Computer algebra independent integration tests

3-Logarithms/3.3-u-a+b-log-c-d+e-x-^n-^p

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Contents

Chapter 1

Introduction

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

The number of integrals in this report is [547]. This is test number [62].

1.1 Listing of CAS systems tested

The following systems were tested at this time.

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

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

Sympy was called directly using Python.

1.2 Results

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

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

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

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

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

System	solved	Failed
Rubi	% 99.27 (543)	% 0.73 (4)
Mathematica	% 99.27 (543)	% 0.73 (4)
Maple	% 56.49 (309)	% 43.51 (238)
Maxima	% 40.77 (223)	% 59.23 (324)
Fricas	% 40.40 (221)	% 59.60 (326)
Sympy	% 29.98 (164)	% 70.02 (383)
Giac	% 39.12 (214)	% 60.88 (333)
Mupad	% 38.21 (209)	% 61.79 (338)

Table 1.1: Percentage solved for each CAS

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

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

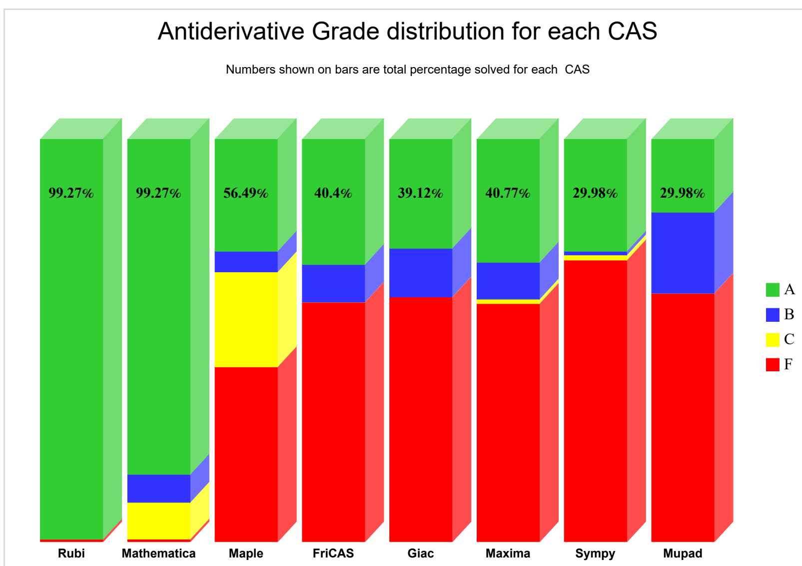
Table 1.2: Description of grading applied to integration result

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

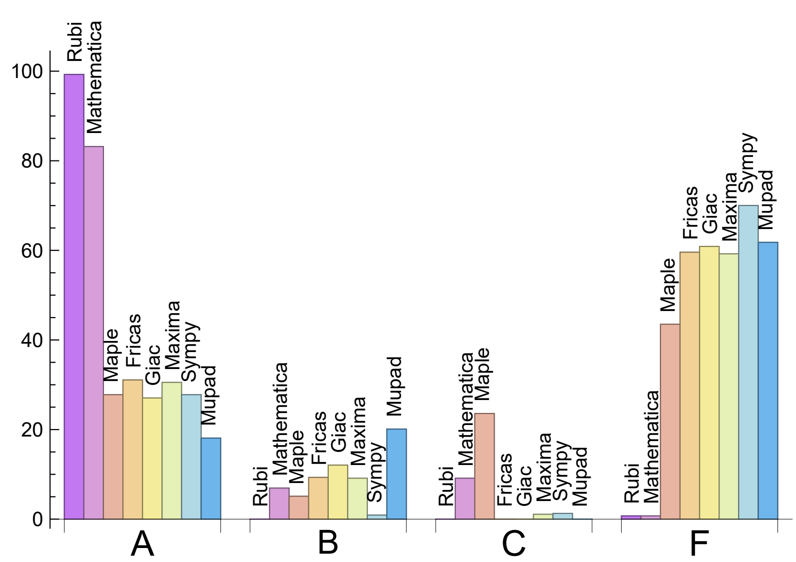
System	% A grade	% B grade	% C grade	% F grade
Rubi	99.27	0.00	0.00	0.73
Mathematica	83.18	6.95	9.14	0.73
Maple	27.79	5.12	23.58	43.51
Maxima	30.53	9.14	1.10	59.23
Fricas	31.08	9.32	0.00	59.60
Sympy	27.79	0.91	1.28	70.02
Giac	27.06	12.07	0.00	60.88
Mupad	18.10	20.11	0.00	61.79

Table 1.3: Antiderivative Grade distribution of each CAS

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



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



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

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

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

System	Number failed	Percentage normal failure	Percentage time-out failure	Percentage exception failure
Rubi	4	100.00 %	0.00 %	0.00 %
Mathematica	4	100.00 %	0.00 %	0.00 %
Maple	238	99.16 %	0.42 %	0.42 %
Maxima	324	80.56 %	0.00 %	19.44 %
Fricas	326	73.01 %	0.00 %	26.99 %
Sympy	383	52.74 %	40.99 %	6.27 %
Giac	333	96.40 %	2.70 %	0.90 %
Mupad	338	100.00 %	0.00 %	0.00 %

Table 1.4: Time and leaf size performance for each CAS

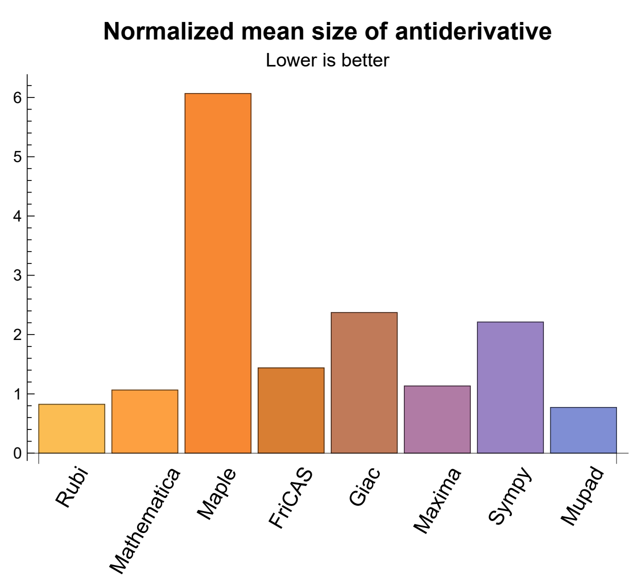
1.3 Performance

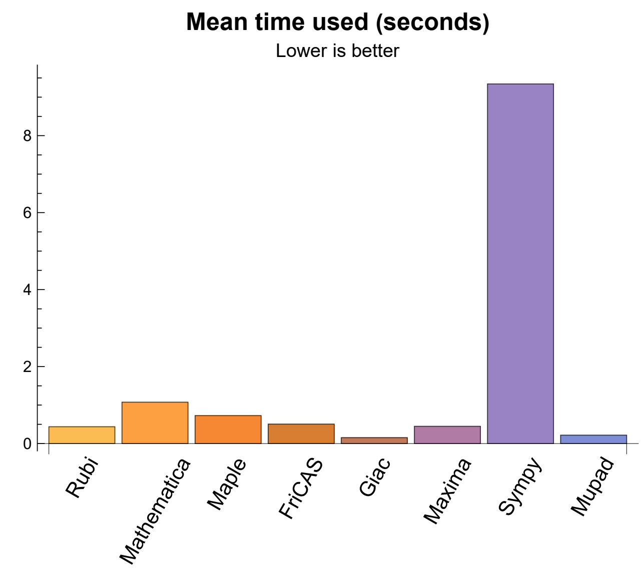
The table below summarizes the performance of each CAS system in terms of CPU time and leaf size of results.

System	Mean time (sec)	Mean size	Normalized mean	Median size	Normalized median
Rubi	0.44	216.37	0.82	158.00	1.00
Mathematica	1.07	296.64	1.07	164.00	0.96
Maple	0.73	1308.92	6.07	108.00	1.35
Maxima	0.45	145.63	1.13	27.00	0.87
Fricas	0.50	248.26	1.44	53.00	1.08
Sympy	9.34	379.64	2.21	49.50	1.13
Giac	0.15	513.11	2.37	42.00	1.06
Mupad	0.22	119.22	0.77	16.00	0.79

Table 1.5: Time and leaf size performance for each CAS

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





1.4 list of integrals that has no closed form antiderivative

{92, 93, 98, 99, 103, 104, 108, 109, 110, 114, 115, 116, 120, 121, 122, 127, 132, 137, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 163, 164, 165, 166, 167, 168, 169, 174, 196, 197, 209, 214, 215, 216, 234, 235, 236, 237, 238, 239, 240, 241, 332, 346, 350, 375, 376, 377, 395, 396, 399, 400, 448, 449, 453, 454, 458, 459, 463, 464, 468, 469, 473, 477, 481, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 507, 508, 509, 510, 511, 512, 513, 517, 540, 541, 542, 543, 544, 545, 546, 547}

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

Rubi {}

Mathematica {}

Maple {}

Maxima {}

Fricas {}

Sympy {}

Giac {}

Mupad {}

1.6 list of integrals solved by CAS but failed verification

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

Rubi {}

Mathematica {}

Maple Verification phase not implemented yet.

Maxima Verification phase not implemented yet.

Fricas Verification phase not implemented yet.

Sympy Verification phase not implemented yet.

Giac Verification phase not implemented yet.

Mupad Verification phase not implemented yet.

1.7 Timing

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

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

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

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

1.8 Verification

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

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

1.9 Important notes about some of the results

1.9.1 Important note about Maxima results

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

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

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

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

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

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

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

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

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

1.9.2 Important note about FriCAS and Giac/XCAS results

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

These will fail With error `Exception raised: NotImplementedError`

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

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

1.9.3 Important note about finding leaf size of antiderivative

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

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

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

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

```
try:
```

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

except Exception as ee:
       leafCount =1
```

1.9.4 Important note about Mupad results

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

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

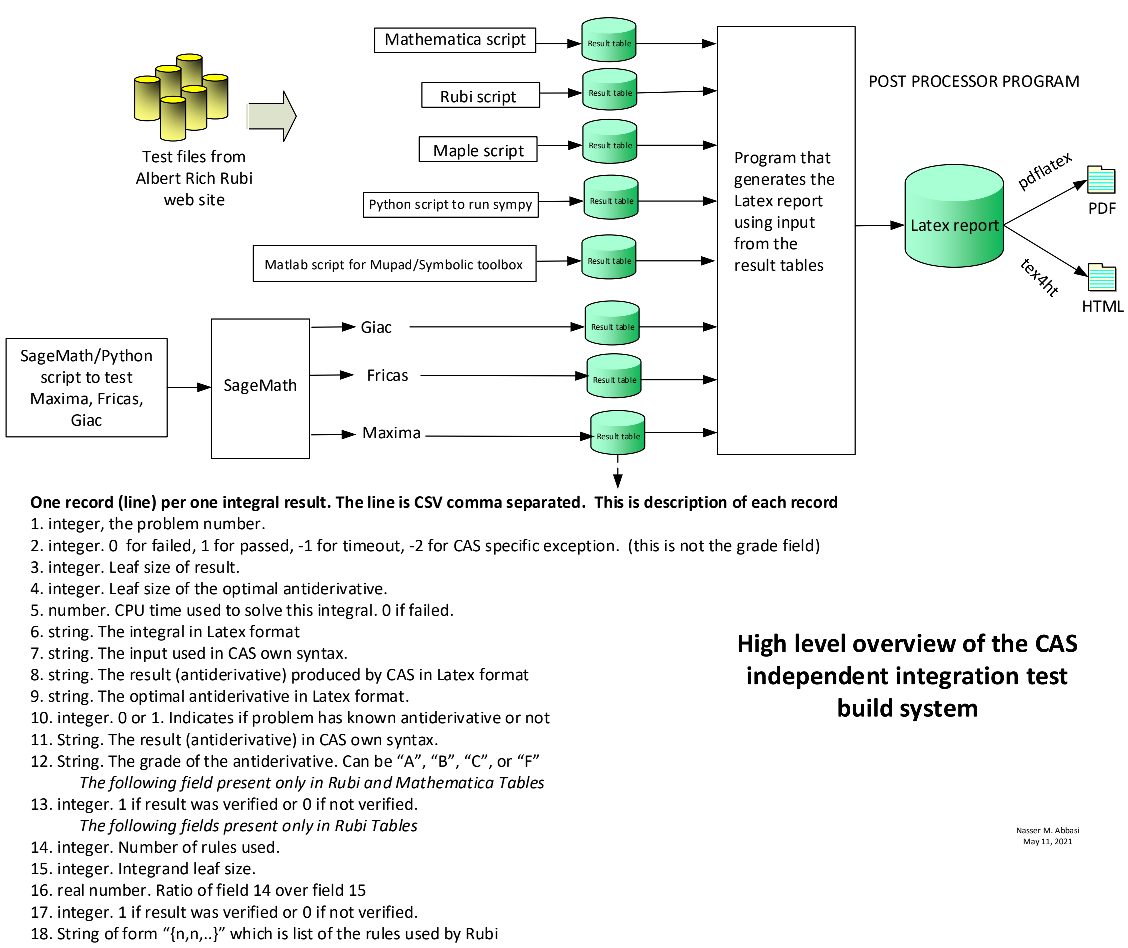
The following is an example of using Matlab's symbolic toolbox (Mupad) to solve an integral

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

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

1.10 Design of the test system

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



Chapter 2

detailed summary tables of results

2.1 List of integrals sorted by grade for each CAS

2.1.1 Rubi

A grade: { 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 373, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547 }

B grade: { }

C grade: { }

F grade: { 370, 371, 372, 374 }

2.1.2 Mathematica

A grade: { 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 58, 59, 60, 61, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 130, 131, 132, 134, 135, 136, 137, 138, 139, 140, 141, 145, 146, 147, 148, 149, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 204, 205, 206, 207, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 227, 228, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 268, 271, 272, 273, 274, 275, 277, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 300, 302, 303, 304, 305, 306, 307, 308, 309, 331, 332, 333, 334, 335, 336, 337, 338, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 369, 370, 371, 372, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 395, 396, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 433, 434, 435, 436, 437, 440, 441, 444, 445, 446, 447, 448, 449, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 521, 523, 524, 525, 526, 527, 528, 529, 530, 534, 539, 540, 541, 542, 543, 544, 545, 546, 547 }

B grade: { 56, 57, 62, 63, 94, 95, 128, 129, 133, 225, 226, 229, 230, 231, 278, 339, 340, 341, 342, 343, 394, 397, 398, 432, 438, 439, 442, 443, 450, 474, 522, 531, 532, 533, 535, 536, 537, 538 }

C grade: { 142, 143, 144, 150, 151, 203, 208, 266, 267, 269, 270, 293, 294, 295, 296, 297, 298, 299, 301, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495 }

F grade: { 276, 368, 373, 520 }

2.1.3 Maple

A grade: { 1, 2, 3, 4, 6, 7, 8, 19, 20, 33, 38, 39, 47, 64, 65, 66, 70, 71, 72, 75, 76, 77, 78, 81, 82, 83, 84, 92, 93, 98, 99, 103, 104, 108, 109, 110, 114, 115, 116, 120, 121, 122, 127, 132, 137, 140, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 163, 164, 165, 166, 167, 168, 169, 174, 179, 195, 196, 197, 209, 213, 214, 215, 216, 234, 235, 236, 237, 238, 239, 240, 241, 279, 281, 303, 309, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 346, 350, 354, 375, 376, 377, 381, 395, 396, 399, 400, 402, 403, 407, 423, 444, 448, 449, 453, 454, 458, 459, 463, 464, 468, 469, 473, 477, 481, 484, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 507, 508, 509, 510, 511, 512, 513, 517, 540, 541, 542, 543, 544, 545, 546, 547 }

B grade: { 67, 68, 69, 73, 74, 79, 80, 175, 176, 177, 178, 180, 181, 182, 183, 184, 185, 186, 187, 188, 280, 282, 351, 352, 353, 355, 356, 357 }

C grade: { 17, 18, 21, 22, 23, 35, 36, 37, 40, 41, 42, 43, 44, 45, 46, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 60, 61, 62, 63, 85, 86, 87, 91, 97, 102, 217, 218, 219, 220, 221, 222, 223, 226, 227, 231, 232, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 304, 305, 306, 307, 308, 322, 331, 343, 344, 345, 349, 358, 359, 360, 361, 362, 363, 364, 365, 366, 379, 380, 382, 383, 384, 385, 386, 387, 388, 389 }

F grade: { 5, 9, 10, 11, 12, 13, 14, 15, 16, 24, 25, 26, 27, 28, 29, 30, 31, 32, 34, 58, 59, 88, 89, 90, 94, 95, 96, 100, 101, 105, 106, 107, 111, 112, 113, 117, 118, 119, 123, 124, 125, 126, 128, 129, 130, 131, 133, 134, 135, 136, 138, 139, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 162, 170, 171, 172, 173, 189, 190, 191, 192, 193, 194, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 210, 211, 212, 224, 225, 228, 229, 230, 233, 275, 276, 277, 278, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 323, 324, 325, 326, 327, 328, 329, 330, 347, 348, 367, 368, 369, 370, 371, 372, 373, 374, 378, 390, 391, 392, 393, 394, 397, 398, 401, 404, 405, 406, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 445, 446, 447, 450, 451, 452, 455, 456, 457, 460, 461, 462, 465, 466, 467, 470, 471, 472, 474, 475, 476, 478, 479, 480, 482, 483, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 506, 514, 515, 516, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539 }

2.1.4 Maxima

A grade: { 3, 4, 5, 6, 7, 8, 13, 14, 15, 16, 20, 32, 37, 38, 39, 41, 42, 46, 64, 65, 66, 67, 68, 69, 70, 73, 74, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 92, 93, 98, 99, 103, 104, 108, 109, 110, 114, 115, 116, 120, 121, 122, 127, 132, 137, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 163, 164, 165, 166, 167, 168, 195, 196, 197, 209, 213, 214, 215, 216, 234, 235, 236, 237, 238, 239, 240, 241, 252, 268, 303, 304, 307, 308, 332, 345, 346, 350, 358, 359, 360, 361, 363, 364, 365, 366, 375, 376, 379, 380, 381, 395, 396, 399, 400, 402, 403, 406, 407, 419, 421, 422, 423, 425, 426, 429, 430, 431, 444, 448, 449, 453, 454, 458, 459, 463, 464, 468, 469, 473, 477, 481, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 507, 508, 509, 510, 511, 512, 540, 541, 542, 543, 544, 545, 546, 547 }

B grade: { 1, 2, 17, 18, 19, 35, 36, 43, 44, 45, 47, 52, 53, 54, 55, 60, 61, 71, 75, 175, 176, 177, 178, 179, 183, 184, 185, 186, 187, 188, 189, 190, 279, 280, 305, 337, 338, 339, 340, 341, 342, 404, 405, 420, 427, 428, 435, 436, 437, 441 }

C grade: { 9, 10, 11, 12, 309, 331 }

F grade: { 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 33, 34, 40, 48, 49, 50, 51, 56, 57, 58, 59, 62, 63, 72, 88, 89, 90, 91, 94, 95, 96, 97, 100, 101, 102, 105, 106, 107, 111, 112, 113, 117, 118, 119, 123, 124, 125, 126, 128, 129, 130, 131, 133, 134, 135, 136, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 162, 169, 170, 171, 172, 173, 174, 180, 181, 182, 191, 192, 193, 194, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 210, 211, 212, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 306, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 333, 334, 335, 336, 343, 344, 347, 348, 349, 351, 352, 353, 354, 355, 356, 357, 362, 367, 368, 369, 370, 371, 372, 373, 374, 377, 378, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 397, 398, 401, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 424, 432, 433, 434, 438, 439, 440, 442, 443, 445, 446, 447, 450, 451, 452, 455, 456, 457, 460, 461, 462, 465, 466, 467, 470, 471, 472, 474, 475, 476, 478, 479, 480, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 506, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539 }

2.1.5 FriCAS

A grade: { 1, 2, 3, 4, 5, 6, 7, 8, 16, 20, 21, 22, 31, 33, 34, 38, 39, 41, 64, 65, 66, 67, 68, 69, 70, 71, 72, 75, 76, 81, 82, 85, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 103, 104, 138, 139, 140, 141, 152, 153, 154, 155, 163, 164, 165, 166, 167, 168, 169, 173, 174, 175, 176, 177, 178, 179, 183, 184, 185, 186, 191, 192, 193, 194, 195, 196, 197, 209, 212, 213, 214, 215, 216, 234, 235, 236, 237, 238, 239, 240, 241, 252, 268, 279, 281, 303, 304, 307, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 346, 350, 375, 376, 377, 379, 380, 381, 395, 396, 399, 400, 402, 403, 407, 408, 409, 418, 422, 423, 425, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 458, 459, 483, 484, 485, 496, 497, 498, 499, 507, 508, 509, 510, 511, 512, 513, 516, 517, 540, 541, 542, 543, 544, 545, 546, 547 }

B grade: { 17, 18, 19, 23, 35, 36, 37, 42, 43, 44, 45, 46, 47, 52, 53, 54, 55, 60, 61, 100, 101, 102, 142, 143, 144, 187, 305, 308, 404, 405, 406, 410, 420, 421, 426, 427, 428, 429, 430, 431, 435, 436, 437, 441, 455, 456, 457, 482, 486, 487, 488 }

C grade: { }

F grade: { 9, 10, 11, 12, 13, 14, 15, 24, 25, 26, 27, 28, 29, 30, 32, 40, 48, 49, 50, 51, 56, 57, 58, 59, 62, 63, 73, 74, 77, 78, 79, 80, 83, 84, 86, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 145, 146, 147, 148, 149, 150, 151, 156, 157, 158, 159, 160, 161, 162, 170, 171, 172, 180, 181, 182, 188, 189, 190, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 210, 211, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 280, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 306, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 343, 344, 345, 347, 348, 349, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 378, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 397, 398, 401, 411, 412, 413, 414, 415, 416, 417, 419, 424, 432, 433, 434, 438, 439, 440, 442, 443, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 489, 490, 491, 492, 493, 494, 495, 500, 501, 502, 503, 504, 505, 506, 514, 515, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539 }

2.1.6 Sympy

A grade: { 1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 13, 16, 17, 18, 19, 20, 33, 35, 36, 37, 38, 39, 44, 45, 46, 47, 52, 53, 54, 55, 60, 61, 64, 65, 66, 67, 68, 69, 70, 76, 79, 80, 82, 83, 84, 85, 87, 92, 93, 98, 99, 103, 104, 108, 109, 110, 114, 127, 138, 139, 140, 141, 142, 154, 155, 157, 158, 160, 161, 163, 167, 174, 176, 177, 178, 179, 186, 195, 196, 197, 214, 234, 235, 236, 237, 238, 239, 240, 241, 303, 304, 305, 332, 346, 375, 376, 379, 380, 381, 402, 403, 404, 405, 406, 407, 420, 421, 422, 423, 427, 428, 429, 430, 431, 435, 436, 437, 441, 444, 448, 449, 453, 454, 458, 463, 464, 468, 469, 473, 477, 482, 483, 484, 485, 486, 498, 499, 501, 502, 504, 505, 507, 511, 517, 540, 541, 542, 543, 544, 545, 546 }

B grade: { 175, 183, 184, 185, 187 }

C grade: { 72, 73, 74, 75, 77, 78, 81 }

F grade: { 9, 14, 15, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 34, 40, 41, 42, 43, 48, 49, 50, 51, 56, 57, 58, 59, 62, 63, 71, 86, 88, 89, 90, 91, 94, 95, 96, 97, 100, 101, 102, 105, 106, 107, 111, 112, 113, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 156, 159, 162, 164, 165, 166, 168, 169, 170, 171, 172, 173, 180, 181, 182, 188, 189, 190, 191, 192, 193, 194, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 377, 378, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 424, 425, 426, 432, 433, 434, 438, 439, 440, 442, 443, 445, 446, 447, 450, 451, 452, 455, 456, 457, 459, 460, 461, 462, 465, 466, 467, 470, 471, 472, 474, 475, 476, 478, 479, 480, 481, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 500, 503, 506, 508, 509, 510, 512, 513, 514, 515, 516, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 547 }

2.1.7 Giac

A grade: { 1, 2, 3, 4, 5, 6, 7, 8, 11, 12, 20, 21, 33, 39, 41, 64, 65, 66, 67, 68, 69, 70, 76, 82, 85, 88, 89, 90, 91, 92, 93, 98, 99, 103, 104, 108, 109, 110, 114, 115, 116, 120, 121, 122, 127, 132, 137, 140, 141, 142, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 163, 164, 165, 166, 167, 168, 174, 176, 177, 178, 179, 195, 196, 197, 213, 214, 216, 234, 235, 236, 237, 238, 239, 240, 241, 252, 268, 307, 332, 346, 350, 375, 376, 377, 381, 395, 399, 402, 403, 407, 408, 423, 425, 444, 445, 446, 447, 448, 449, 453, 454, 458, 459, 463, 464, 468, 469, 473, 477, 481, 484, 485, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 507, 508, 509, 510, 511, 512, 513, 517, 540, 541, 542, 543, 544, 545, 546, 547 }

B grade: { 17, 18, 19, 22, 23, 35, 36, 37, 38, 42, 43, 44, 45, 46, 47, 52, 53, 54, 55, 60, 61, 87, 94, 95, 96, 97, 100, 101, 102, 175, 183, 184, 185, 186, 187, 303, 304, 305, 308, 379, 380, 404, 405, 406, 409, 410, 420, 421, 422, 426, 427, 428, 429, 430, 431, 435, 436, 437, 441, 450, 451, 452, 456, 457, 486, 487 }

C grade: { }

F grade: { 9, 10, 13, 14, 15, 16, 24, 25, 26, 27, 28, 29, 30, 31, 32, 34, 40, 48, 49, 50, 51, 56, 57, 58, 59, 62, 63, 71, 72, 73, 74, 75, 77, 78, 79, 80, 81, 83, 84, 86, 105, 106, 107, 111, 112, 113, 117, 118, 119, 123, 124, 125, 126, 128, 129, 130, 131, 133, 134, 135, 136, 138, 139, 143, 144, 145, 146, 147, 148, 149, 150, 151, 162, 169, 170, 171, 172, 173, 180, 181, 182, 188, 189, 190, 191, 192, 193, 194, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 215, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 306, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 347, 348, 349, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 378, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 396, 397, 398, 400, 401, 411, 412, 413, 414, 415, 416, 417, 418, 419, 424, 432, 433, 434, 438, 439, 440, 442, 443, 455, 460, 461, 462, 465, 466, 467, 470, 471, 472, 474, 475, 476, 478, 479, 480, 482, 483, 488, 489, 490, 491, 492, 493, 494, 495, 506, 514, 515, 516, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539 }

2.1.8 Mupad

A grade: { 92, 93, 98, 99, 103, 104, 108, 109, 110, 114, 115, 116, 120, 121, 122, 127, 132, 137, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 163, 164, 165, 166, 167, 168, 169, 174, 196, 197, 209, 214, 215, 216, 234, 235, 236, 237, 238, 239, 240, 241, 332, 346, 350, 375, 376, 377, 395, 396, 399, 400, 448, 449, 453, 454, 458, 459, 463, 464, 468, 469, 473, 477, 481, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 507, 508, 509, 510, 511, 512, 513, 517, 540, 541, 542, 543, 544, 545, 546, 547 }

B grade: { 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 33, 35, 36, 37, 38, 39, 41, 42, 43, 44, 45, 46, 47, 52, 53, 54, 55, 60, 61, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 87, 175, 176, 177, 178, 179, 183, 184, 185, 186, 187, 195, 213, 252, 268, 279, 281, 303, 304, 305, 307, 308, 337, 338, 379, 380, 381, 402, 403, 404, 405, 406, 407, 420, 421, 422, 423, 425, 426, 427, 428, 429, 430, 431, 435, 436, 437, 441, 444 }

C grade: { }

F grade: { 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 34, 40, 48, 49, 50, 51, 56, 57, 58, 59, 62, 63, 86, 88, 89, 90, 91, 94, 95, 96, 97, 100, 101, 102, 105, 106, 107, 111, 112, 113, 117, 118, 119, 123, 124, 125, 126, 128, 129, 130, 131, 133, 134, 135, 136, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 162, 170, 171, 172, 173, 180, 181, 182, 188, 189, 190, 191, 192, 193, 194, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 210, 211, 212, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 280, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 306, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 333, 334, 335, 336, 339, 340, 341, 342, 343, 344, 345, 347, 348, 349, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 378, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 397, 398, 401, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 424, 432, 433, 434, 438, 439, 440, 442, 443, 445, 446, 447, 450, 451, 452, 455, 456, 457, 460, 461, 462, 465, 466, 467, 470, 471, 472, 474, 475, 476, 478, 479, 480, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 506, 514, 515, 516, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539 }

2.2 Detailed conclusion table per each integral for all CAS systems

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

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

Problem 1	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	81	81	74	129	188	78	88	92	119
normalized size	1	1.00	0.91	1.59	2.32	0.96	1.09	1.14	1.47
time (sec)	N/A	0.035	0.008	0.043	0.834	0.585	0.484	0.211	0.364

Problem 2	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	61	61	57	98	125	60	68	71	88
normalized size	1	1.00	0.93	1.61	2.05	0.98	1.11	1.16	1.44
time (sec)	N/A	0.027	0.006	0.042	0.781	0.842	0.412	0.205	0.245

Problem 3	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	40	67	71	42	46	50	57
normalized size	1	1.00	0.98	1.63	1.73	1.02	1.12	1.22	1.39
time (sec)	N/A	0.018	0.005	0.040	0.610	0.709	0.353	0.199	0.217

Problem 4	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	21	21	21	36	31	25	26	33	25
normalized size	1	1.00	1.00	1.71	1.48	1.19	1.24	1.57	1.19
time (sec)	N/A	0.008	0.005	0.035	0.529	2.020	0.149	0.192	0.062

Problem 5	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F(-1)	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	15	15	15	0	17	16	12	16	15
normalized size	1	1.00	1.00	0.00	1.13	1.07	0.80	1.07	1.00
time (sec)	N/A	0.009	0.009	180.000	1.094	0.641	0.753	0.200	0.211

Problem 6	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	36	36	36	54	20	47	29	38	36
normalized size	1	1.00	1.00	1.50	0.56	1.31	0.81	1.06	1.00
time (sec)	N/A	0.015	0.015	0.050	0.977	0.499	0.801	0.179	0.227

Problem 7	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	63	63	47	85	21	67	48	60	64
normalized size	1	1.00	0.75	1.35	0.33	1.06	0.76	0.95	1.02
time (sec)	N/A	0.024	0.016	0.040	0.963	0.614	0.815	0.232	0.281

Problem 8	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	85	85	57	116	20	90	71	81	67
normalized size	1	1.00	0.67	1.36	0.24	1.06	0.84	0.95	0.79
time (sec)	N/A	0.033	0.019	0.043	1.247	0.959	0.844	0.194	0.192

Problem 9	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	C	F(-2)	F(-1)	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	98	98	75	0	78	0	0	0	96
normalized size	1	1.00	0.77	0.00	0.80	0.00	0.00	0.00	0.98
time (sec)	N/A	0.050	0.013	0.108	0.708	0.000	0.000	0.000	0.212

Problem 10	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	C	F(-2)	A	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	74	74	63	0	65	0	105	0	82
normalized size	1	1.00	0.85	0.00	0.88	0.00	1.42	0.00	1.11
time (sec)	N/A	0.038	0.010	0.084	0.717	0.000	132.605	0.000	0.169

Problem 11	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	C	F(-2)	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	50	50	50	0	49	0	90	55	46
normalized size	1	1.00	1.00	0.00	0.98	0.00	1.80	1.10	0.92
time (sec)	N/A	0.031	0.009	0.187	0.618	0.000	2.241	0.242	0.178

Problem 12	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	C	F(-2)	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	25	25	25	0	25	0	63	26	45
normalized size	1	1.00	1.00	0.00	1.00	0.00	2.52	1.04	1.80
time (sec)	N/A	0.022	0.002	0.054	0.663	0.000	2.150	0.239	0.153

Problem 13	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	F(-2)	A	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	58	0	45	0	92	0	67
normalized size	1	1.00	1.18	0.00	0.92	0.00	1.88	0.00	1.37
time (sec)	N/A	0.030	0.025	0.048	1.071	0.000	29.707	0.000	0.155

Problem 14	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	F(-2)	F(-1)	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	77	77	72	0	45	0	0	0	113
normalized size	1	1.00	0.94	0.00	0.58	0.00	0.00	0.00	1.47
time (sec)	N/A	0.038	0.029	0.050	0.959	0.000	0.000	0.000	0.180

Problem 15	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	F(-2)	F(-1)	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	101	101	85	0	45	0	0	0	140
normalized size	1	1.00	0.84	0.00	0.45	0.00	0.00	0.00	1.39
time (sec)	N/A	0.049	0.036	0.050	1.049	0.000	0.000	0.000	0.189

Problem 16	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	A	A	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	45	45	45	0	53	26	54	0	45
normalized size	1	1.00	1.00	0.00	1.18	0.58	1.20	0.00	1.00
time (sec)	N/A	0.028	0.017	0.056	1.057	0.692	6.942	0.000	0.179

Problem 17	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	131	131	112	15871	500	614	1059	778	275
normalized size	1	1.00	0.85	121.15	3.82	4.69	8.08	5.94	2.10
time (sec)	N/A	0.074	0.058	1.631	0.833	0.617	6.973	0.292	0.362

Problem 18	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	99	99	85	4872	282	324	527	409	172
normalized size	1	1.00	0.86	49.21	2.85	3.27	5.32	4.13	1.74
time (sec)	N/A	0.053	0.012	0.698	0.713	0.557	3.322	0.191	0.256

Problem 19	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	65	65	59	130	131	140	211	178	94
normalized size	1	1.00	0.91	2.00	2.02	2.15	3.25	2.74	1.45
time (sec)	N/A	0.035	0.010	0.066	0.602	1.281	1.466	0.173	0.203

Problem 20	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	29	29	29	36	40	40	42	46	35
normalized size	1	1.00	1.00	1.24	1.38	1.38	1.45	1.59	1.21
time (sec)	N/A	0.015	0.007	0.043	0.667	1.426	0.475	0.162	0.154

Problem 21	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	63	63	63	311	0	46	0	49	-1
normalized size	1	1.00	1.00	4.94	0.00	0.73	0.00	0.78	-0.02
time (sec)	N/A	0.055	0.068	0.656	0.000	0.717	0.000	0.170	0.000

Problem 22	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	96	96	123	456	0	117	0	307	-1
normalized size	1	1.00	1.28	4.75	0.00	1.22	0.00	3.20	-0.01
time (sec)	N/A	0.061	0.069	0.662	0.000	0.679	0.000	0.199	0.000

Problem 23	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	135	135	144	734	0	263	0	1322	-1
normalized size	1	1.00	1.07	5.44	0.00	1.95	0.00	9.79	-0.01
time (sec)	N/A	0.081	0.099	0.661	0.000	0.676	0.000	0.265	0.000

Problem 24	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	179	179	152	0	0	0	0	0	-1
normalized size	1	1.00	0.85	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.148	0.268	0.889	0.000	0.000	0.000	0.000	0.000

Problem 25	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	143	143	127	0	0	0	0	0	-1
normalized size	1	1.00	0.89	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.107	0.074	0.365	0.000	0.000	0.000	0.000	0.000

Problem 26	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	111	111	106	0	0	0	0	0	-1
normalized size	1	1.00	0.95	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.091	0.052	0.356	0.000	0.000	0.000	0.000	0.000

Problem 27	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	80	80	80	0	0	0	0	0	-1
normalized size	1	1.00	1.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.073	0.016	0.391	0.000	0.000	0.000	0.000	0.000

Problem 28	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	116	116	139	0	0	0	0	0	-1
normalized size	1	1.00	1.20	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.101	0.124	0.352	0.000	0.000	0.000	0.000	0.000

Problem 29	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	156	156	163	0	0	0	0	0	-1
normalized size	1	1.00	1.04	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.120	0.185	0.400	0.000	0.000	0.000	0.000	0.000

Problem 30	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	192	192	203	0	0	0	0	0	-1
normalized size	1	1.00	1.06	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.149	0.221	0.355	0.000	0.000	0.000	0.000	0.000

Problem 31	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	103	103	103	0	0	59	0	0	-1
normalized size	1	1.00	1.00	0.00	0.00	0.57	0.00	0.00	-0.01
time (sec)	N/A	0.059	0.097	1.143	0.000	0.456	0.000	0.000	0.000

Problem 32	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	88	88	88	0	59	0	0	0	-1
normalized size	1	1.00	1.00	0.00	0.67	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.068	0.052	0.086	1.226	0.487	0.000	0.000	0.000

Problem 33	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	20	20	20	26	0	22	42	23	20
normalized size	1	1.00	1.00	1.30	0.00	1.10	2.10	1.15	1.00
time (sec)	N/A	0.047	0.028	0.066	0.000	0.432	6.179	0.284	0.200

Problem 34	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	42	42	42	0	0	27	0	0	-1
normalized size	1	1.00	1.00	0.00	0.00	0.64	0.00	0.00	-0.02
time (sec)	N/A	0.076	0.027	1.378	0.000	0.452	0.000	0.000	0.000

Problem 35	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	178	178	315	1105	393	471	620	1224	526
normalized size	1	1.00	1.77	6.21	2.21	2.65	3.48	6.88	2.96
time (sec)	N/A	0.100	0.312	0.350	1.074	0.465	14.961	0.293	0.422

Problem 36	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	149	149	226	836	284	340	450	780	352
normalized size	1	1.00	1.52	5.61	1.91	2.28	3.02	5.23	2.36
time (sec)	N/A	0.070	0.226	0.334	1.117	0.453	8.834	0.219	0.345

Problem 37	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	120	120	150	585	187	221	277	430	212
normalized size	1	1.00	1.25	4.88	1.56	1.84	2.31	3.58	1.77
time (sec)	N/A	0.054	0.147	0.317	1.079	0.446	3.915	0.193	0.268

Problem 38	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	91	91	101	101	102	119	148	186	104
normalized size	1	1.00	1.11	1.11	1.12	1.31	1.63	2.04	1.14
time (sec)	N/A	0.037	0.053	0.070	0.993	0.439	1.706	0.173	0.248

Problem 39	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	29	29	29	36	40	40	42	46	35
normalized size	1	1.00	1.00	1.24	1.38	1.38	1.45	1.59	1.21
time (sec)	N/A	0.016	0.008	0.044	0.951	0.443	0.498	0.158	0.002

Problem 40	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	63	63	62	261	0	0	0	0	-1
normalized size	1	1.00	0.98	4.14	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.052	0.014	0.295	0.000	0.418	0.000	0.000	0.000

Problem 41	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F(-2)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	74	74	57	354	85	95	0	111	84
normalized size	1	1.00	0.77	4.78	1.15	1.28	0.00	1.50	1.14
time (sec)	N/A	0.032	0.064	0.335	1.009	0.457	0.000	0.173	1.139

Problem 42	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	B	F(-2)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	112	112	83	633	167	274	0	302	173
normalized size	1	1.00	0.74	5.65	1.49	2.45	0.00	2.70	1.54
time (sec)	N/A	0.062	0.113	0.403	1.033	0.485	0.000	0.250	0.666

Problem 43	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	B	B	F(-2)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	141	141	110	950	301	507	0	565	283
normalized size	1	1.00	0.78	6.74	2.13	3.60	0.00	4.01	2.01
time (sec)	N/A	0.082	0.177	0.479	1.116	0.490	0.000	0.186	0.937

Problem 44	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	365	301	360	6770	827	1190	1744	2385	1051
normalized size	1	0.82	0.99	18.55	2.27	3.26	4.78	6.53	2.88
time (sec)	N/A	0.535	0.302	0.941	1.219	0.492	21.767	0.356	0.741

Problem 45	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	287	243	247	4597	554	760	1103	1339	591
normalized size	1	0.85	0.86	16.02	1.93	2.65	3.84	4.67	2.06
time (sec)	N/A	0.413	0.157	0.790	1.410	0.591	10.976	0.270	0.554

Problem 46	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	186	186	144	2616	314	401	561	595	268
normalized size	1	1.00	0.77	14.06	1.69	2.16	3.02	3.20	1.44
time (sec)	N/A	0.164	0.079	0.572	1.099	0.469	4.529	0.254	0.351

Problem 47	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	65	65	59	130	131	140	211	178	94
normalized size	1	1.00	0.91	2.00	2.02	2.15	3.25	2.74	1.45
time (sec)	N/A	0.039	0.005	0.071	0.999	0.433	1.478	0.176	0.002

Problem 48	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	111	111	194	2018	0	0	0	0	-1
normalized size	1	1.00	1.75	18.18	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.114	0.132	0.472	0.000	0.423	0.000	0.000	0.000

Problem 49	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	132	132	126	1092	0	0	0	0	-1
normalized size	1	1.00	0.95	8.27	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.088	0.087	0.377	0.000	0.444	0.000	0.000	0.000

Problem 50	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	202	233	204	1473	0	0	0	0	-1
normalized size	1	1.15	1.01	7.29	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.385	0.199	0.467	0.000	0.449	0.000	0.000	0.000

Problem 51	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	317	347	302	1815	0	0	0	0	-1
normalized size	1	1.09	0.95	5.73	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.605	0.343	0.545	0.000	0.454	0.000	0.000	0.000

Problem 52	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	598	598	475	30495	1687	2802	4495	5282	2133
normalized size	1	1.00	0.79	50.99	2.82	4.69	7.52	8.83	3.57
time (sec)	N/A	0.552	0.425	2.994	1.703	0.578	48.313	0.641	1.212

Problem 53	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	432	432	333	20417	1140	1771	2746	2992	1157
normalized size	1	1.00	0.77	47.26	2.64	4.10	6.36	6.93	2.68
time (sec)	N/A	0.384	0.228	2.293	1.548	0.473	23.775	0.437	0.859

Problem 54	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	265	265	201	11547	662	923	1479	1351	511
normalized size	1	1.00	0.76	43.57	2.50	3.48	5.58	5.10	1.93
time (sec)	N/A	0.219	0.137	1.361	1.276	0.511	10.383	0.309	0.567

Problem 55	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	99	99	85	4872	282	324	527	409	172
normalized size	1	1.00	0.86	49.21	2.85	3.27	5.32	4.13	1.74
time (sec)	N/A	0.052	0.023	0.178	1.155	0.496	3.287	0.214	0.002

Problem 56	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	158	158	335	9538	0	0	0	0	-1
normalized size	1	1.00	2.12	60.37	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.177	0.254	0.777	0.000	0.414	0.000	0.000	0.000

Problem 57	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	190	190	410	5626	0	0	0	0	-1
normalized size	1	1.00	2.16	29.61	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.154	0.390	0.864	0.000	0.481	0.000	0.000	0.000

Problem 58	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	342	370	620	0	0	0	0	0	-1
normalized size	1	1.08	1.81	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.625	0.745	2.132	0.000	0.484	0.000	0.000	0.000

Problem 59	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	564	525	843	0	0	0	0	0	-1
normalized size	1	0.93	1.49	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.140	1.126	2.804	0.000	0.511	0.000	0.000	0.000

Problem 60	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	340	340	258	37938	1163	1756	2885	2548	823
normalized size	1	1.00	0.76	111.58	3.42	5.16	8.49	7.49	2.42
time (sec)	N/A	0.281	0.224	3.402	1.553	0.602	20.670	0.368	0.801

Problem 61	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	131	131	112	15871	500	614	1059	778	275
normalized size	1	1.00	0.85	121.15	3.82	4.69	8.08	5.94	2.10
time (sec)	N/A	0.071	0.031	0.418	1.289	0.494	6.924	0.222	0.002

Problem 62	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	205	205	503	33189	0	0	0	0	-1
normalized size	1	1.00	2.45	161.90	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.231	0.230	1.090	0.000	0.483	0.000	0.000	0.000

Problem 63	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	248	248	531	21740	0	0	0	0	-1
normalized size	1	1.00	2.14	87.66	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.235	0.739	1.474	0.000	0.504	0.000	0.000	0.000

Problem 64	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	19	19	19	30	23	22	24	23	23
normalized size	1	1.00	1.00	1.58	1.21	1.16	1.26	1.21	1.21
time (sec)	N/A	0.006	0.005	0.036	0.635	0.460	0.142	0.158	0.071

Problem 65	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	37	37	36	55	27	36	42	44	48
normalized size	1	1.00	0.97	1.49	0.73	0.97	1.14	1.19	1.30
time (sec)	N/A	0.014	0.004	0.042	0.668	0.429	0.337	0.163	0.288

Problem 66	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	55	55	51	80	37	51	63	62	73
normalized size	1	1.00	0.93	1.45	0.67	0.93	1.15	1.13	1.33
time (sec)	N/A	0.018	0.006	0.042	0.798	0.438	0.412	0.176	0.245

Problem 67	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	25	25	25	75	34	30	36	34	31
normalized size	1	1.00	1.00	3.00	1.36	1.20	1.44	1.36	1.24
time (sec)	N/A	0.015	0.007	0.037	0.696	0.495	0.335	0.175	0.078

Problem 68	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	48	131	38	48	63	65	94
normalized size	1	1.00	0.98	2.67	0.78	0.98	1.29	1.33	1.92
time (sec)	N/A	0.025	0.006	0.042	0.690	0.470	0.498	0.174	0.359

Problem 69	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	73	73	67	187	51	67	95	91	138
normalized size	1	1.00	0.92	2.56	0.70	0.92	1.30	1.25	1.89
time (sec)	N/A	0.032	0.009	0.043	0.611	0.589	0.651	0.170	0.367

Problem 70	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	24	24	24	30	35	32	37	40	29
normalized size	1	1.00	1.00	1.25	1.46	1.33	1.54	1.67	1.21
time (sec)	N/A	0.009	0.007	0.045	0.715	0.492	0.454	0.163	0.064

Problem 71	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	24	24	24	35	102	27	0	0	23
normalized size	1	1.00	1.00	1.46	4.25	1.12	0.00	0.00	0.96
time (sec)	N/A	0.026	0.007	0.043	0.674	0.435	0.000	0.000	0.394

Problem 72	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	C	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	15	15	15	19	0	14	17	0	15
normalized size	1	1.00	1.00	1.27	0.00	0.93	1.13	0.00	1.00
time (sec)	N/A	0.019	0.003	0.045	0.000	0.455	6.203	0.000	0.079

Problem 73	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	F	C	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	16	16	16	33	20	0	68	0	18
normalized size	1	1.00	1.00	2.06	1.25	0.00	4.25	0.00	1.12
time (sec)	N/A	0.015	0.002	0.045	1.041	0.481	2.869	0.000	0.034

Problem 74	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	F	C	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	16	16	16	33	20	0	68	0	18
normalized size	1	1.00	1.00	2.06	1.25	0.00	4.25	0.00	1.12
time (sec)	N/A	0.015	0.002	0.043	0.622	0.435	2.915	0.000	0.029

Problem 75	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	C	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	8	8	8	9	19	7	10	0	18
normalized size	1	1.00	1.00	1.12	2.38	0.88	1.25	0.00	2.25
time (sec)	N/A	0.007	0.001	0.042	0.850	0.448	2.403	0.000	0.029

Problem 76	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	10	10	10	9	8	8	7	9	8
normalized size	1	1.00	1.00	0.90	0.80	0.80	0.70	0.90	0.80
time (sec)	N/A	0.006	0.001	0.036	0.671	0.454	0.088	0.191	0.168

Problem 77	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	F	C	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	20	20	20	17	19	0	48	0	16
normalized size	1	1.00	1.00	0.85	0.95	0.00	2.40	0.00	0.80
time (sec)	N/A	0.019	0.002	0.044	0.725	0.470	3.362	0.000	0.030

Problem 78	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	F	C	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	25	25	27	19	20	0	88	0	18
normalized size	1	1.00	1.08	0.76	0.80	0.00	3.52	0.00	0.72
time (sec)	N/A	0.020	0.002	0.043	0.678	0.444	3.499	0.000	0.032

Problem 79	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	F	A	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	21	21	22	46	27	0	75	0	25
normalized size	1	1.00	1.05	2.19	1.29	0.00	3.57	0.00	1.19
time (sec)	N/A	0.021	0.003	0.045	0.941	0.422	4.066	0.000	0.084

Problem 80	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	F	A	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	21	21	22	46	27	0	75	0	25
normalized size	1	1.00	1.05	2.19	1.29	0.00	3.57	0.00	1.19
time (sec)	N/A	0.021	0.002	0.045	0.811	0.457	4.080	0.000	0.069

Problem 81	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	C	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	14	14	14	17	26	13	15	0	14
normalized size	1	1.00	1.00	1.21	1.86	0.93	1.07	0.00	1.00
time (sec)	N/A	0.018	0.002	0.045	1.142	0.432	3.546	0.000	0.056

Problem 82	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	17	17	16	17	15	16	14	14	14
normalized size	1	1.00	0.94	1.00	0.88	0.94	0.82	0.82	0.82
time (sec)	N/A	0.011	0.002	0.036	0.723	0.491	0.241	0.166	0.147

Problem 83	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	F	A	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	26	26	27	26	26	0	54	0	23
normalized size	1	1.00	1.04	1.00	1.00	0.00	2.08	0.00	0.88
time (sec)	N/A	0.022	0.002	0.045	0.987	0.433	4.530	0.000	0.161

Problem 84	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	F	A	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	31	31	34	28	27	0	95	0	25
normalized size	1	1.00	1.10	0.90	0.87	0.00	3.06	0.00	0.81
time (sec)	N/A	0.023	0.002	0.045	0.830	0.496	4.893	0.000	0.163

Problem 85	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	187	156	163	1300	131	179	260	342	116
normalized size	1	0.83	0.87	6.95	0.70	0.96	1.39	1.83	0.62
time (sec)	N/A	0.192	0.051	0.459	0.595	0.458	3.908	0.181	0.240

Problem 86	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	177	193	186	1102	150	0	0	0	-1
normalized size	1	1.09	1.05	6.23	0.85	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.306	0.059	0.396	0.793	0.464	0.000	0.000	0.000

Problem 87	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	285	285	260	5345	215	341	517	626	172
normalized size	1	1.00	0.91	18.75	0.75	1.20	1.81	2.20	0.60
time (sec)	N/A	0.224	0.100	0.833	0.617	0.480	7.342	0.200	0.264

Problem 88	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	299	299	266	0	0	305	0	582	-1
normalized size	1	1.00	0.89	0.00	0.00	1.02	0.00	1.95	-0.00
time (sec)	N/A	0.452	1.035	0.594	0.000	0.488	0.000	0.375	0.000

Problem 89	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	219	219	197	0	0	192	0	337	-1
normalized size	1	1.00	0.90	0.00	0.00	0.88	0.00	1.54	-0.00
time (sec)	N/A	0.293	0.411	0.566	0.000	0.527	0.000	0.262	0.000

Problem 90	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	139	139	126	0	0	105	0	159	-1
normalized size	1	1.00	0.91	0.00	0.00	0.76	0.00	1.14	-0.01
time (sec)	N/A	0.162	0.169	0.414	0.000	0.464	0.000	0.205	0.000

Problem 91	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	63	63	63	311	0	46	0	49	-1
normalized size	1	1.00	1.00	4.94	0.00	0.73	0.00	0.78	-0.02
time (sec)	N/A	0.046	0.019	0.060	0.000	0.451	0.000	0.179	0.000

Problem 92	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	27	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.037	0.205	0.731	0.000	0.473	0.000	0.000	0.000

Problem 93	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	27	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.035	0.607	0.749	0.000	0.473	0.000	0.000	0.000

Problem 94	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	339	339	1674	0	0	681	0	3475	-1
normalized size	1	1.00	4.94	0.00	0.00	2.01	0.00	10.25	-0.00
time (sec)	N/A	0.788	1.134	5.063	0.000	0.485	0.000	0.820	0.000

Problem 95	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	259	259	1015	0	0	433	0	2041	-1
normalized size	1	1.00	3.92	0.00	0.00	1.67	0.00	7.88	-0.00
time (sec)	N/A	0.517	0.624	4.903	0.000	0.449	0.000	0.497	0.000

Problem 96	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	177	177	208	0	0	239	0	984	-1
normalized size	1	1.00	1.18	0.00	0.00	1.35	0.00	5.56	-0.01
time (sec)	N/A	0.248	0.289	4.828	0.000	0.486	0.000	0.365	0.000

Problem 97	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	96	96	123	456	0	117	0	307	-1
normalized size	1	1.00	1.28	4.75	0.00	1.22	0.00	3.20	-0.01
time (sec)	N/A	0.063	0.048	0.092	0.000	0.441	0.000	0.225	0.000

Problem 98	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	27	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.034	0.589	1.928	0.000	0.439	0.000	0.000	0.000

Problem 99	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	27	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.033	5.027	4.409	0.000	0.457	0.000	0.000	0.000

Problem 100	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	351	351	351	0	0	1090	0	8396	-1
normalized size	1	1.00	1.00	0.00	0.00	3.11	0.00	23.92	-0.00
time (sec)	N/A	0.865	1.602	3.932	0.000	0.469	0.000	1.090	0.000

Problem 101	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	261	261	256	0	0	588	0	4114	-1
normalized size	1	1.00	0.98	0.00	0.00	2.25	0.00	15.76	-0.00
time (sec)	N/A	0.360	0.414	4.923	0.000	0.485	0.000	0.621	0.000

Problem 102	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	135	135	118	734	0	263	0	1322	-1
normalized size	1	1.00	0.87	5.44	0.00	1.95	0.00	9.79	-0.01
time (sec)	N/A	0.080	0.077	0.049	0.000	0.486	0.000	0.265	0.000

Problem 103	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	27	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.034	1.339	4.222	0.000	0.456	0.000	0.000	0.000

Problem 104	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	27	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.034	5.084	9.462	0.000	0.516	0.000	0.000	0.000

Problem 105	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	404	404	374	0	0	0	0	0	-1
normalized size	1	1.00	0.93	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.701	0.511	0.529	0.000	0.000	0.000	0.000	0.000

Problem 106	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	255	255	235	0	0	0	0	0	-1
normalized size	1	1.00	0.92	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.341	0.287	0.388	0.000	0.000	0.000	0.000	0.000

Problem 107	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	111	111	106	0	0	0	0	0	-1
normalized size	1	1.00	0.95	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.087	0.047	0.038	0.000	0.000	0.000	0.000	0.000

Problem 108	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.047	1.176	0.588	0.000	0.000	0.000	0.000	0.000

Problem 109	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	88	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.102	0.331	0.551	0.000	0.000	0.000	0.000	0.000

Problem 110	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	79	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.216	0.409	0.549	0.000	0.000	0.000	0.000	0.000

Problem 111	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	526	526	446	0	0	0	0	0	-1
normalized size	1	1.00	0.85	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.812	1.091	0.528	0.000	0.000	0.000	0.000	0.000

Problem 112	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	330	330	282	0	0	0	0	0	-1
normalized size	1	1.00	0.85	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.426	0.415	0.385	0.000	0.000	0.000	0.000	0.000

Problem 113	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	143	143	127	0	0	0	0	0	-1
normalized size	1	1.00	0.89	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.109	0.006	0.038	0.000	0.000	0.000	0.000	0.000

Problem 114	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.056	2.129	0.592	0.000	0.000	0.000	0.000	0.000

Problem 115	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	F(-2)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	88	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.106	0.846	0.586	0.000	0.000	0.000	0.000	0.000

Problem 116	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	79	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.207	0.808	0.548	0.000	0.000	0.000	0.000	0.000

Problem 117	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	660	660	511	0	0	0	0	0	-1
normalized size	1	1.00	0.77	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.984	1.816	0.550	0.000	0.000	0.000	0.000	0.000

Problem 118	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	413	413	326	0	0	0	0	0	-1
normalized size	1	1.00	0.79	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.508	0.673	0.388	0.000	0.000	0.000	0.000	0.000

Problem 119	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	179	179	152	0	0	0	0	0	-1
normalized size	1	1.00	0.85	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.130	0.172	0.035	0.000	0.000	0.000	0.000	0.000

Problem 120	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	F(-2)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.057	2.152	0.565	0.000	0.000	0.000	0.000	0.000

Problem 121	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	88	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.114	7.055	0.549	0.000	0.000	0.000	0.000	0.000

Problem 122	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	79	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.235	6.477	0.624	0.000	0.000	0.000	0.000	0.000

Problem 123	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	383	383	331	0	0	0	0	0	-1
normalized size	1	1.00	0.86	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.728	0.450	0.531	0.000	0.000	0.000	0.000	0.000

Problem 124	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	283	283	252	0	0	0	0	0	-1
normalized size	1	1.00	0.89	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.516	0.277	0.576	0.000	0.000	0.000	0.000	0.000

Problem 125	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	181	181	164	0	0	0	0	0	-1
normalized size	1	1.00	0.91	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.273	0.155	0.385	0.000	0.000	0.000	0.000	0.000

Problem 126	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	80	80	80	0	0	0	0	0	-1
normalized size	1	1.00	1.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.070	0.017	0.036	0.000	0.000	0.000	0.000	0.000

Problem 127	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.052	0.083	0.571	0.000	0.000	0.000	0.000	0.000

Problem 128	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	422	422	1281	0	0	0	0	0	-1
normalized size	1	1.00	3.04	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.315	2.839	0.523	0.000	0.000	0.000	0.000	0.000

Problem 129	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	325	325	828	0	0	0	0	0	-1
normalized size	1	1.00	2.55	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.869	1.433	0.541	0.000	0.000	0.000	0.000	0.000

Problem 130	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	220	220	338	0	0	0	0	0	-1
normalized size	1	1.00	1.54	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.403	0.836	0.383	0.000	0.000	0.000	0.000	0.000

Problem 131	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	116	116	139	0	0	0	0	0	-1
normalized size	1	1.00	1.20	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.095	0.129	0.036	0.000	0.000	0.000	0.000	0.000

Problem 132	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	F(-2)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.061	0.255	0.552	0.000	0.000	0.000	0.000	0.000

Problem 133	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	520	520	2647	0	0	0	0	0	-1
normalized size	1	1.00	5.09	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	2.333	7.075	0.527	0.000	0.000	0.000	0.000	0.000

Problem 134	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	421	421	527	0	0	0	0	0	-1
normalized size	1	1.00	1.25	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.399	4.582	0.529	0.000	0.000	0.000	0.000	0.000

Problem 135	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	311	311	353	0	0	0	0	0	-1
normalized size	1	1.00	1.14	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.564	1.962	0.378	0.000	0.000	0.000	0.000	0.000

Problem 136	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	156	156	163	0	0	0	0	0	-1
normalized size	1	1.00	1.04	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.117	0.163	0.035	0.000	0.000	0.000	0.000	0.000

Problem 137	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.059	0.559	0.553	0.000	0.000	0.000	0.000	0.000

Problem 138	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	A	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	163	163	137	0	0	538	469	0	-1
normalized size	1	1.00	0.84	0.00	0.00	3.30	2.88	0.00	-0.01
time (sec)	N/A	0.163	0.228	0.658	0.000	0.555	57.099	0.000	0.000

Problem 139	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	A	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	132	132	118	0	0	311	139	0	-1
normalized size	1	1.00	0.89	0.00	0.00	2.36	1.05	0.00	-0.01
time (sec)	N/A	0.085	0.136	0.608	0.000	0.503	4.715	0.000	0.000

Problem 140	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	97	97	83	148	0	185	326	110	-1
normalized size	1	1.00	0.86	1.53	0.00	1.91	3.36	1.13	-0.01
time (sec)	N/A	0.059	0.083	0.078	0.000	0.539	38.950	0.191	0.000

Problem 141	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	81	81	80	0	0	224	85	92	-1
normalized size	1	1.00	0.99	0.00	0.00	2.77	1.05	1.14	-0.01
time (sec)	N/A	0.053	0.170	0.468	0.000	0.549	15.984	0.223	0.000

Problem 142	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	B	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	114	114	85	0	0	425	117	188	-1
normalized size	1	1.00	0.75	0.00	0.00	3.73	1.03	1.65	-0.01
time (sec)	N/A	0.082	0.036	0.490	0.000	0.532	76.043	0.255	0.000

Problem 143	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	B	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	145	145	78	0	0	789	0	0	-1
normalized size	1	1.00	0.54	0.00	0.00	5.44	0.00	0.00	-0.01
time (sec)	N/A	0.111	0.046	0.517	0.000	0.583	0.000	0.000	0.000

Problem 144	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	B	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	176	176	78	0	0	1252	0	0	-1
normalized size	1	1.00	0.44	0.00	0.00	7.11	0.00	0.00	-0.01
time (sec)	N/A	0.144	0.051	0.469	0.000	0.596	0.000	0.000	0.000

Problem 145	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	590	590	854	0	0	0	0	0	-1
normalized size	1	1.00	1.45	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	2.169	1.943	0.596	0.000	0.472	0.000	0.000	0.000

Problem 146	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	510	510	643	0	0	0	0	0	-1
normalized size	1	1.00	1.26	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.501	1.169	0.599	0.000	0.514	0.000	0.000	0.000

Problem 147	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	418	418	566	0	0	0	0	0	-1
normalized size	1	1.00	1.35	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.067	1.090	0.505	0.000	0.499	0.000	0.000	0.000

Problem 148	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	312	312	424	0	0	0	0	0	-1
normalized size	1	1.00	1.36	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.766	0.670	0.488	0.000	0.523	0.000	0.000	0.000

Problem 149	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	423	423	557	0	0	0	0	0	-1
normalized size	1	1.00	1.32	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.121	1.332	0.455	0.000	0.565	0.000	0.000	0.000

Problem 150	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	503	503	639	0	0	0	0	0	-1
normalized size	1	1.00	1.27	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.512	2.196	0.528	0.000	0.833	0.000	0.000	0.000

Problem 151	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	583	583	728	0	0	0	0	0	-1
normalized size	1	1.00	1.25	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.848	3.945	0.522	0.000	0.556	0.000	0.000	0.000

Problem 152	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.041	1.088	0.433	0.000	0.514	0.000	0.000	0.000

Problem 153	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.038	0.945	0.409	0.000	0.512	0.000	0.000	0.000

Problem 154	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.039	1.355	0.405	0.000	0.504	0.000	0.000	0.000

Problem 155	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.042	1.450	0.413	0.000	0.527	0.000	0.000	0.000

Problem 156	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	83	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.265	1.417	0.717	0.000	0.000	0.000	0.000	0.000

Problem 157	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	79	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.243	1.656	0.634	0.000	0.000	0.000	0.000	0.000

Problem 158	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	78	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.257	1.321	0.638	0.000	0.000	0.000	0.000	0.000

Problem 159	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.055	5.330	0.635	0.000	0.000	0.000	0.000	0.000

Problem 160	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.056	3.078	0.567	0.000	0.000	0.000	0.000	0.000

Problem 161	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.058	0.781	0.556	0.000	0.000	0.000	0.000	0.000

Problem 162	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	94	94	81	0	0	0	0	0	-1
normalized size	1	1.00	0.86	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.050	0.073	1.014	0.000	0.447	0.000	0.000	0.000

Problem 163	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	27	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.027	0.344	1.303	0.000	0.435	0.000	0.000	0.000

Problem 164	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-2)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	27	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.027	2.907	8.965	0.000	0.427	0.000	0.000	0.000

Problem 165	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.053	6.249	0.650	0.000	0.458	0.000	0.000	0.000

Problem 166	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-2)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.043	0.070	0.645	0.000	0.437	0.000	0.000	0.000

Problem 167	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.046	3.215	0.642	0.000	0.458	0.000	0.000	0.000

Problem 168	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-2)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.054	2.873	0.643	0.000	0.496	0.000	0.000	0.000

Problem 169	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-2)	A	F(-2)	F(-2)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	27	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.026	0.469	0.937	0.000	0.448	0.000	0.000	0.000

Problem 170	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	474	474	343	0	0	0	0	0	-1
normalized size	1	1.00	0.72	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.549	1.852	1.331	0.000	0.421	0.000	0.000	0.000

Problem 171	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	348	348	262	0	0	0	0	0	-1
normalized size	1	1.00	0.75	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.364	0.615	2.247	0.000	0.442	0.000	0.000	0.000

Problem 172	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	225	225	181	0	0	0	0	0	-1
normalized size	1	1.00	0.80	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.205	0.222	2.216	0.000	0.465	0.000	0.000	0.000

Problem 173	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	103	103	103	0	0	60	0	0	-1
normalized size	1	1.00	1.00	0.00	0.00	0.58	0.00	0.00	-0.01
time (sec)	N/A	0.060	0.062	1.240	0.000	0.454	0.000	0.000	0.000

Problem 174	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-2)	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	27	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.029	0.316	1.415	0.000	0.434	0.000	0.000	0.000

Problem 175	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	315	260	589	1057	757	478	682	682	661
normalized size	1	0.83	1.87	3.36	2.40	1.52	2.17	2.17	2.10
time (sec)	N/A	0.506	0.638	0.054	0.623	0.431	3.042	0.240	0.546

Problem 176	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	244	204	375	685	539	308	427	442	393
normalized size	1	0.84	1.54	2.81	2.21	1.26	1.75	1.81	1.61
time (sec)	N/A	0.384	0.362	0.050	0.566	0.424	2.308	0.186	0.408

Problem 177	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	157	133	214	387	351	170	226	241	208
normalized size	1	0.85	1.36	2.46	2.24	1.08	1.44	1.54	1.32
time (sec)	N/A	0.263	0.154	0.050	0.530	0.444	1.657	0.176	0.352

Problem 178	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	79	79	66	163	201	71	85	109	100
normalized size	1	1.00	0.84	2.06	2.54	0.90	1.08	1.38	1.27
time (sec)	N/A	0.129	0.054	0.047	0.524	0.416	1.123	0.170	0.637

Problem 179	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	27	27	27	39	101	34	31	33	31
normalized size	1	1.00	1.00	1.44	3.74	1.26	1.15	1.22	1.15
time (sec)	N/A	0.034	0.004	0.046	0.519	0.434	0.331	0.202	0.353

Problem 180	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	87	116	91	197	0	0	0	0	-1
normalized size	1	1.33	1.05	2.26	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.234	0.088	0.172	0.000	0.428	0.000	0.000	0.000

Problem 181	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	151	181	141	355	0	0	0	0	-1
normalized size	1	1.20	0.93	2.35	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.364	0.170	0.146	0.000	0.448	0.000	0.000	0.000

Problem 182	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	250	282	226	656	0	0	0	0	-1
normalized size	1	1.13	0.90	2.62	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.572	0.235	0.167	0.000	0.437	0.000	0.000	0.000

Problem 183	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	579	672	374	2310	1427	939	1479	1624	1346
normalized size	1	1.16	0.65	3.99	2.46	1.62	2.55	2.80	2.32
time (sec)	N/A	1.674	0.596	0.058	0.717	0.461	8.480	0.251	0.962

Problem 184	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	464	459	267	1485	964	606	918	1041	803
normalized size	1	0.99	0.58	3.20	2.08	1.31	1.98	2.24	1.73
time (sec)	N/A	0.981	0.359	0.055	0.683	0.438	5.627	0.261	0.692

Problem 185	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	238	238	171	825	586	336	473	560	408
normalized size	1	1.00	0.72	3.47	2.46	1.41	1.99	2.35	1.71
time (sec)	N/A	0.513	0.215	0.049	0.614	0.416	3.460	0.213	0.498

Problem 186	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	113	113	89	341	304	141	175	240	163
normalized size	1	1.00	0.79	3.02	2.69	1.25	1.55	2.12	1.44
time (sec)	N/A	0.202	0.062	0.047	0.525	0.421	2.077	0.223	0.335

Problem 187	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	27	27	27	63	128	53	51	53	50
normalized size	1	1.00	1.00	2.33	4.74	1.96	1.89	1.96	1.85
time (sec)	N/A	0.060	0.005	0.050	0.509	0.408	0.495	0.222	0.481

Problem 188	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	142	168	189	383	331	0	0	0	-1
normalized size	1	1.18	1.33	2.70	2.33	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.383	0.238	0.078	0.730	0.414	0.000	0.000	0.000

Problem 189	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	273	300	360	0	622	0	0	0	-1
normalized size	1	1.10	1.32	0.00	2.28	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.637	0.540	1.040	0.900	0.421	0.000	0.000	0.000

Problem 190	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	485	453	680	0	1271	0	0	0	-1
normalized size	1	0.93	1.40	0.00	2.62	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.092	0.952	1.136	1.322	0.428	0.000	0.000	0.000

Problem 191	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	230	230	397	0	0	401	0	0	-1
normalized size	1	1.00	1.73	0.00	0.00	1.74	0.00	0.00	-0.00
time (sec)	N/A	0.668	0.967	0.642	0.000	0.418	0.000	0.000	0.000

Problem 192	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	177	177	279	0	0	260	0	0	-1
normalized size	1	1.00	1.58	0.00	0.00	1.47	0.00	0.00	-0.01
time (sec)	N/A	0.484	0.651	0.628	0.000	0.428	0.000	0.000	0.000

Problem 193	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	124	124	137	0	0	149	0	0	-1
normalized size	1	1.00	1.10	0.00	0.00	1.20	0.00	0.00	-0.01
time (sec)	N/A	0.379	0.339	0.627	0.000	0.412	0.000	0.000	0.000

Problem 194	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	71	71	76	0	0	70	0	0	-1
normalized size	1	1.00	1.07	0.00	0.00	0.99	0.00	0.00	-0.01
time (sec)	N/A	0.218	0.234	0.489	0.000	0.427	0.000	0.000	0.000

Problem 195	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	23	23	23	25	29	24	17	25	23
normalized size	1	1.00	1.00	1.09	1.26	1.04	0.74	1.09	1.00
time (sec)	N/A	0.066	0.020	0.047	0.470	0.440	0.224	0.180	0.850

Problem 196	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	72	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.241	0.433	0.682	0.000	0.434	0.000	0.000	0.000

Problem 197	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	115	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.295	4.495	0.672	0.000	0.420	0.000	0.000	0.000

Problem 198	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	485	485	818	0	0	0	0	0	-1
normalized size	1	1.00	1.69	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	2.045	1.315	0.675	0.000	0.441	0.000	0.000	0.000

Problem 199	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	417	417	607	0	0	0	0	0	-1
normalized size	1	1.00	1.46	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.378	1.143	0.633	0.000	0.455	0.000	0.000	0.000

Problem 200	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	349	349	534	0	0	0	0	0	-1
normalized size	1	1.00	1.53	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.986	0.574	0.694	0.000	0.438	0.000	0.000	0.000

Problem 201	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	256	256	457	0	0	0	0	0	-1
normalized size	1	1.00	1.79	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.694	0.236	0.635	0.000	0.454	0.000	0.000	0.000

Problem 202	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	340	340	526	0	0	0	0	0	-1
normalized size	1	1.00	1.55	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.026	0.534	0.657	0.000	0.473	0.000	0.000	0.000

Problem 203	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	406	406	608	0	0	0	0	0	-1
normalized size	1	1.00	1.50	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.388	0.811	0.629	0.000	0.454	0.000	0.000	0.000

Problem 204	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F(-2)	F(-2)	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	381	381	663	0	0	0	0	0	-1
normalized size	1	1.00	1.74	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.530	1.099	180.000	0.000	0.543	0.000	0.000	0.000

Problem 205	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	323	323	534	0	0	0	0	0	-1
normalized size	1	1.00	1.65	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.913	0.408	0.546	0.000	0.457	0.000	0.000	0.000

Problem 206	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	242	242	239	0	0	0	0	0	-1
normalized size	1	1.00	0.99	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.645	2.894	0.514	0.000	0.440	0.000	0.000	0.000

Problem 207	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	316	316	550	0	0	0	0	0	-1
normalized size	1	1.00	1.74	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.945	0.471	0.501	0.000	0.457	0.000	0.000	0.000

Problem 208	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	372	372	568	0	0	0	0	0	-1
normalized size	1	1.00	1.53	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.257	0.973	0.497	0.000	0.468	0.000	0.000	0.000

Problem 209	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	F(-2)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	35	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.111	0.623	0.880	0.000	0.490	0.000	0.000	0.000

Problem 210	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	305	305	247	0	0	0	0	0	-1
normalized size	1	1.00	0.81	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.664	1.380	0.499	0.000	0.483	0.000	0.000	0.000

Problem 211	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	210	210	189	0	0	0	0	0	-1
normalized size	1	1.00	0.90	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.472	0.651	0.483	0.000	0.460	0.000	0.000	0.000

Problem 212	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	115	115	106	0	0	118	0	0	-1
normalized size	1	1.00	0.92	0.00	0.00	1.03	0.00	0.00	-0.01
time (sec)	N/A	0.282	0.272	0.341	0.000	0.472	0.000	0.000	0.000

Problem 213	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	31	31	31	32	32	41	0	31	31
normalized size	1	1.00	1.00	1.03	1.03	1.32	0.00	1.00	1.00
time (sec)	N/A	0.075	0.014	0.048	0.465	0.448	0.000	0.198	0.349

Problem 214	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	35	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.130	0.646	0.496	0.000	0.464	0.000	0.000	0.000

Problem 215	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	F(-2)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	35	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.127	1.681	0.498	0.000	0.471	0.000	0.000	0.000

Problem 216	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	35	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.129	3.853	0.499	0.000	0.502	0.000	0.000	0.000

Problem 217	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	402	402	379	2801	0	0	0	0	-1
normalized size	1	1.00	0.94	6.97	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.364	0.617	0.306	0.000	0.465	0.000	0.000	0.000

Problem 218	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	241	241	224	1605	0	0	0	0	-1
normalized size	1	1.00	0.93	6.66	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.223	0.314	0.282	0.000	0.454	0.000	0.000	0.000

Problem 219	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	119	119	110	750	0	0	0	0	-1
normalized size	1	1.00	0.92	6.30	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.139	0.116	0.321	0.000	0.450	0.000	0.000	0.000

Problem 220	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	63	63	62	261	0	0	0	0	-1
normalized size	1	1.00	0.98	4.14	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.045	0.007	0.109	0.000	0.435	0.000	0.000	0.000

Problem 221	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	155	155	111	647	0	0	0	0	-1
normalized size	1	1.00	0.72	4.17	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.195	0.069	0.309	0.000	0.442	0.000	0.000	0.000

Problem 222	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	252	252	196	970	0	0	0	0	-1
normalized size	1	1.00	0.78	3.85	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.259	0.195	0.304	0.000	0.490	0.000	0.000	0.000

Problem 223	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	402	402	311	1468	0	0	0	0	-1
normalized size	1	1.00	0.77	3.65	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.371	0.400	0.316	0.000	0.478	0.000	0.000	0.000

Problem 224	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	469	469	876	0	0	0	0	0	-1
normalized size	1	1.00	1.87	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.555	0.641	1.766	0.000	0.455	0.000	0.000	0.000

Problem 225	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	215	215	460	0	0	0	0	0	-1
normalized size	1	1.00	2.14	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.274	0.342	1.783	0.000	0.477	0.000	0.000	0.000

Problem 226	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	111	111	242	2018	0	0	0	0	-1
normalized size	1	1.00	2.18	18.18	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.114	0.119	0.088	0.000	0.441	0.000	0.000	0.000

Problem 227	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	264	264	353	4712	0	0	0	0	-1
normalized size	1	1.00	1.34	17.85	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.371	0.315	0.626	0.000	0.424	0.000	0.000	0.000

Problem 228	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	427	427	630	0	0	0	0	0	-1
normalized size	1	1.00	1.48	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.491	0.730	1.339	0.000	0.445	0.000	0.000	0.000

Problem 229	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	660	660	1521	0	0	0	0	0	-1
normalized size	1	1.00	2.30	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.734	1.031	2.809	0.000	0.430	0.000	0.000	0.000

Problem 230	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	308	308	799	0	0	0	0	0	-1
normalized size	1	1.00	2.59	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.364	0.440	2.213	0.000	0.453	0.000	0.000	0.000

Problem 231	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	158	158	457	9538	0	0	0	0	-1
normalized size	1	1.00	2.89	60.37	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.180	0.220	0.150	0.000	0.434	0.000	0.000	0.000

Problem 232	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	372	372	599	21696	0	0	0	0	-1
normalized size	1	1.00	1.61	58.32	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.522	0.552	1.115	0.000	0.451	0.000	0.000	0.000

Problem 233	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	602	602	1025	0	0	0	0	0	-1
normalized size	1	1.00	1.70	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.725	1.326	1.526	0.000	0.493	0.000	0.000	0.000

Problem 234	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	107	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.176	0.306	0.691	0.000	0.434	0.000	0.000	0.000

Problem 235	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	27	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.037	0.026	0.038	0.000	0.491	0.000	0.000	0.000

Problem 236	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	80	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.189	0.982	1.170	0.000	0.459	0.000	0.000	0.000

Problem 237	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	123	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.234	3.277	1.583	0.000	0.430	0.000	0.000	0.000

Problem 238	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	143	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.196	1.423	3.079	0.000	0.445	0.000	0.000	0.000

Problem 239	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	27	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.034	0.136	0.038	0.000	0.464	0.000	0.000	0.000

Problem 240	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	80	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.183	13.254	17.412	0.000	0.463	0.000	0.000	0.000

Problem 241	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	123	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.224	26.942	26.776	0.000	0.475	0.000	0.000	0.000

Problem 242	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	281	281	241	1000	0	0	0	0	-1
normalized size	1	1.00	0.86	3.56	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.278	0.287	0.279	0.000	0.452	0.000	0.000	0.000

Problem 243	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	181	181	170	724	0	0	0	0	-1
normalized size	1	1.00	0.94	4.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.193	0.161	0.267	0.000	0.429	0.000	0.000	0.000

Problem 244	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	104	104	95	463	0	0	0	0	-1
normalized size	1	1.00	0.91	4.45	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.131	0.079	0.309	0.000	0.435	0.000	0.000	0.000

Problem 245	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	63	63	62	261	0	0	0	0	-1
normalized size	1	1.00	0.98	4.14	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.048	0.016	0.112	0.000	0.430	0.000	0.000	0.000

Problem 246	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	107	107	85	455	0	0	0	0	-1
normalized size	1	1.00	0.79	4.25	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.144	0.042	0.252	0.000	0.474	0.000	0.000	0.000

Problem 247	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	162	162	141	669	0	0	0	0	-1
normalized size	1	1.00	0.87	4.13	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.191	0.096	0.255	0.000	0.454	0.000	0.000	0.000

Problem 248	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	250	250	208	926	0	0	0	0	-1
normalized size	1	1.00	0.83	3.70	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.252	0.241	0.246	0.000	0.431	0.000	0.000	0.000

Problem 249	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	265	265	220	1063	0	0	0	0	-1
normalized size	1	1.00	0.83	4.01	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.260	0.330	0.276	0.000	0.445	0.000	0.000	0.000

Problem 250	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	186	186	153	791	0	0	0	0	-1
normalized size	1	1.00	0.82	4.25	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.203	0.178	0.269	0.000	0.430	0.000	0.000	0.000

Problem 251	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	138	138	114	519	0	0	0	0	-1
normalized size	1	1.00	0.83	3.76	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.152	0.105	0.231	0.000	0.438	0.000	0.000	0.000

Problem 252	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F(-2)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	74	74	57	354	85	95	0	111	84
normalized size	1	1.00	0.77	4.78	1.15	1.28	0.00	1.50	1.14
time (sec)	N/A	0.028	0.088	0.068	0.479	0.455	0.000	0.170	0.503

Problem 253	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	179	179	152	694	0	0	0	0	-1
normalized size	1	1.00	0.85	3.88	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.202	0.131	0.260	0.000	0.431	0.000	0.000	0.000

Problem 254	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	240	240	199	936	0	0	0	0	-1
normalized size	1	1.00	0.83	3.90	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.244	0.212	0.247	0.000	0.425	0.000	0.000	0.000

Problem 255	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	335	335	269	1224	0	0	0	0	-1
normalized size	1	1.00	0.80	3.65	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.314	0.495	0.256	0.000	0.445	0.000	0.000	0.000

Problem 256	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	397	397	331	905	0	0	0	0	-1
normalized size	1	1.00	0.83	2.28	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.510	0.315	0.312	0.000	0.431	0.000	0.000	0.000

Problem 257	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	278	278	243	631	0	0	0	0	-1
normalized size	1	1.00	0.87	2.27	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.325	0.180	0.263	0.000	0.404	0.000	0.000	0.000

Problem 258	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	203	203	172	411	0	0	0	0	-1
normalized size	1	1.00	0.85	2.02	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.180	0.046	0.221	0.000	0.434	0.000	0.000	0.000

Problem 259	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	245	245	224	604	0	0	0	0	-1
normalized size	1	1.00	0.91	2.47	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.316	0.104	0.231	0.000	0.426	0.000	0.000	0.000

Problem 260	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	331	331	279	841	0	0	0	0	-1
normalized size	1	1.00	0.84	2.54	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.368	0.188	0.246	0.000	0.456	0.000	0.000	0.000

Problem 261	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	369	369	339	982	0	0	0	0	-1
normalized size	1	1.00	0.92	2.66	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.395	0.354	0.319	0.000	0.412	0.000	0.000	0.000

Problem 262	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	276	276	263	710	0	0	0	0	-1
normalized size	1	1.00	0.95	2.57	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.309	0.155	0.305	0.000	0.439	0.000	0.000	0.000

Problem 263	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	239	239	184	474	0	0	0	0	-1
normalized size	1	1.00	0.77	1.98	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.168	0.057	0.348	0.000	0.442	0.000	0.000	0.000

Problem 264	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	290	290	280	722	0	0	0	0	-1
normalized size	1	1.00	0.97	2.49	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.316	0.229	0.464	0.000	0.477	0.000	0.000	0.000

Problem 265	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	388	388	350	983	0	0	0	0	-1
normalized size	1	1.00	0.90	2.53	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.376	0.475	0.487	0.000	0.431	0.000	0.000	0.000

Problem 266	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	417	417	530	1008	0	0	0	0	-1
normalized size	1	1.00	1.27	2.42	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.487	1.478	0.276	0.000	0.446	0.000	0.000	0.000

Problem 267	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	344	344	455	726	0	0	0	0	-1
normalized size	1	1.00	1.32	2.11	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.407	1.159	0.240	0.000	0.420	0.000	0.000	0.000

Problem 268	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	139	139	165	765	130	373	0	218	366
normalized size	1	1.00	1.19	5.50	0.94	2.68	0.00	1.57	2.63
time (sec)	N/A	0.078	0.197	0.563	1.054	0.493	0.000	0.232	0.789

Problem 269	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	383	383	521	910	0	0	0	0	-1
normalized size	1	1.00	1.36	2.38	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.453	1.413	0.250	0.000	0.410	0.000	0.000	0.000

Problem 270	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	460	460	596	1165	0	0	0	0	-1
normalized size	1	1.00	1.30	2.53	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.517	1.544	0.260	0.000	0.459	0.000	0.000	0.000

Problem 271	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	534	534	434	2021	0	0	0	0	-1
normalized size	1	1.00	0.81	3.78	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.930	0.776	0.413	0.000	0.420	0.000	0.000	0.000

Problem 272	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	491	491	383	1781	0	0	0	0	-1
normalized size	1	1.00	0.78	3.63	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.760	0.669	0.448	0.000	0.442	0.000	0.000	0.000

Problem 273	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	503	503	407	1666	0	0	0	0	-1
normalized size	1	1.00	0.81	3.31	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.394	1.058	0.433	0.000	0.424	0.000	0.000	0.000

Problem 274	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	560	560	476	2032	0	0	0	0	-1
normalized size	1	1.00	0.85	3.63	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.819	0.818	0.536	0.000	0.447	0.000	0.000	0.000

Problem 275	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	326	326	275	0	0	0	0	0	-1
normalized size	1	1.00	0.84	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.421	0.246	0.452	0.000	0.441	0.000	0.000	0.000

Problem 276	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	F	F	F	F	F	F	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	506	506	0	0	0	0	0	0	-1
normalized size	1	1.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.557	3.771	0.445	0.000	0.427	0.000	0.000	0.000

Problem 277	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	278	278	307	0	0	0	0	0	-1
normalized size	1	1.00	1.10	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.474	0.029	0.710	0.000	0.428	0.000	0.000	0.000

Problem 278	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	510	510	1077	0	0	0	0	0	-1
normalized size	1	1.00	2.11	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.644	4.785	0.652	0.000	0.426	0.000	0.000	0.000

Problem 279	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	24	24	27	20	120	21	0	0	19
normalized size	1	1.00	1.12	0.83	5.00	0.88	0.00	0.00	0.79
time (sec)	N/A	0.031	0.006	0.050	0.644	0.411	0.000	0.000	0.286

Problem 280	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	42	42	81	84	119	0	0	0	-1
normalized size	1	1.00	1.93	2.00	2.83	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.054	0.016	0.051	0.580	0.428	0.000	0.000	0.000

Problem 281	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	82	44	0	43	0	0	43
normalized size	1	1.00	2.00	1.07	0.00	1.05	0.00	0.00	1.05
time (sec)	N/A	0.061	0.034	0.050	0.000	0.418	0.000	0.000	0.343

Problem 282	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	47	47	80	109	0	0	0	0	-1
normalized size	1	1.00	1.70	2.32	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.065	0.027	0.049	0.000	0.445	0.000	0.000	0.000

Problem 283	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	371	371	345	153	0	0	0	0	-1
normalized size	1	1.00	0.93	0.41	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.596	0.346	0.258	0.000	0.432	0.000	0.000	0.000

Problem 284	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	292	292	297	77	0	0	0	0	-1
normalized size	1	1.00	1.02	0.26	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.277	0.055	0.274	0.000	0.416	0.000	0.000	0.000

Problem 285	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	324	324	330	108	0	0	0	0	-1
normalized size	1	1.00	1.02	0.33	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.429	0.108	0.278	0.000	0.420	0.000	0.000	0.000

Problem 286	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	414	414	405	185	0	0	0	0	-1
normalized size	1	1.00	0.98	0.45	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.496	0.164	0.292	0.000	0.973	0.000	0.000	0.000

Problem 287	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	416	416	403	148	0	0	0	0	-1
normalized size	1	1.00	0.97	0.36	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.701	0.331	0.257	0.000	0.438	0.000	0.000	0.000

Problem 288	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	383	383	369	136	0	0	0	0	-1
normalized size	1	1.00	0.96	0.36	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.446	0.139	0.256	0.000	0.506	0.000	0.000	0.000

Problem 289	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	359	359	297	86	0	0	0	0	-1
normalized size	1	1.00	0.83	0.24	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.315	0.088	0.257	0.000	0.450	0.000	0.000	0.000

Problem 290	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	359	359	294	94	0	0	0	0	-1
normalized size	1	1.00	0.82	0.26	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.239	0.072	0.255	0.000	0.451	0.000	0.000	0.000

Problem 291	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	398	398	378	128	0	0	0	0	-1
normalized size	1	1.00	0.95	0.32	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.494	0.142	0.283	0.000	0.427	0.000	0.000	0.000

Problem 292	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	423	423	371	153	0	0	0	0	-1
normalized size	1	1.00	0.88	0.36	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.438	0.234	0.290	0.000	0.438	0.000	0.000	0.000

Problem 293	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	498	498	446	175	0	0	0	0	-1
normalized size	1	1.00	0.90	0.35	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.810	0.339	0.260	0.000	0.433	0.000	0.000	0.000

Problem 294	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	401	401	383	85	0	0	0	0	-1
normalized size	1	1.00	0.96	0.21	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.460	0.067	0.255	0.000	0.413	0.000	0.000	0.000

Problem 295	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	433	433	416	116	0	0	0	0	-1
normalized size	1	1.00	0.96	0.27	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.595	0.110	0.260	0.000	0.434	0.000	0.000	0.000

Problem 296	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	530	530	484	164	0	0	0	0	-1
normalized size	1	1.00	0.91	0.31	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.648	0.230	0.258	0.000	0.414	0.000	0.000	0.000

Problem 297	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	473	473	348	102	0	0	0	0	-1
normalized size	1	1.00	0.74	0.22	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.473	0.120	0.258	0.000	0.471	0.000	0.000	0.000

Problem 298	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	537	537	506	161	0	0	0	0	-1
normalized size	1	1.00	0.94	0.30	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.651	0.216	0.291	0.000	0.450	0.000	0.000	0.000

Problem 299	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	521	521	458	154	0	0	0	0	-1
normalized size	1	1.00	0.88	0.30	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.756	0.245	0.256	0.000	0.465	0.000	0.000	0.000

Problem 300	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	497	497	464	94	0	0	0	0	-1
normalized size	1	1.00	0.93	0.19	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.541	0.288	0.259	0.000	0.454	0.000	0.000	0.000

Problem 301	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	497	497	359	112	0	0	0	0	-1
normalized size	1	1.00	0.72	0.23	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.416	0.117	0.251	0.000	0.438	0.000	0.000	0.000

Problem 302	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	536	536	525	136	0	0	0	0	-1
normalized size	1	1.00	0.98	0.25	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.816	0.625	0.285	0.000	0.439	0.000	0.000	0.000

Problem 303	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	91	91	101	101	102	117	148	186	104
normalized size	1	1.00	1.11	1.11	1.12	1.29	1.63	2.04	1.14
time (sec)	N/A	0.064	0.058	0.076	0.471	0.435	3.007	0.182	0.271

Problem 304	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	120	120	150	585	187	219	277	430	212
normalized size	1	1.00	1.25	4.88	1.56	1.82	2.31	3.58	1.77
time (sec)	N/A	0.113	0.148	0.344	0.493	0.430	16.431	0.201	0.298

Problem 305	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	149	149	226	836	284	336	450	780	352
normalized size	1	1.00	1.52	5.61	1.91	2.26	3.02	5.23	2.36
time (sec)	N/A	0.123	0.219	0.361	0.510	0.455	63.040	0.282	0.370

Problem 306	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	63	63	62	261	0	0	0	0	-1
normalized size	1	1.00	0.98	4.14	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.100	0.014	0.281	0.000	0.426	0.000	0.000	0.000

Problem 307	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F(-2)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	74	74	57	354	86	95	0	111	84
normalized size	1	1.00	0.77	4.78	1.16	1.28	0.00	1.50	1.14
time (sec)	N/A	0.083	0.065	0.357	0.465	0.486	0.000	0.184	0.897

Problem 308	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	112	112	83	633	169	272	0	302	173
normalized size	1	1.00	0.74	5.65	1.51	2.43	0.00	2.70	1.54
time (sec)	N/A	0.118	0.114	0.419	0.507	0.463	0.000	0.188	0.669

Problem 309	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	C	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	247	247	247	248	298	0	0	0	-1
normalized size	1	1.00	1.00	1.00	1.21	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.337	0.182	0.059	1.244	0.441	0.000	0.000	0.000

Problem 310	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	831	752	862	0	0	0	0	0	-1
normalized size	1	0.90	1.04	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.085	1.097	1.305	0.000	0.447	0.000	0.000	0.000

Problem 311	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	499	499	637	0	0	0	0	0	-1
normalized size	1	1.00	1.28	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.688	0.539	1.566	0.000	0.437	0.000	0.000	0.000

Problem 312	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	317	317	464	0	0	0	0	0	-1
normalized size	1	1.00	1.46	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.371	0.280	0.975	0.000	0.451	0.000	0.000	0.000

Problem 313	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	397	397	576	0	0	0	0	0	-1
normalized size	1	1.00	1.45	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.597	0.408	1.110	0.000	0.468	0.000	0.000	0.000

Problem 314	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	551	575	811	0	0	0	0	0	-1
normalized size	1	1.04	1.47	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.946	0.767	1.254	0.000	0.439	0.000	0.000	0.000

Problem 315	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	701	646	821	0	0	0	0	0	-1
normalized size	1	0.92	1.17	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.922	0.998	29.078	0.000	0.442	0.000	0.000	0.000

Problem 316	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	447	447	623	0	0	0	0	0	-1
normalized size	1	1.00	1.39	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.592	0.619	71.651	0.000	0.426	0.000	0.000	0.000

Problem 317	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	371	371	485	0	0	0	0	0	-1
normalized size	1	1.00	1.31	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.376	0.339	11.072	0.000	0.439	0.000	0.000	0.000

Problem 318	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	461	461	668	0	0	0	0	0	-1
normalized size	1	1.00	1.45	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.634	0.522	62.416	0.000	0.432	0.000	0.000	0.000

Problem 319	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	694	717	930	0	0	0	0	0	-1
normalized size	1	1.03	1.34	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.114	0.845	34.975	0.000	0.477	0.000	0.000	0.000

Problem 320	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	936	936	1254	0	0	0	0	0	-1
normalized size	1	1.00	1.34	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.530	3.311	1.614	0.000	0.442	0.000	0.000	0.000

Problem 321	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	739	739	1103	0	0	0	0	0	-1
normalized size	1	1.00	1.49	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.195	2.655	1.503	0.000	0.452	0.000	0.000	0.000

Problem 322	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	430	430	590	2134	0	0	0	0	-1
normalized size	1	1.00	1.37	4.96	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.547	0.690	0.666	0.000	0.457	0.000	0.000	0.000

Problem 323	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	814	814	1209	0	0	0	0	0	-1
normalized size	1	1.00	1.49	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.300	2.362	1.171	0.000	0.422	0.000	0.000	0.000

Problem 324	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	970	994	1391	0	0	0	0	0	-1
normalized size	1	1.02	1.43	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.653	3.308	1.364	0.000	0.444	0.000	0.000	0.000

Problem 325	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	897	897	1237	0	0	0	0	0	-1
normalized size	1	1.00	1.38	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.784	3.498	12.124	0.000	0.438	0.000	0.000	0.000

Problem 326	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	815	815	1132	0	0	0	0	0	-1
normalized size	1	1.00	1.39	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.544	2.823	63.857	0.000	0.428	0.000	0.000	0.000

Problem 327	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	821	821	1143	0	0	0	0	0	-1
normalized size	1	1.00	1.39	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.846	3.079	46.013	0.000	0.440	0.000	0.000	0.000

Problem 328	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	919	919	1304	0	0	0	0	0	-1
normalized size	1	1.00	1.42	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.613	3.690	17.496	0.000	0.438	0.000	0.000	0.000

Problem 329	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	477	477	754	0	0	0	0	0	-1
normalized size	1	1.00	1.58	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.537	0.326	13.429	0.000	0.431	0.000	0.000	0.000

Problem 330	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	347	347	488	0	0	0	0	0	-1
normalized size	1	1.00	1.41	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.316	0.182	13.190	0.000	0.437	0.000	0.000	0.000

Problem 331	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	C	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	229	229	178	419	309	0	0	0	-1
normalized size	1	1.00	0.78	1.83	1.35	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.164	0.112	0.266	1.238	0.481	0.000	0.000	0.000

Problem 332	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	90	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.115	0.423	0.712	0.000	0.428	0.000	0.000	0.000

Problem 333	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	27	27	29	24	0	33	0	0	-1
normalized size	1	1.00	1.07	0.89	0.00	1.22	0.00	0.00	-0.04
time (sec)	N/A	0.130	0.022	0.052	0.000	0.422	0.000	0.000	0.000

Problem 334	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	27	27	29	24	0	33	0	0	-1
normalized size	1	1.00	1.07	0.89	0.00	1.22	0.00	0.00	-0.04
time (sec)	N/A	0.180	0.008	0.052	0.000	0.467	0.000	0.000	0.000

Problem 335	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	28	28	31	28	0	35	0	0	-1
normalized size	1	1.00	1.11	1.00	0.00	1.25	0.00	0.00	-0.04
time (sec)	N/A	0.135	0.023	0.053	0.000	0.438	0.000	0.000	0.000

Problem 336	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	28	28	31	28	0	35	0	0	-1
normalized size	1	1.00	1.11	1.00	0.00	1.25	0.00	0.00	-0.04
time (sec)	N/A	0.183	0.008	0.054	0.000	0.429	0.000	0.000	0.000

Problem 337	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	24	24	27	20	120	21	0	0	19
normalized size	1	1.00	1.12	0.83	5.00	0.88	0.00	0.00	0.79
time (sec)	N/A	0.031	0.006	0.049	0.488	0.464	0.000	0.000	0.282

Problem 338	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	24	24	27	20	120	21	0	0	19
normalized size	1	1.00	1.12	0.83	5.00	0.88	0.00	0.00	0.79
time (sec)	N/A	0.133	0.004	0.051	0.500	0.447	0.000	0.000	0.200

Problem 339	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	B	A	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	37	37	252	24	246	34	0	0	-1
normalized size	1	1.00	6.81	0.65	6.65	0.92	0.00	0.00	-0.03
time (sec)	N/A	0.025	0.197	0.056	0.505	0.435	0.000	0.000	0.000

Problem 340	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	B	A	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	27	27	252	24	246	34	0	0	-1
normalized size	1	1.00	9.33	0.89	9.11	1.26	0.00	0.00	-0.04
time (sec)	N/A	0.074	0.162	0.050	0.513	0.423	0.000	0.000	0.000

Problem 341	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	B	A	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	27	27	252	24	243	34	0	0	-1
normalized size	1	1.00	9.33	0.89	9.00	1.26	0.00	0.00	-0.04
time (sec)	N/A	0.020	0.146	0.052	0.523	0.425	0.000	0.000	0.000

Problem 342	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	B	A	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	27	27	252	24	243	34	0	0	-1
normalized size	1	1.00	9.33	0.89	9.00	1.26	0.00	0.00	-0.04
time (sec)	N/A	0.127	0.160	0.050	0.525	0.421	0.000	0.000	0.000

Problem 343	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	238	238	494	12205	0	0	0	0	-1
normalized size	1	1.00	2.08	51.28	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.351	0.225	1.076	0.000	0.440	0.000	0.000	0.000

Problem 344	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	168	168	292	2679	0	0	0	0	-1
normalized size	1	1.00	1.74	15.95	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.248	0.141	0.519	0.000	0.440	0.000	0.000	0.000

Problem 345	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	97	97	98	420	123	0	0	0	-1
normalized size	1	1.00	1.01	4.33	1.27	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.124	0.023	0.227	0.676	0.422	0.000	0.000	0.000

Problem 346	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	53	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.110	0.698	0.708	0.000	0.438	0.000	0.000	0.000

Problem 347	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	500	500	993	0	0	0	0	0	-1
normalized size	1	1.00	1.99	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.701	0.807	27.237	0.000	0.434	0.000	0.000	0.000

Problem 348	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	372	372	655	0	0	0	0	0	-1
normalized size	1	1.00	1.76	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.406	0.454	20.052	0.000	0.444	0.000	0.000	0.000

Problem 349	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F(-2)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	243	243	194	689	0	0	0	0	-1
normalized size	1	1.00	0.80	2.84	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.229	0.182	0.263	0.000	0.432	0.000	0.000	0.000

Problem 350	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	105	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.199	0.599	1.457	0.000	0.433	0.000	0.000	0.000

Problem 351	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	286	286	464	791	0	0	0	0	-1
normalized size	1	1.00	1.62	2.77	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.443	0.687	0.054	0.000	0.428	0.000	0.000	0.000

Problem 352	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	234	234	434	593	0	0	0	0	-1
normalized size	1	1.00	1.85	2.53	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.355	0.277	0.054	0.000	0.429	0.000	0.000	0.000

Problem 353	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	193	193	210	361	0	0	0	0	-1
normalized size	1	1.00	1.09	1.87	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.181	0.146	0.053	0.000	0.428	0.000	0.000	0.000

Problem 354	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	153	153	144	178	0	0	0	0	-1
normalized size	1	1.00	0.94	1.16	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.137	0.065	0.053	0.000	0.437	0.000	0.000	0.000

Problem 355	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	204	204	227	375	0	0	0	0	-1
normalized size	1	1.00	1.11	1.84	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.282	0.218	0.059	0.000	0.457	0.000	0.000	0.000

Problem 356	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	251	251	255	608	0	0	0	0	-1
normalized size	1	1.00	1.02	2.42	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.391	0.386	0.055	0.000	0.448	0.000	0.000	0.000

Problem 357	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	308	308	311	816	0	0	0	0	-1
normalized size	1	1.00	1.01	2.65	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.512	0.468	0.056	0.000	0.452	0.000	0.000	0.000

Problem 358	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	232	232	221	2330	231	0	0	0	-1
normalized size	1	1.00	0.95	10.04	1.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.220	0.192	0.925	0.683	0.443	0.000	0.000	0.000

Problem 359	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	195	195	197	2162	207	0	0	0	-1
normalized size	1	1.00	1.01	11.09	1.06	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.183	0.184	0.858	0.693	0.459	0.000	0.000	0.000

Problem 360	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	158	158	164	1994	178	0	0	0	-1
normalized size	1	1.00	1.04	12.62	1.13	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.138	0.129	0.845	0.668	0.481	0.000	0.000	0.000

Problem 361	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	99	99	116	1724	139	0	0	0	-1
normalized size	1	1.00	1.17	17.41	1.40	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.094	0.082	0.752	0.660	0.436	0.000	0.000	0.000

Problem 362	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	88	88	128	1749	0	0	0	0	-1
normalized size	1	1.00	1.45	19.88	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.074	0.075	0.575	0.000	0.464	0.000	0.000	0.000

Problem 363	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	102	120	111	1859	162	0	0	0	-1
normalized size	1	1.18	1.09	18.23	1.59	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.095	0.115	0.714	0.708	0.462	0.000	0.000	0.000

Problem 364	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	156	175	204	2051	198	0	0	0	-1
normalized size	1	1.12	1.31	13.15	1.27	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.151	0.128	0.767	0.684	0.448	0.000	0.000	0.000

Problem 365	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	193	212	240	2220	229	0	0	0	-1
normalized size	1	1.10	1.24	11.50	1.19	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.181	0.144	0.895	0.715	0.463	0.000	0.000	0.000

Problem 366	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	230	249	273	2387	253	0	0	0	-1
normalized size	1	1.08	1.19	10.38	1.10	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.219	0.154	0.943	0.711	0.452	0.000	0.000	0.000

Problem 367	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	705	902	735	0	0	0	0	0	-1
normalized size	1	1.28	1.04	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	2.189	1.801	1.878	0.000	0.446	0.000	0.000	0.000

Problem 368	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	F	F	F	F	F(-1)	F	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	602	602	0	0	0	0	0	0	-1
normalized size	1	1.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.293	0.407	4.076	0.000	0.436	0.000	0.000	0.000

Problem 369	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	309	309	549	0	0	0	0	0	-1
normalized size	1	1.00	1.78	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.453	0.487	2.645	0.000	0.442	0.000	0.000	0.000

Problem 370	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	F	A	F	F	F	F(-1)	F	F
verified	N/A	N/A	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	823	0	823	0	0	0	0	0	-1
normalized size	1	0.00	1.00	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.066	0.397	2.639	0.000	0.438	0.000	0.000	0.000

Problem 371	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	F	A	F	F	F	F(-1)	F	F
verified	N/A	N/A	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	607	0	513	0	0	0	0	0	-1
normalized size	1	0.00	0.85	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.029	0.709	1.730	0.000	0.471	0.000	0.000	0.000

Problem 372	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	F	A	F	F	F	F(-1)	F	F
verified	N/A	N/A	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	939	0	781	0	0	0	0	0	-1
normalized size	1	0.00	0.83	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.030	1.011	1.882	0.000	0.489	0.000	0.000	0.000

Problem 373	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	F	F	F	F	F(-1)	F	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	522	522	0	0	0	0	0	0	-1
normalized size	1	1.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.858	0.542	4.191	0.000	0.453	0.000	0.000	0.000

Problem 374	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	F	A	F	F	F	F	F	F
verified	N/A	N/A	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	519	0	519	0	0	0	0	0	-1
normalized size	1	0.00	1.00	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.049	0.101	0.087	0.000	0.442	0.000	0.000	0.000

Problem 375	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	26	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.011	0.045	7.405	0.000	0.469	0.000	0.000	0.000

Problem 376	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	26	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.011	0.494	13.299	0.000	0.466	0.000	0.000	0.000

Problem 377	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-2)	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	26	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.010	0.096	1.398	0.000	0.464	0.000	0.000	0.000

Problem 378	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	364	364	394	0	0	0	0	0	-1
normalized size	1	1.00	1.08	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.055	0.063	0.062	0.000	0.442	0.000	0.000	0.000

Problem 379	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	258	258	342	1785	274	329	508	756	323
normalized size	1	1.00	1.33	6.92	1.06	1.28	1.97	2.93	1.25
time (sec)	N/A	0.435	0.091	0.526	0.503	0.446	6.626	0.211	0.403

Problem 380	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	196	206	263	1558	224	256	389	477	203
normalized size	1	1.05	1.34	7.95	1.14	1.31	1.98	2.43	1.04
time (sec)	N/A	0.371	0.051	0.531	0.528	0.504	3.574	0.204	0.346

Problem 381	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	110	130	76	156	165	156	257	214	102
normalized size	1	1.18	0.69	1.42	1.50	1.42	2.34	1.95	0.93
time (sec)	N/A	0.222	0.029	0.075	0.500	0.432	1.656	0.188	0.273

Problem 382	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	158	219	227	1534	0	0	0	0	-1
normalized size	1	1.39	1.44	9.71	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.326	0.062	0.435	0.000	0.419	0.000	0.000	0.000

Problem 383	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	96	169	180	931	0	0	0	0	-1
normalized size	1	1.76	1.88	9.70	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.346	0.030	0.336	0.000	0.449	0.000	0.000	0.000

Problem 384	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	156	265	254	1201	0	0	0	0	-1
normalized size	1	1.70	1.63	7.70	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.557	0.131	0.353	0.000	0.455	0.000	0.000	0.000

Problem 385	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	234	365	351	1437	0	0	0	0	-1
normalized size	1	1.56	1.50	6.14	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.822	0.177	0.433	0.000	0.434	0.000	0.000	0.000

Problem 386	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	742	742	605	4217	0	0	0	0	-1
normalized size	1	1.00	0.82	5.68	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.872	1.202	2.210	0.000	0.464	0.000	0.000	0.000

Problem 387	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	558	558	492	3680	0	0	0	0	-1
normalized size	1	1.00	0.88	6.59	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.609	0.948	1.756	0.000	0.459	0.000	0.000	0.000

Problem 388	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	397	397	341	3163	0	0	0	0	-1
normalized size	1	1.00	0.86	7.97	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.433	0.597	1.610	0.000	0.451	0.000	0.000	0.000

Problem 389	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	232	232	329	2544	0	0	0	0	-1
normalized size	1	1.00	1.42	10.97	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.285	0.235	1.205	0.000	0.443	0.000	0.000	0.000

Problem 390	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	637	637	605	0	0	0	0	0	-1
normalized size	1	1.00	0.95	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.433	0.299	1.527	0.000	0.447	0.000	0.000	0.000

Problem 391	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	270	270	476	0	0	0	0	0	-1
normalized size	1	1.00	1.76	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.333	0.226	2.605	0.000	0.454	0.000	0.000	0.000

Problem 392	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	421	421	765	0	0	0	0	0	-1
normalized size	1	1.00	1.82	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.455	0.347	1.586	0.000	0.490	0.000	0.000	0.000

Problem 393	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	1210	1179	2067	0	0	0	0	0	-1
normalized size	1	0.97	1.71	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	2.790	1.369	8.620	0.000	0.460	0.000	0.000	0.000

Problem 394	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	649	649	1355	0	0	0	0	0	-1
normalized size	1	1.00	2.09	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.481	0.553	4.711	0.000	0.489	0.000	0.000	0.000

Problem 395	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	37	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.037	0.727	1.963	0.000	0.454	0.000	0.000	0.000

Problem 396	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	37	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.040	0.913	1.875	0.000	0.463	0.000	0.000	0.000

Problem 397	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	2050	2050	4971	0	0	0	0	0	-1
normalized size	1	1.00	2.42	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	6.891	3.788	4.017	0.000	0.467	0.000	0.000	0.000

Problem 398	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	1147	1147	3163	0	0	0	0	0	-1
normalized size	1	1.00	2.76	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	3.123	1.132	9.763	0.000	0.471	0.000	0.000	0.000

Problem 399	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	37	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.040	1.381	2.280	0.000	0.435	0.000	0.000	0.000

Problem 400	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	37	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.041	1.930	2.592	0.000	0.446	0.000	0.000	0.000

Problem 401	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	62	0	0	0	0	0	-1
normalized size	1	1.00	0.94	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.084	0.111	2.417	0.000	0.468	0.000	0.000	0.000

Problem 402	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	92	92	43	116	99	46	56	72	63
normalized size	1	1.00	0.47	1.26	1.08	0.50	0.61	0.78	0.68
time (sec)	N/A	0.095	0.070	0.047	0.638	0.445	0.294	0.191	0.473

Problem 403	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	102	102	58	184	159	61	75	104	92
normalized size	1	1.00	0.57	1.80	1.56	0.60	0.74	1.02	0.90
time (sec)	N/A	0.111	0.112	0.057	0.710	0.451	0.338	0.206	0.496

Problem 404	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	160	160	132	0	559	1409	2390	1802	380
normalized size	1	1.00	0.82	0.00	3.49	8.81	14.94	11.26	2.38
time (sec)	N/A	0.201	0.071	0.763	0.858	0.491	24.007	0.346	0.576

Problem 405	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	121	121	100	0	317	639	1023	822	242
normalized size	1	1.00	0.83	0.00	2.62	5.28	8.45	6.79	2.00
time (sec)	N/A	0.141	0.014	0.095	0.792	0.474	9.844	0.281	0.409

Problem 406	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	78	78	69	0	148	231	343	303	111
normalized size	1	1.00	0.88	0.00	1.90	2.96	4.40	3.88	1.42
time (sec)	N/A	0.094	0.010	0.088	0.632	0.444	3.589	0.333	0.280

Problem 407	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	34	34	34	42	45	50	58	64	41
normalized size	1	1.00	1.00	1.24	1.32	1.47	1.71	1.88	1.21
time (sec)	N/A	0.032	0.007	0.049	0.621	0.448	0.967	0.175	0.213

Problem 408	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	83	83	83	0	0	65	0	79	-1
normalized size	1	1.00	1.00	0.00	0.00	0.78	0.00	0.95	-0.01
time (sec)	N/A	0.132	0.117	0.068	0.000	0.425	0.000	0.171	0.000

Problem 409	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	123	123	163	0	0	171	0	593	-1
normalized size	1	1.00	1.33	0.00	0.00	1.39	0.00	4.82	-0.01
time (sec)	N/A	0.168	0.118	0.067	0.000	0.438	0.000	0.246	0.000

Problem 410	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	169	169	189	0	0	444	0	3481	-1
normalized size	1	1.00	1.12	0.00	0.00	2.63	0.00	20.60	-0.01
time (sec)	N/A	0.223	0.191	0.066	0.000	0.433	0.000	0.449	0.000

Problem 411	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	219	219	190	0	0	0	0	0	-1
normalized size	1	1.00	0.87	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.368	0.329	0.093	0.000	0.000	0.000	0.000	0.000

Problem 412	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	176	176	160	0	0	0	0	0	-1
normalized size	1	1.00	0.91	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.276	0.064	0.068	0.000	0.000	0.000	0.000	0.000

Problem 413	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	139	139	134	0	0	0	0	0	-1
normalized size	1	1.00	0.96	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.220	0.064	0.066	0.000	0.000	0.000	0.000	0.000

Problem 414	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	104	104	104	0	0	0	0	0	-1
normalized size	1	1.00	1.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.182	0.022	0.070	0.000	0.000	0.000	0.000	0.000

Problem 415	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	147	147	181	0	0	0	0	0	-1
normalized size	1	1.00	1.23	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.246	0.230	0.066	0.000	0.000	0.000	0.000	0.000

Problem 416	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	194	194	211	0	0	0	0	0	-1
normalized size	1	1.00	1.09	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.312	0.334	0.070	0.000	0.000	0.000	0.000	0.000

Problem 417	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	237	237	272	0	0	0	0	0	-1
normalized size	1	1.00	1.15	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.385	0.451	0.069	0.000	0.000	0.000	0.000	0.000

Problem 418	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	131	131	131	0	0	80	0	0	-1
normalized size	1	1.00	1.00	0.00	0.00	0.61	0.00	0.00	-0.01
time (sec)	N/A	0.147	0.183	0.118	0.000	0.475	0.000	0.000	0.000

Problem 419	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	109	109	109	0	70	0	0	0	-1
normalized size	1	1.00	1.00	0.00	0.64	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.139	0.121	0.148	0.625	0.491	0.000	0.000	0.000

Problem 420	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	158	158	232	0	304	405	546	1047	370
normalized size	1	1.00	1.47	0.00	1.92	2.56	3.46	6.63	2.34
time (sec)	N/A	0.164	0.310	0.791	0.528	0.433	21.354	0.240	0.421

Problem 421	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	128	128	156	0	202	268	342	585	225
normalized size	1	1.00	1.22	0.00	1.58	2.09	2.67	4.57	1.76
time (sec)	N/A	0.125	0.193	0.329	0.529	0.452	9.512	0.203	0.347

Problem 422	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	98	98	113	0	112	148	187	259	113
normalized size	1	1.00	1.15	0.00	1.14	1.51	1.91	2.64	1.15
time (sec)	N/A	0.081	0.061	0.096	0.498	0.445	3.593	0.199	0.294

Problem 423	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	34	34	34	42	45	50	58	64	41
normalized size	1	1.00	1.00	1.24	1.32	1.47	1.71	1.88	1.21
time (sec)	N/A	0.029	0.009	0.050	0.464	0.459	0.916	0.160	0.218

Problem 424	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	68	68	67	0	0	0	0	0	-1
normalized size	1	1.00	0.99	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.112	0.016	0.378	0.000	0.414	0.000	0.000	0.000

Problem 425	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	A	F(-2)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	80	80	69	0	90	113	0	129	89
normalized size	1	1.00	0.86	0.00	1.12	1.41	0.00	1.61	1.11
time (sec)	N/A	0.076	0.103	0.366	0.509	0.452	0.000	0.172	2.044

Problem 426	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	B	F(-2)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	119	119	88	0	172	310	0	359	180
normalized size	1	1.00	0.74	0.00	1.45	2.61	0.00	3.02	1.51
time (sec)	N/A	0.129	0.164	0.365	0.501	0.471	0.000	0.181	2.259

Problem 427	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	149	149	115	0	306	563	8709	643	293
normalized size	1	1.00	0.77	0.00	2.05	3.78	58.45	4.32	1.97
time (sec)	N/A	0.167	0.202	0.378	0.529	0.492	131.754	0.204	2.477

Problem 428	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	409	325	400	0	895	1742	2623	3938	1154
normalized size	1	0.79	0.98	0.00	2.19	4.26	6.41	9.63	2.82
time (sec)	N/A	1.038	0.289	0.361	0.692	0.581	67.673	0.487	0.915

Problem 429	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	323	264	277	0	605	1137	1692	2241	652
normalized size	1	0.82	0.86	0.00	1.87	3.52	5.24	6.94	2.02
time (sec)	N/A	0.835	0.214	0.336	0.622	0.490	32.826	0.390	0.692

Problem 430	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	211	211	164	0	348	622	879	1014	302
normalized size	1	1.00	0.78	0.00	1.65	2.95	4.17	4.81	1.43
time (sec)	N/A	0.389	0.112	0.102	0.580	0.462	12.690	0.241	0.464

Problem 431	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	78	78	69	0	148	231	343	303	111
normalized size	1	1.00	0.88	0.00	1.90	2.96	4.40	3.88	1.42
time (sec)	N/A	0.096	0.018	0.094	0.528	0.459	3.825	0.184	0.301

Problem 432	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	123	123	324	0	0	0	0	0	-1
normalized size	1	1.00	2.63	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.265	0.204	0.367	0.000	0.443	0.000	0.000	0.000

Problem 433	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	144	144	200	0	0	0	0	0	-1
normalized size	1	1.00	1.39	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.200	0.233	0.359	0.000	0.888	0.000	0.000	0.000

Problem 434	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	222	257	316	0	0	0	0	0	-1
normalized size	1	1.16	1.42	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.817	0.469	0.350	0.000	0.679	0.000	0.000	0.000

Problem 435	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	492	492	378	0	1245	3121	5008	5907	1400
normalized size	1	1.00	0.77	0.00	2.53	6.34	10.18	12.01	2.85
time (sec)	N/A	0.948	0.293	0.343	0.791	2.220	80.862	0.646	1.264

Problem 436	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	306	306	231	0	732	1692	2756	2717	651
normalized size	1	1.00	0.75	0.00	2.39	5.53	9.01	8.88	2.13
time (sec)	N/A	0.534	0.132	0.100	0.685	0.546	28.216	0.385	0.831

Problem 437	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	121	121	100	0	317	639	1023	822	242
normalized size	1	1.00	0.83	0.00	2.62	5.28	8.45	6.79	2.00
time (sec)	N/A	0.141	0.026	0.092	0.805	0.474	8.946	0.217	0.426

Problem 438	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	177	177	646	0	0	0	0	0	-1
normalized size	1	1.00	3.65	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.412	0.293	0.371	0.000	0.469	0.000	0.000	0.000

Problem 439	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	209	209	444	0	0	0	0	0	-1
normalized size	1	1.00	2.12	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.366	0.545	0.354	0.000	0.489	0.000	0.000	0.000

Problem 440	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	376	408	660	0	0	0	0	0	-1
normalized size	1	1.09	1.76	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.390	0.903	0.351	0.000	0.465	0.000	0.000	0.000

Problem 441	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	160	160	132	0	559	1409	2390	1802	380
normalized size	1	1.00	0.82	0.00	3.49	8.81	14.94	11.26	2.38
time (sec)	N/A	0.201	0.057	0.100	0.877	0.475	22.866	0.304	0.561

Problem 442	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	231	231	1095	0	0	0	0	0	-1
normalized size	1	1.00	4.74	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.534	0.450	0.370	0.000	0.495	0.000	0.000	0.000

Problem 443	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	274	274	1301	0	0	0	0	0	-1
normalized size	1	1.00	4.75	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.525	0.580	0.351	0.000	0.442	0.000	0.000	0.000

Problem 444	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	29	29	29	36	40	42	53	58	36
normalized size	1	1.00	1.00	1.24	1.38	1.45	1.83	2.00	1.24
time (sec)	N/A	0.023	0.010	0.052	0.578	0.459	0.952	0.179	0.073

Problem 445	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	279	279	252	0	0	243	0	524	-1
normalized size	1	1.00	0.90	0.00	0.00	0.87	0.00	1.88	-0.00
time (sec)	N/A	0.779	0.843	0.328	0.000	0.440	0.000	0.309	0.000

Problem 446	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	179	179	164	0	0	140	0	252	-1
normalized size	1	1.00	0.92	0.00	0.00	0.78	0.00	1.41	-0.01
time (sec)	N/A	0.416	0.271	0.082	0.000	0.452	0.000	0.224	0.000

Problem 447	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	83	83	83	0	0	65	0	79	-1
normalized size	1	1.00	1.00	0.00	0.00	0.78	0.00	0.95	-0.01
time (sec)	N/A	0.119	0.063	0.082	0.000	0.448	0.000	0.172	0.000

Problem 448	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.070	0.264	0.378	0.000	0.475	0.000	0.000	0.000

Problem 449	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.066	0.825	0.349	0.000	0.455	0.000	0.000	0.000

Problem 450	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	326	326	1310	0	0	573	0	4046	-1
normalized size	1	1.00	4.02	0.00	0.00	1.76	0.00	12.41	-0.00
time (sec)	N/A	1.292	0.985	0.333	0.000	0.448	0.000	0.836	0.000

Problem 451	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	224	224	269	0	0	328	0	1968	-1
normalized size	1	1.00	1.20	0.00	0.00	1.46	0.00	8.79	-0.00
time (sec)	N/A	0.621	0.462	0.082	0.000	0.473	0.000	0.485	0.000

Problem 452	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	123	123	163	0	0	171	0	593	-1
normalized size	1	1.00	1.33	0.00	0.00	1.39	0.00	4.82	-0.01
time (sec)	N/A	0.161	0.121	0.082	0.000	0.449	0.000	0.244	0.000

Problem 453	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.065	1.397	0.369	0.000	0.492	0.000	0.000	0.000

Problem 454	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.062	18.599	0.347	0.000	0.463	0.000	0.000	0.000

Problem 455	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	B	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	432	432	438	0	0	1682	0	0	-1
normalized size	1	1.00	1.01	0.00	0.00	3.89	0.00	0.00	-0.00
time (sec)	N/A	2.134	2.325	0.329	0.000	0.526	0.000	0.000	0.000

Problem 456	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	322	322	322	0	0	931	0	11533	-1
normalized size	1	1.00	1.00	0.00	0.00	2.89	0.00	35.82	-0.00
time (sec)	N/A	0.926	0.852	0.083	0.000	0.492	0.000	1.308	0.000

Problem 457	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	169	169	189	0	0	444	0	3481	-1
normalized size	1	1.00	1.12	0.00	0.00	2.63	0.00	20.60	-0.01
time (sec)	N/A	0.215	0.317	0.082	0.000	0.457	0.000	0.433	0.000

Problem 458	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.065	1.644	0.353	0.000	0.505	0.000	0.000	0.000

Problem 459	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.063	39.712	0.352	0.000	0.496	0.000	0.000	0.000

Problem 460	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	488	488	458	0	0	0	0	0	-1
normalized size	1	1.00	0.94	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.615	0.691	0.337	0.000	0.000	0.000	0.000	0.000

Problem 461	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	311	311	298	0	0	0	0	0	-1
normalized size	1	1.00	0.96	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.811	0.388	0.092	0.000	0.000	0.000	0.000	0.000

Problem 462	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	139	139	134	0	0	0	0	0	-1
normalized size	1	1.00	0.96	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.223	0.065	0.086	0.000	0.000	0.000	0.000	0.000

Problem 463	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	33	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.096	1.251	0.373	0.000	0.000	0.000	0.000	0.000

Problem 464	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	33	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.149	0.388	0.352	0.000	0.000	0.000	0.000	0.000

Problem 465	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	625	625	545	0	0	0	0	0	-1
normalized size	1	1.00	0.87	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.916	1.413	0.324	0.000	0.000	0.000	0.000	0.000

Problem 466	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	396	396	348	0	0	0	0	0	-1
normalized size	1	1.00	0.88	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.018	0.571	0.092	0.000	0.000	0.000	0.000	0.000

Problem 467	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	176	176	160	0	0	0	0	0	-1
normalized size	1	1.00	0.91	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.270	0.213	0.082	0.000	0.000	0.000	0.000	0.000

Problem 468	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	33	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.116	2.002	0.378	0.000	0.000	0.000	0.000	0.000

Problem 469	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	33	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.163	2.248	0.352	0.000	0.000	0.000	0.000	0.000

Problem 470	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	355	355	315	0	0	0	0	0	-1
normalized size	1	1.00	0.89	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.307	0.349	0.326	0.000	0.000	0.000	0.000	0.000

Problem 471	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	229	229	208	0	0	0	0	0	-1
normalized size	1	1.00	0.91	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.666	0.186	0.085	0.000	0.000	0.000	0.000	0.000

Problem 472	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	104	104	104	0	0	0	0	0	-1
normalized size	1	1.00	1.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.179	0.022	0.085	0.000	0.000	0.000	0.000	0.000

Problem 473	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	33	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.104	0.116	0.368	0.000	0.000	0.000	0.000	0.000

Problem 474	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	404	404	1040	0	0	0	0	0	-1
normalized size	1	1.00	2.57	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	2.250	2.574	0.333	0.000	0.000	0.000	0.000	0.000

Problem 475	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	275	275	435	0	0	0	0	0	-1
normalized size	1	1.00	1.58	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.012	1.340	0.083	0.000	0.000	0.000	0.000	0.000

Problem 476	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	147	147	181	0	0	0	0	0	-1
normalized size	1	1.00	1.23	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.248	0.186	0.081	0.000	0.000	0.000	0.000	0.000

Problem 477	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	33	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.123	0.476	0.380	0.000	0.000	0.000	0.000	0.000

Problem 478	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	514	514	652	0	0	0	0	0	-1
normalized size	1	1.00	1.27	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	3.856	6.928	0.325	0.000	0.000	0.000	0.000	0.000

Problem 479	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	380	380	491	0	0	0	0	0	-1
normalized size	1	1.00	1.29	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.598	2.315	0.085	0.000	0.000	0.000	0.000	0.000

Problem 480	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	194	194	211	0	0	0	0	0	-1
normalized size	1	1.00	1.09	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.339	0.356	0.082	0.000	0.000	0.000	0.000	0.000

Problem 481	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	33	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.130	0.850	0.373	0.000	0.000	0.000	0.000	0.000

Problem 482	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	B	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	171	171	153	0	0	624	484	0	-1
normalized size	1	1.00	0.89	0.00	0.00	3.65	2.83	0.00	-0.01
time (sec)	N/A	0.335	0.390	0.502	0.000	0.525	98.685	0.000	0.000

Problem 483	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	A	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	139	139	124	0	0	353	144	0	-1
normalized size	1	1.00	0.89	0.00	0.00	2.54	1.04	0.00	-0.01
time (sec)	N/A	0.183	0.193	0.354	0.000	0.521	5.689	0.000	0.000

Problem 484	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	103	103	89	155	0	201	347	128	-1
normalized size	1	1.00	0.86	1.50	0.00	1.95	3.37	1.24	-0.01
time (sec)	N/A	0.137	0.298	0.085	0.000	0.510	42.586	0.185	0.000

Problem 485	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	86	86	84	0	0	240	90	99	-1
normalized size	1	1.00	0.98	0.00	0.00	2.79	1.05	1.15	-0.01
time (sec)	N/A	0.126	0.167	0.349	0.000	0.555	21.452	0.222	0.000

Problem 486	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	120	120	91	0	0	467	122	209	-1
normalized size	1	1.00	0.76	0.00	0.00	3.89	1.02	1.74	-0.01
time (sec)	N/A	0.160	0.100	0.380	0.000	0.492	147.442	0.277	0.000

Problem 487	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	B	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	152	152	91	0	0	863	0	378	-1
normalized size	1	1.00	0.60	0.00	0.00	5.68	0.00	2.49	-0.01
time (sec)	N/A	0.199	0.090	0.371	0.000	0.513	0.000	0.357	0.000

Problem 488	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	B	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	184	184	91	0	0	1362	0	0	-1
normalized size	1	1.00	0.49	0.00	0.00	7.40	0.00	0.00	-0.01
time (sec)	N/A	0.278	0.100	0.351	0.000	0.549	0.000	0.000	0.000

Problem 489	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	635	635	2450	0	0	0	0	0	-1
normalized size	1	1.00	3.86	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	4.348	8.968	0.360	0.000	0.466	0.000	0.000	0.000

Problem 490	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	547	547	365	0	0	0	0	0	-1
normalized size	1	1.00	0.67	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	2.983	2.158	0.349	0.000	0.496	0.000	0.000	0.000

Problem 491	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	447	447	646	0	0	0	0	0	-1
normalized size	1	1.00	1.45	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	2.217	1.683	0.354	0.000	0.489	0.000	0.000	0.000

Problem 492	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	330	330	356	0	0	0	0	0	-1
normalized size	1	1.00	1.08	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.620	3.770	0.352	0.000	0.494	0.000	0.000	0.000

Problem 493	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	449	449	657	0	0	0	0	0	-1
normalized size	1	1.00	1.46	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	2.378	6.199	0.350	0.000	0.483	0.000	0.000	0.000

Problem 494	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	537	537	1183	0	0	0	0	0	-1
normalized size	1	1.00	2.20	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	3.084	7.746	0.351	0.000	0.486	0.000	0.000	0.000

Problem 495	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	625	625	1249	0	0	0	0	0	-1
normalized size	1	1.00	2.00	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	3.927	7.829	0.380	0.000	0.512	0.000	0.000	0.000

Problem 496	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	33	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.088	1.294	0.349	0.000	0.461	0.000	0.000	0.000

Problem 497	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	33	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.078	1.114	0.360	0.000	0.476	0.000	0.000	0.000

Problem 498	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	33	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.082	1.600	0.363	0.000	0.463	0.000	0.000	0.000

Problem 499	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	33	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.087	1.958	0.360	0.000	0.476	0.000	0.000	0.000

Problem 500	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	35	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.332	1.810	0.358	0.000	0.000	0.000	0.000	0.000

Problem 501	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	35	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.310	2.067	0.353	0.000	0.000	0.000	0.000	0.000

Problem 502	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	35	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.324	1.846	0.360	0.000	0.000	0.000	0.000	0.000

Problem 503	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	35	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.112	7.778	0.365	0.000	0.000	0.000	0.000	0.000

Problem 504	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	35	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.117	4.129	0.361	0.000	0.000	0.000	0.000	0.000

Problem 505	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	35	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.120	1.024	0.362	0.000	0.000	0.000	0.000	0.000

Problem 506	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	99	99	86	0	0	0	0	0	-1
normalized size	1	1.00	0.87	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.106	0.116	0.403	0.000	0.486	0.000	0.000	0.000

Problem 507	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.057	0.424	0.360	0.000	0.507	0.000	0.000	0.000

Problem 508	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-2)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.055	2.733	0.364	0.000	0.434	0.000	0.000	0.000

Problem 509	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	33	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.111	9.719	0.363	0.000	0.492	0.000	0.000	0.000

Problem 510	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-2)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	33	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.090	0.083	0.359	0.000	0.457	0.000	0.000	0.000

Problem 511	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	33	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.097	4.153	0.359	0.000	0.476	0.000	0.000	0.000

Problem 512	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-2)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	33	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.114	3.977	0.351	0.000	0.531	0.000	0.000	0.000

Problem 513	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-2)	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.055	0.653	0.493	0.000	0.467	0.000	0.000	0.000

Problem 514	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	432	432	326	0	0	0	0	0	-1
normalized size	1	1.00	0.75	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.957	1.075	0.328	0.000	0.489	0.000	0.000	0.000

Problem 515	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	281	281	227	0	0	0	0	0	-1
normalized size	1	1.00	0.81	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.529	0.361	0.142	0.000	0.484	0.000	0.000	0.000

Problem 516	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	131	131	131	0	0	80	0	0	-1
normalized size	1	1.00	1.00	0.00	0.00	0.61	0.00	0.00	-0.01
time (sec)	N/A	0.151	0.133	0.112	0.000	0.468	0.000	0.000	0.000

Problem 517	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-2)	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.062	0.358	0.349	0.000	0.523	0.000	0.000	0.000

Problem 518	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	249	249	190	0	0	0	0	0	-1
normalized size	1	1.00	0.76	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.504	0.149	0.351	0.000	0.446	0.000	0.000	0.000

Problem 519	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	335	335	284	0	0	0	0	0	-1
normalized size	1	1.00	0.85	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.832	0.234	0.387	0.000	0.450	0.000	0.000	0.000

Problem 520	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	F	F	F	F	F	F	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	515	515	0	0	0	0	0	0	-1
normalized size	1	1.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.201	3.793	0.363	0.000	0.449	0.000	0.000	0.000

Problem 521	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	287	287	316	0	0	0	0	0	-1
normalized size	1	1.00	1.10	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.059	0.031	0.536	0.000	0.474	0.000	0.000	0.000

Problem 522	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	519	519	1083	0	0	0	0	0	-1
normalized size	1	1.00	2.09	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.411	4.635	0.538	0.000	0.439	0.000	0.000	0.000

Problem 523	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	427	427	386	0	0	0	0	0	-1
normalized size	1	1.00	0.90	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.817	0.713	0.513	0.000	0.466	0.000	0.000	0.000

Problem 524	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	258	258	231	0	0	0	0	0	-1
normalized size	1	1.00	0.90	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.545	0.311	0.523	0.000	0.464	0.000	0.000	0.000

Problem 525	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	129	129	120	0	0	0	0	0	-1
normalized size	1	1.00	0.93	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.332	0.124	0.357	0.000	0.455	0.000	0.000	0.000

Problem 526	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	68	68	67	0	0	0	0	0	-1
normalized size	1	1.00	0.99	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.112	0.007	0.039	0.000	0.443	0.000	0.000	0.000

Problem 527	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	165	165	117	0	0	0	0	0	-1
normalized size	1	1.00	0.71	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.468	0.073	0.573	0.000	0.440	0.000	0.000	0.000

Problem 528	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	268	268	225	0	0	0	0	0	-1
normalized size	1	1.00	0.84	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.595	0.252	0.532	0.000	0.473	0.000	0.000	0.000

Problem 529	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	425	425	363	0	0	0	0	0	-1
normalized size	1	1.00	0.85	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.835	0.482	0.525	0.000	0.459	0.000	0.000	0.000

Problem 530	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	519	519	927	0	0	0	0	0	-1
normalized size	1	1.00	1.79	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.344	0.746	0.521	0.000	0.451	0.000	0.000	0.000

Problem 531	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	240	240	852	0	0	0	0	0	-1
normalized size	1	1.00	3.55	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.647	0.390	0.367	0.000	0.449	0.000	0.000	0.000

Problem 532	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	123	123	313	0	0	0	0	0	-1
normalized size	1	1.00	2.54	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.275	0.304	0.039	0.000	0.491	0.000	0.000	0.000

Problem 533	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	288	288	652	0	0	0	0	0	-1
normalized size	1	1.00	2.26	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.899	0.395	0.548	0.000	0.481	0.000	0.000	0.000

Problem 534	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	463	463	654	0	0	0	0	0	-1
normalized size	1	1.00	1.41	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.183	0.958	0.528	0.000	0.436	0.000	0.000	0.000

Problem 535	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	742	742	4056	0	0	0	0	0	-1
normalized size	1	1.00	5.47	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.831	1.607	0.505	0.000	0.482	0.000	0.000	0.000

Problem 536	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	349	349	1769	0	0	0	0	0	-1
normalized size	1	1.00	5.07	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.893	0.786	0.365	0.000	1.168	0.000	0.000	0.000

Problem 537	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	177	177	646	0	0	0	0	0	-1
normalized size	1	1.00	3.65	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.427	0.258	0.040	0.000	0.454	0.000	0.000	0.000

Problem 538	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	410	410	1350	0	0	0	0	0	-1
normalized size	1	1.00	3.29	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.258	0.560	0.545	0.000	0.483	0.000	0.000	0.000

Problem 539	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	659	659	1057	0	0	0	0	0	-1
normalized size	1	1.00	1.60	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.716	1.687	0.541	0.000	0.460	0.000	0.000	0.000

Problem 540	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	36	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.260	0.341	0.356	0.000	0.446	0.000	0.000	0.000

Problem 541	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.071	0.031	0.042	0.000	0.471	0.000	0.000	0.000

Problem 542	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	38	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.302	1.066	0.540	0.000	0.444	0.000	0.000	0.000

Problem 543	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	38	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.341	4.268	0.552	0.000	0.488	0.000	0.000	0.000

Problem 544	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	36	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.299	3.074	0.368	0.000	0.487	0.000	0.000	0.000

Problem 545	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.067	0.184	0.043	0.000	0.481	0.000	0.000	0.000

Problem 546	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	38	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.294	30.399	0.530	0.000	0.492	0.000	0.000	0.000

Problem 547	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	38	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.335	42.963	0.549	0.000	0.518	0.000	0.000	0.000

2.3 Detailed conclusion table specific for Rubi results

The following table is specific to Rubi. It gives additional statistics for each integral. the column **steps** is the number of steps used by Rubi to obtain the antiderivative. The **rules** column is the number of unique rules used. The **integrand size** column is the leaf size of the integrand. Finally the ratio $\frac{\text{number of rules}}{\text{integrand size}}$ is given. The larger this ratio is, the harder the integral was to solve. In this test, problem number [397] had the largest ratio of [1.000]

Table 2.1: Rubi specific breakdown of results for each integral

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1	A	5	3	1.00	10	0.300
2	A	4	3	1.00	10	0.300
3	A	3	3	1.00	10	0.300
4	A	2	2	1.00	8	0.250
5	A	2	2	1.00	10	0.200
6	A	3	3	1.00	10	0.300
7	A	4	3	1.00	10	0.300
8	A	5	3	1.00	10	0.300
9	A	7	5	1.00	12	0.417
10	A	6	5	1.00	12	0.417
11	A	5	5	1.00	12	0.417
12	A	4	4	1.00	12	0.333
13	A	5	5	1.00	12	0.417

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	number of rules / integrand leaf size
14	A	6	5	1.00	12	0.417
15	A	7	5	1.00	12	0.417
16	A	3	3	1.00	10	0.300
17	A	6	3	1.00	16	0.188
18	A	5	3	1.00	16	0.188
19	A	4	3	1.00	16	0.188
20	A	3	2	1.00	14	0.143
21	A	3	3	1.00	16	0.188
22	A	4	4	1.00	16	0.250
23	A	5	4	1.00	16	0.250
24	A	7	5	1.00	18	0.278
25	A	6	5	1.00	18	0.278
26	A	5	5	1.00	18	0.278
27	A	4	4	1.00	18	0.222
28	A	5	5	1.00	18	0.278
29	A	6	5	1.00	18	0.278
30	A	7	5	1.00	18	0.278
31	A	3	3	1.00	16	0.188
32	A	3	3	1.00	18	0.167
33	A	3	3	1.00	22	0.136
34	A	4	4	1.00	25	0.160
35	A	3	2	1.00	22	0.091
36	A	3	2	1.00	22	0.091
37	A	3	2	1.00	22	0.091
38	A	3	2	1.00	20	0.100
39	A	3	2	1.00	14	0.143
40	A	3	3	1.00	22	0.136
41	A	4	3	1.00	22	0.136
42	A	3	2	1.00	22	0.091
43	A	3	2	1.00	22	0.091
44	A	6	6	0.82	24	0.250
45	A	8	7	0.85	24	0.292
46	A	9	7	1.00	22	0.318
47	A	4	3	1.00	16	0.188
48	A	4	4	1.00	24	0.167
49	A	4	4	1.00	24	0.167

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
50	A	9	9	1.15	24	0.375
51	A	13	11	1.09	24	0.458
52	A	19	7	1.00	24	0.292
53	A	15	7	1.00	24	0.292
54	A	11	7	1.00	22	0.318
55	A	5	3	1.00	16	0.188
56	A	5	5	1.00	24	0.208
57	A	5	5	1.00	24	0.208
58	A	12	11	1.08	24	0.458
59	A	21	15	0.93	24	0.625
60	A	13	7	1.00	22	0.318
61	A	6	3	1.00	16	0.188
62	A	6	5	1.00	24	0.208
63	A	6	6	1.00	24	0.250
64	A	2	2	1.00	6	0.333
65	A	3	3	1.00	8	0.375
66	A	4	3	1.00	8	0.375
67	A	3	3	1.00	9	0.333
68	A	4	4	1.00	11	0.364
69	A	5	4	1.00	11	0.364
70	A	2	2	1.00	10	0.200
71	A	2	2	1.00	27	0.074
72	A	2	2	1.00	18	0.111
73	A	2	2	1.00	10	0.200
74	A	2	2	1.00	10	0.200
75	A	1	1	1.00	10	0.100
76	A	1	1	1.00	8	0.125
77	A	2	2	1.00	10	0.200
78	A	2	2	1.00	10	0.200
79	A	2	2	1.00	14	0.143
80	A	2	2	1.00	14	0.143
81	A	2	2	1.00	14	0.143
82	A	1	1	1.00	12	0.083
83	A	2	2	1.00	14	0.143
84	A	2	2	1.00	14	0.143
85	A	7	7	0.83	16	0.438

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
86	A	13	11	1.09	16	0.688
87	A	14	7	1.00	16	0.438
88	A	14	6	1.00	24	0.250
89	A	11	6	1.00	24	0.250
90	A	8	6	1.00	22	0.273
91	A	3	3	1.00	16	0.188
92	A	0	0	0.00	0	0.000
93	A	0	0	0.00	0	0.000
94	A	26	7	1.00	24	0.292
95	A	20	7	1.00	24	0.292
96	A	12	7	1.00	22	0.318
97	A	4	4	1.00	16	0.250
98	A	0	0	0.00	0	0.000
99	A	0	0	0.00	0	0.000
100	A	33	7	1.00	24	0.292
101	A	17	8	1.00	22	0.364
102	A	5	4	1.00	16	0.250
103	A	0	0	0.00	0	0.000
104	A	0	0	0.00	0	0.000
105	A	17	9	1.00	26	0.346
106	A	12	9	1.00	24	0.375
107	A	5	5	1.00	18	0.278
108	A	0	0	0.00	0	0.000
109	A	0	0	0.00	0	0.000
110	A	0	0	0.00	0	0.000
111	A	20	9	1.00	26	0.346
112	A	14	9	1.00	24	0.375
113	A	6	5	1.00	18	0.278
114	A	0	0	0.00	0	0.000
115	A	0	0	0.00	0	0.000
116	A	0	0	0.00	0	0.000
117	A	23	9	1.00	26	0.346
118	A	16	9	1.00	24	0.375
119	A	7	5	1.00	18	0.278
120	A	0	0	0.00	0	0.000
121	A	0	0	0.00	0	0.000

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
122	A	0	0	0.00	0	0.000
123	A	18	7	1.00	26	0.269
124	A	14	7	1.00	26	0.269
125	A	10	7	1.00	24	0.292
126	A	4	4	1.00	18	0.222
127	A	0	0	0.00	0	0.000
128	A	33	8	1.00	26	0.308
129	A	25	8	1.00	26	0.308
130	A	15	8	1.00	24	0.333
131	A	5	5	1.00	18	0.278
132	A	0	0	0.00	0	0.000
133	A	59	8	1.00	26	0.308
134	A	41	8	1.00	26	0.308
135	A	21	9	1.00	24	0.375
136	A	6	5	1.00	18	0.278
137	A	0	0	0.00	0	0.000
138	A	6	4	1.00	24	0.167
139	A	5	4	1.00	24	0.167
140	A	4	4	1.00	24	0.167
141	A	3	3	1.00	24	0.125
142	A	4	4	1.00	24	0.167
143	A	5	4	1.00	24	0.167
144	A	6	4	1.00	24	0.167
145	A	28	15	1.00	26	0.577
146	A	21	15	1.00	26	0.577
147	A	15	15	1.00	26	0.577
148	A	10	12	1.00	26	0.462
149	A	14	14	1.00	26	0.538
150	A	19	15	1.00	26	0.577
151	A	25	15	1.00	26	0.577
152	A	0	0	0.00	0	0.000
153	A	0	0	0.00	0	0.000
154	A	0	0	0.00	0	0.000
155	A	0	0	0.00	0	0.000
156	A	0	0	0.00	0	0.000
157	A	0	0	0.00	0	0.000

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
158	A	0	0	0.00	0	0.000
159	A	0	0	0.00	0	0.000
160	A	0	0	0.00	0	0.000
161	A	0	0	0.00	0	0.000
162	A	2	2	1.00	22	0.091
163	A	0	0	0.00	0	0.000
164	A	0	0	0.00	0	0.000
165	A	0	0	0.00	0	0.000
166	A	0	0	0.00	0	0.000
167	A	0	0	0.00	0	0.000
168	A	0	0	0.00	0	0.000
169	A	0	0	0.00	0	0.000
170	A	14	6	1.00	24	0.250
171	A	11	6	1.00	24	0.250
172	A	8	6	1.00	22	0.273
173	A	3	3	1.00	16	0.188
174	A	0	0	0.00	0	0.000
175	A	6	5	0.83	30	0.167
176	A	8	6	0.84	30	0.200
177	A	7	6	0.85	30	0.200
178	A	6	5	1.00	28	0.179
179	A	3	3	1.00	23	0.130
180	A	6	6	1.33	30	0.200
181	A	9	9	1.20	30	0.300
182	A	13	11	1.13	30	0.367
183	A	30	15	1.16	32	0.469
184	A	24	15	0.99	32	0.469
185	A	16	10	1.00	32	0.312
186	A	8	7	1.00	30	0.233
187	A	4	4	1.00	25	0.160
188	A	8	8	1.18	32	0.250
189	A	12	11	1.10	32	0.344
190	A	21	15	0.93	32	0.469
191	A	14	8	1.00	32	0.250
192	A	12	8	1.00	32	0.250
193	A	10	8	1.00	32	0.250

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
194	A	8	7	1.00	30	0.233
195	A	4	4	1.00	25	0.160
196	A	0	0	0.00	0	0.000
197	A	0	0	0.00	0	0.000
198	A	27	14	1.00	31	0.452
199	A	20	14	1.00	31	0.452
200	A	14	14	1.00	31	0.452
201	A	9	11	1.00	31	0.355
202	A	13	13	1.00	31	0.419
203	A	18	14	1.00	31	0.452
204	A	20	14	1.00	23	0.609
205	A	14	14	1.00	23	0.609
206	A	9	11	1.00	23	0.478
207	A	13	13	1.00	23	0.565
208	A	18	14	1.00	23	0.609
209	A	0	0	0.00	0	0.000
210	A	12	8	1.00	32	0.250
211	A	10	8	1.00	32	0.250
212	A	8	7	1.00	30	0.233
213	A	4	4	1.00	25	0.160
214	A	0	0	0.00	0	0.000
215	A	0	0	0.00	0	0.000
216	A	0	0	0.00	0	0.000
217	A	14	8	1.00	29	0.276
218	A	11	8	1.00	29	0.276
219	A	8	6	1.00	27	0.222
220	A	3	3	1.00	22	0.136
221	A	8	4	1.00	29	0.138
222	A	12	7	1.00	29	0.241
223	A	15	8	1.00	29	0.276
224	A	19	12	1.00	31	0.387
225	A	10	8	1.00	29	0.276
226	A	4	4	1.00	24	0.167
227	A	10	5	1.00	31	0.161
228	A	14	9	1.00	31	0.290
229	A	23	13	1.00	31	0.419

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
230	A	12	9	1.00	29	0.310
231	A	5	5	1.00	24	0.208
232	A	12	6	1.00	31	0.194
233	A	17	7	1.00	31	0.226
234	A	0	0	0.00	0	0.000
235	A	0	0	0.00	0	0.000
236	A	0	0	0.00	0	0.000
237	A	0	0	0.00	0	0.000
238	A	0	0	0.00	0	0.000
239	A	0	0	0.00	0	0.000
240	A	0	0	0.00	0	0.000
241	A	0	0	0.00	0	0.000
242	A	14	8	1.00	25	0.320
243	A	11	8	1.00	25	0.320
244	A	8	7	1.00	23	0.304
245	A	3	3	1.00	22	0.136
246	A	7	8	1.00	25	0.320
247	A	11	10	1.00	25	0.400
248	A	14	10	1.00	25	0.400
249	A	15	10	1.00	25	0.400
250	A	12	10	1.00	25	0.400
251	A	9	8	1.00	23	0.348
252	A	4	3	1.00	22	0.136
253	A	11	9	1.00	25	0.360
254	A	15	10	1.00	25	0.400
255	A	18	10	1.00	25	0.400
256	A	16	8	1.00	27	0.296
257	A	13	8	1.00	27	0.296
258	A	8	5	1.00	25	0.200
259	A	12	10	1.00	27	0.370
260	A	15	9	1.00	27	0.333
261	A	16	11	1.00	27	0.407
262	A	13	9	1.00	27	0.333
263	A	8	4	1.00	24	0.167
264	A	14	11	1.00	27	0.407
265	A	17	12	1.00	27	0.444

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
266	A	19	13	1.00	27	0.482
267	A	16	12	1.00	27	0.444
268	A	6	6	1.00	25	0.240
269	A	18	13	1.00	27	0.482
270	A	21	14	1.00	27	0.518
271	A	31	13	1.00	27	0.482
272	A	28	10	1.00	27	0.370
273	A	18	7	1.00	24	0.292
274	A	32	12	1.00	27	0.444
275	A	10	8	1.00	26	0.308
276	A	11	9	1.00	26	0.346
277	A	9	7	1.00	34	0.206
278	A	11	9	1.00	34	0.265
279	A	2	2	1.00	26	0.077
280	A	4	4	1.00	25	0.160
281	A	4	4	1.00	30	0.133
282	A	4	4	1.00	29	0.138
283	A	16	8	1.00	19	0.421
284	A	11	5	1.00	19	0.263
285	A	15	10	1.00	19	0.526
286	A	18	9	1.00	19	0.474
287	A	16	13	1.00	19	0.684
288	A	15	14	1.00	19	0.737
289	A	11	10	1.00	17	0.588
290	A	11	4	1.00	16	0.250
291	A	17	14	1.00	19	0.737
292	A	16	14	1.00	19	0.737
293	A	23	8	1.00	19	0.421
294	A	18	5	1.00	19	0.263
295	A	22	10	1.00	19	0.526
296	A	23	10	1.00	19	0.526
297	A	18	7	1.00	17	0.412
298	A	23	10	1.00	19	0.526
299	A	22	14	1.00	19	0.737
300	A	18	11	1.00	19	0.579
301	A	18	4	1.00	16	0.250

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	number of rules / integrand leaf size
302	A	24	16	1.00	19	0.842
303	A	4	3	1.00	23	0.130
304	A	4	3	1.00	27	0.111
305	A	4	3	1.00	27	0.111
306	A	4	4	1.00	27	0.148
307	A	5	4	1.00	27	0.148
308	A	4	3	1.00	27	0.111
309	A	12	6	1.00	16	0.375
310	A	28	19	0.90	29	0.655
311	A	21	12	1.00	29	0.414
312	A	10	5	1.00	27	0.185
313	A	16	5	1.00	29	0.172
314	A	25	14	1.04	29	0.483
315	A	23	16	0.92	29	0.552
316	A	16	9	1.00	29	0.310
317	A	10	5	1.00	26	0.192
318	A	15	9	1.00	29	0.310
319	A	28	20	1.03	29	0.690
320	A	34	18	1.00	29	0.621
321	A	25	12	1.00	29	0.414
322	A	13	7	1.00	27	0.259
323	A	29	12	1.00	29	0.414
324	A	38	19	1.02	29	0.655
325	A	36	13	1.00	29	0.448
326	A	32	10	1.00	29	0.345
327	A	20	9	1.00	26	0.346
328	A	35	11	1.00	29	0.379
329	A	12	6	1.00	22	0.273
330	A	10	5	1.00	22	0.227
331	A	8	4	1.00	20	0.200
332	A	0	0	0.00	0	0.000
333	A	4	4	1.00	32	0.125
334	A	5	5	1.00	36	0.139
335	A	4	4	1.00	38	0.105
336	A	5	5	1.00	38	0.132
337	A	2	2	1.00	26	0.077

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	number of rules / integrand leaf size
338	A	4	4	1.00	27	0.148
339	A	1	1	1.00	38	0.026
340	A	2	2	1.00	39	0.051
341	A	1	1	1.00	34	0.029
342	A	3	3	1.00	35	0.086
343	A	13	7	1.00	24	0.292
344	A	11	6	1.00	24	0.250
345	A	8	9	1.00	22	0.409
346	A	0	0	0.00	0	0.000
347	A	12	6	1.00	25	0.240
348	A	10	5	1.00	25	0.200
349	A	8	4	1.00	23	0.174
350	A	0	0	0.00	0	0.000
351	A	10	5	1.00	18	0.278
352	A	9	4	1.00	18	0.222
353	A	6	3	1.00	16	0.188
354	A	6	3	1.00	15	0.200
355	A	9	4	1.00	18	0.222
356	A	10	5	1.00	18	0.278
357	A	11	5	1.00	18	0.278
358	A	11	7	1.00	24	0.292
359	A	10	7	1.00	24	0.292
360	A	9	7	1.00	22	0.318
361	A	8	6	1.00	21	0.286
362	A	4	4	1.00	24	0.167
363	A	8	8	1.18	24	0.333
364	A	9	7	1.12	24	0.292
365	A	10	7	1.10	24	0.292
366	A	11	7	1.08	24	0.292
367	A	50	22	1.28	26	0.846
368	A	38	16	1.00	24	0.667
369	A	17	12	1.00	23	0.522
370	F	0	0	N/A	0	N/A
371	F	0	0	N/A	0	N/A
372	F	0	0	N/A	0	N/A
373	A	28	13	1.00	23	0.565

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	number of rules / integrand leaf size
374	F	0	0	N/A	0	N/A
375	A	0	0	0.00	0	0.000
376	A	0	0	0.00	0	0.000
377	A	0	0	0.00	0	0.000
378	A	1	1	1.00	16	0.062
379	A	13	7	1.00	32	0.219
380	A	13	7	1.05	30	0.233
381	A	11	5	1.18	29	0.172
382	A	11	6	1.39	32	0.188
383	A	11	6	1.76	32	0.188
384	A	17	9	1.70	32	0.281
385	A	25	11	1.56	32	0.344
386	A	35	9	1.00	32	0.281
387	A	29	9	1.00	32	0.281
388	A	23	9	1.00	30	0.300
389	A	17	8	1.00	29	0.276
390	A	13	5	1.00	32	0.156
391	A	15	9	1.00	32	0.281
392	A	23	11	1.00	32	0.344
393	A	73	27	0.97	32	0.844
394	A	41	19	1.00	31	0.613
395	A	0	0	0.00	0	0.000
396	A	0	0	0.00	0	0.000
397	A	148	32	1.00	32	1.000
398	A	64	22	1.00	31	0.710
399	A	0	0	0.00	0	0.000
400	A	0	0	0.00	0	0.000
401	A	3	3	1.00	40	0.075
402	A	4	4	1.00	28	0.143
403	A	4	4	1.00	32	0.125
404	A	7	4	1.00	20	0.200
405	A	6	4	1.00	20	0.200
406	A	5	4	1.00	20	0.200
407	A	4	3	1.00	18	0.167
408	A	4	4	1.00	20	0.200
409	A	5	5	1.00	20	0.250

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
410	A	6	5	1.00	20	0.250
411	A	8	6	1.00	22	0.273
412	A	7	6	1.00	22	0.273
413	A	6	6	1.00	22	0.273
414	A	5	5	1.00	22	0.227
415	A	6	6	1.00	22	0.273
416	A	7	6	1.00	22	0.273
417	A	8	6	1.00	22	0.273
418	A	4	4	1.00	20	0.200
419	A	4	4	1.00	24	0.167
420	A	4	3	1.00	26	0.115
421	A	4	3	1.00	26	0.115
422	A	4	3	1.00	24	0.125
423	A	4	3	1.00	18	0.167
424	A	4	4	1.00	26	0.154
425	A	5	4	1.00	26	0.154
426	A	4	3	1.00	26	0.115
427	A	4	3	1.00	26	0.115
428	A	7	7	0.79	28	0.250
429	A	9	8	0.82	28	0.286
430	A	10	8	1.00	26	0.308
431	A	5	4	1.00	20	0.200
432	A	5	5	1.00	28	0.179
433	A	5	5	1.00	28	0.179
434	A	10	10	1.16	28	0.357
435	A	16	8	1.00	28	0.286
436	A	12	8	1.00	26	0.308
437	A	6	4	1.00	20	0.200
438	A	6	6	1.00	28	0.214
439	A	6	6	1.00	28	0.214
440	A	13	12	1.09	28	0.429
441	A	7	4	1.00	20	0.200
442	A	7	6	1.00	28	0.214
443	A	7	7	1.00	28	0.250
444	A	3	3	1.00	14	0.214
445	A	12	7	1.00	28	0.250

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	number of rules / integrand leaf size
446	A	9	7	1.00	26	0.269
447	A	4	4	1.00	20	0.200
448	A	0	0	0.00	0	0.000
449	A	0	0	0.00	0	0.000
450	A	21	8	1.00	28	0.286
451	A	13	8	1.00	26	0.308
452	A	5	5	1.00	20	0.250
453	A	0	0	0.00	0	0.000
454	A	0	0	0.00	0	0.000
455	A	34	8	1.00	28	0.286
456	A	18	9	1.00	26	0.346
457	A	6	5	1.00	20	0.250
458	A	0	0	0.00	0	0.000
459	A	0	0	0.00	0	0.000
460	A	18	10	1.00	30	0.333
461	A	13	10	1.00	28	0.357
462	A	6	6	1.00	22	0.273
463	A	0	0	0.00	0	0.000
464	A	0	0	0.00	0	0.000
465	A	21	10	1.00	30	0.333
466	A	15	10	1.00	28	0.357
467	A	7	6	1.00	22	0.273
468	A	0	0	0.00	0	0.000
469	A	0	0	0.00	0	0.000
470	A	15	8	1.00	30	0.267
471	A	11	8	1.00	28	0.286
472	A	5	5	1.00	22	0.227
473	A	0	0	0.00	0	0.000
474	A	26	9	1.00	30	0.300
475	A	16	9	1.00	28	0.321
476	A	6	6	1.00	22	0.273
477	A	0	0	0.00	0	0.000
478	A	42	9	1.00	30	0.300
479	A	22	10	1.00	28	0.357
480	A	7	6	1.00	22	0.273
481	A	0	0	0.00	0	0.000

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	number of rules / integrand leaf size
482	A	7	5	1.00	28	0.179
483	A	6	5	1.00	28	0.179
484	A	5	5	1.00	28	0.179
485	A	4	4	1.00	28	0.143
486	A	5	5	1.00	28	0.179
487	A	6	5	1.00	28	0.179
488	A	7	5	1.00	28	0.179
489	A	29	16	1.00	30	0.533
490	A	22	16	1.00	30	0.533
491	A	16	16	1.00	30	0.533
492	A	11	13	1.00	30	0.433
493	A	15	15	1.00	30	0.500
494	A	20	16	1.00	30	0.533
495	A	26	16	1.00	30	0.533
496	A	0	0	0.00	0	0.000
497	A	0	0	0.00	0	0.000
498	A	0	0	0.00	0	0.000
499	A	0	0	0.00	0	0.000
500	A	0	0	0.00	0	0.000
501	A	0	0	0.00	0	0.000
502	A	0	0	0.00	0	0.000
503	A	0	0	0.00	0	0.000
504	A	0	0	0.00	0	0.000
505	A	0	0	0.00	0	0.000
506	A	3	3	1.00	26	0.115
507	A	0	0	0.00	0	0.000
508	A	0	0	0.00	0	0.000
509	A	0	0	0.00	0	0.000
510	A	0	0	0.00	0	0.000
511	A	0	0	0.00	0	0.000
512	A	0	0	0.00	0	0.000
513	A	0	0	0.00	0	0.000
514	A	12	7	1.00	28	0.250
515	A	9	7	1.00	26	0.269
516	A	4	4	1.00	20	0.200
517	A	0	0	0.00	0	0.000

Continued on next page

Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
518	A	9	5	1.00	28	0.179
519	A	11	9	1.00	30	0.300
520	A	12	10	1.00	30	0.333
521	A	10	8	1.00	38	0.210
522	A	12	10	1.00	38	0.263
523	A	15	9	1.00	33	0.273
524	A	12	9	1.00	33	0.273
525	A	9	7	1.00	31	0.226
526	A	4	4	1.00	26	0.154
527	A	9	5	1.00	33	0.152
528	A	13	8	1.00	33	0.242
529	A	16	9	1.00	33	0.273
530	A	20	13	1.00	35	0.371
531	A	11	9	1.00	33	0.273
532	A	5	5	1.00	28	0.179
533	A	11	6	1.00	35	0.171
534	A	15	10	1.00	35	0.286
535	A	24	14	1.00	35	0.400
536	A	13	10	1.00	33	0.303
537	A	6	6	1.00	28	0.214
538	A	13	7	1.00	35	0.200
539	A	18	8	1.00	35	0.229
540	A	0	0	0.00	0	0.000
541	A	0	0	0.00	0	0.000
542	A	0	0	0.00	0	0.000
543	A	0	0	0.00	0	0.000
544	A	0	0	0.00	0	0.000
545	A	0	0	0.00	0	0.000
546	A	0	0	0.00	0	0.000
547	A	0	0	0.00	0	0.000

Chapter 3

Listing of integrals

3.1 $\int \log^4(c(d+ex))\,dx$

Optimal. Leaf size=81

$$\frac{(d+ex)\log^4(c(d+ex))}{e}-\frac{4(d+ex)\log^3(c(d+ex))}{e}+\frac{12(d+ex)\log^2(c(d+ex))}{e}-\frac{24(d+ex)\log(c(d+ex))}{e}+24$$

```
[Out] 24*x-24*(e*x+d)*ln(c*(e*x+d))/e+12*(e*x+d)*ln(c*(e*x+d))^2/e-4*(e*x+d)*ln(c
*(e*x+d))^3/e+(e*x+d)*ln(c*(e*x+d))^4/e
```

Rubi [A] time = 0.04, antiderivative size = 81, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}} = 0.300$, Rules used = {2389, 2296, 2295}

$$\frac{(d+ex)\log^4(c(d+ex))}{e}-\frac{4(d+ex)\log^3(c(d+ex))}{e}+\frac{12(d+ex)\log^2(c(d+ex))}{e}-\frac{24(d+ex)\log(c(d+ex))}{e}+24$$

Antiderivative was successfully verified.

```
[In] Int[Log[c*(d + e*x)]^4,x]
```

```
[Out] 24*x - (24*(d + e*x)*Log[c*(d + e*x)])/e + (12*(d + e*x)*Log[c*(d + e*x)]^2
)/e - (4*(d + e*x)*Log[c*(d + e*x)]^3)/e + ((d + e*x)*Log[c*(d + e*x)]^4)/e
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rubi steps

$$\int \log^4(c(d+ex))\,dx = \frac{\text{Subst}\left(\int \log^4(cx)\,dx, x, d+ex\right)}{e}$$
$$= \frac{(d+ex)\log^4(c(d+ex))}{e} - \frac{4\,\text{Subst}\left(\int \log^3(cx)\,dx, x, d+ex\right)}{e}$$
$$= -\frac{4(d+ex)\log^3(c(d+ex))}{e} + \frac{(d+ex)\log^4(c(d+ex))}{e} + \frac{12\,\text{Subst}\left(\int \log^2(cx)\,dx, x, d+ex\right.}{e}$$
$$= \frac{12(d+ex)\log^2(c(d+ex))}{e} - \frac{4(d+ex)\log^3(c(d+ex))}{e} + \frac{(d+ex)\log^4(c(d+ex))}{e} - \frac{24\,\text{Su}}{}$$
$$= 24x - \frac{24(d+ex)\log(c(d+ex))}{e} + \frac{12(d+ex)\log^2(c(d+ex))}{e} - \frac{4(d+ex)\log^3(c(d+ex))}{e}$$

Mathematica [A] time = 0.01, size = 74, normalized size = 0.91

$$\frac{(d+ex)\log^4(c(d+ex)) - 4(d+ex)\log^3(c(d+ex)) + 12(d+ex)\log^2(c(d+ex)) - 24(d+ex)\log(c(d+ex)) + 24e}{e}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(d + e*x)]^4,x]
```

```
[Out] (24*e*x - 24*(d + e*x)*Log[c*(d + e*x)] + 12*(d + e*x)*Log[c*(d + e*x)]^2 -
 4*(d + e*x)*Log[c*(d + e*x)]^3 + (d + e*x)*Log[c*(d + e*x)]^4)/e
```

fricas [A] time = 0.59, size = 78, normalized size = 0.96

$$\frac{(ex+d)\log(cex+cd)^4 - 4(ex+d)\log(cex+cd)^3 + 12(ex+d)\log(cex+cd)^2 + 24ex - 24(ex+d)\log(cex+c}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(e*x+d))^4,x, algorithm="fricas")
```

```
[Out] ((e*x + d)*log(c*e*x + c*d)^4 - 4*(e*x + d)*log(c*e*x + c*d)^3 + 12*(e*x +
d)*log(c*e*x + c*d)^2 + 24*e*x - 24*(e*x + d)*log(c*e*x + c*d))/e
```

giac [A] time = 0.21, size = 92, normalized size = 1.14

$$(xe+d)e^{(-1)}\log((xe+d)c)^4 - 4(xe+d)e^{(-1)}\log((xe+d)c)^3 + 12(xe+d)e^{(-1)}\log((xe+d)c)^2 - 24(xe+d)e^{(-1)}\log$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(e*x+d))^4,x, algorithm="giac")
```

```
[Out] (x*e + d)*e^(-1)*log((x*e + d)*c)^4 - 4*(x*e + d)*e^(-1)*log((x*e + d)*c)^3
 + 12*(x*e + d)*e^(-1)*log((x*e + d)*c)^2 - 24*(x*e + d)*e^(-1)*log((x*e +
d)*c) + 24*(x*e + d)*e^(-1)
```

maple [A] time = 0.04, size = 129, normalized size = 1.59

$$x\ln(cex+cd)^4 + \frac{d\ln(cex+cd)^4}{e} - 4x\ln(cex+cd)^3 - \frac{4d\ln(cex+cd)^3}{e} + 12x\ln(cex+cd)^2 + \frac{12d\ln(cex+cd)^2}{e} - 24x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln((e*x+d)*c)^4,x)
```

```
[Out] ln(c*e*x+c*d)^4*x+1/e*ln(c*e*x+c*d)^4*d-4*ln(c*e*x+c*d)^3*x-4/e*ln(c*e*x+c*
d)^3*d+12*ln(c*e*x+c*d)^2*x+12/e*ln(c*e*x+c*d)^2*d-24*ln(c*e*x+c*d)*x-24/e*
ln(c*e*x+c*d)*d+24*x+24*d/e
```

maxima [B] time = 0.83, size = 188, normalized size = 2.32

$$-4\,e\left(\frac{x}{e}-\frac{d\log\left(ex+d\right)}{e^2}\right)\log\left((ex+d)c\right)^3+x\log\left((ex+d)c\right)^4+\left(e\left(\frac{4\left(d\log\left(ex+d\right)^3+3\,d\log\left(ex+d\right)^2-6\,ex+\right.}{e^3}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(e*x+d))^4,x, algorithm="maxima")
```

```
[Out] -4*e*(x/e - d*log(e*x + d)/e^2)*log((e*x + d)*c)^3 + x*log((e*x + d)*c)^4 +
 (e*(4*(d*log(e*x + d)^3 + 3*d*log(e*x + d)^2 - 6*e*x + 6*d*log(e*x + d))*l
og((e*x + d)*c)/e^3 - (d*log(e*x + d)^4 + 4*d*log(e*x + d)^3 + 12*d*log(e*x
 + d)^2 - 24*e*x + 24*d*log(e*x + d))/e^3) - 6*(d*log(e*x + d)^2 - 2*e*x +
2*d*log(e*x + d))*log((e*x + d)*c)^2/e^2)*e
```

mupad [B] time = 0.36, size = 119, normalized size = 1.47

$$24\,x-24\,x\,\ln\left(c\,d+c\,e\,x\right)+12\,x\ln\left(c\,d+c\,e\,x\right)^2-4\,x\ln\left(c\,d+c\,e\,x\right)^3+x\ln\left(c\,d+c\,e\,x\right)^4+\frac{12\,d\ln\left(c\,d+c\,e\,x\right)^2}{e}-\frac{4\,d\,\mathrm{l}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(c*(d + e*x))^4,x)
```

```
[Out] 24*x - 24*x*log(c*d + c*e*x) + 12*x*log(c*d + c*e*x)^2 - 4*x*log(c*d + c*e*
x)^3 + x*log(c*d + c*e*x)^4 + (12*d*log(c*d + c*e*x)^2)/e - (4*d*log(c*d +
c*e*x)^3)/e + (d*log(c*d + c*e*x)^4)/e - (24*d*log(d + e*x))/e
```

sympy [A] time = 0.48, size = 88, normalized size = 1.09

$$24e\left(-\frac{d\log\left(d+ex\right)}{e^2}+\frac{x}{e}\right)-24x\log\left(c\left(d+ex\right)\right)+\frac{\left(-4d-4ex\right)\log\left(c\left(d+ex\right)\right)^3}{e}+\frac{\left(d+ex\right)\log\left(c\left(d+ex\right)\right)^4}{e}+\frac{(12d}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(c*(e*x+d))**4,x)
```

```
[Out] 24*e*(-d*log(d + e*x)/e**2 + x/e) - 24*x*log(c*(d + e*x)) + (-4*d - 4*e*x)*
log(c*(d + e*x))**3/e + (d + e*x)*log(c*(d + e*x))**4/e + (12*d + 12*e*x)*l
og(c*(d + e*x))**2/e
```

3.2 $\int \log^3(c(d+ex))\,dx$

Optimal. Leaf size=61

$$\frac{(d+ex)\log^3(c(d+ex))}{e}-\frac{3(d+ex)\log^2(c(d+ex))}{e}+\frac{6(d+ex)\log(c(d+ex))}{e}-6x$$

```
[Out] -6*x+6*(e*x+d)*ln(c*(e*x+d))/e-3*(e*x+d)*ln(c*(e*x+d))^2/e+(e*x+d)*ln(c*(e*
x+d))^3/e
```

Rubi [A] time = 0.03, antiderivative size = 61, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}} = 0.300$, Rules used = {2389, 2296, 2295}

$$\frac{(d+ex)\log^3(c(d+ex))}{e}-\frac{3(d+ex)\log^2(c(d+ex))}{e}+\frac{6(d+ex)\log(c(d+ex))}{e}-6x$$

Antiderivative was successfully verified.

```
[In] Int[Log[c*(d + e*x)]^3,x]
```

```
[Out] -6*x + (6*(d + e*x)*Log[c*(d + e*x)])/e - (3*(d + e*x)*Log[c*(d + e*x)]^2)/
e + ((d + e*x)*Log[c*(d + e*x)]^3)/e
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rubi steps

$$\begin{aligned}
\int \log^3(c(d+ex))\,dx &= \frac{\text{Subst}\left(\int \log^3(cx)\,dx,x,d+ex\right)}{e}\\
&= \frac{(d+ex)\log^3(c(d+ex))}{e}-\frac{3\,\text{Subst}\left(\int \log^2(cx)\,dx,x,d+ex\right)}{e}\\
&= -\frac{3(d+ex)\log^2(c(d+ex))}{e}+\frac{(d+ex)\log^3(c(d+ex))}{e}+\frac{6\,\text{Subst}(\int \log(cx)\,dx,x,d+ex)}{e}\\
&= -6x+\frac{6(d+ex)\log(c(d+ex))}{e}-\frac{3(d+ex)\log^2(c(d+ex))}{e}+\frac{(d+ex)\log^3(c(d+ex))}{e}
\end{aligned}$$

Mathematica [A] time = 0.01, size = 57, normalized size = 0.93

$$\frac{(d+ex)\log^3(c(d+ex))-3(d+ex)\log^2(c(d+ex))+6(d+ex)\log(c(d+ex))-6ex}{e}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(d + e*x)]^3,x]
```

```
[Out] (-6*e*x + 6*(d + e*x)*Log[c*(d + e*x)] - 3*(d + e*x)*Log[c*(d + e*x)]^2 + (
d + e*x)*Log[c*(d + e*x)]^3)/e
```

fricas [A] time = 0.84, size = 60, normalized size = 0.98

$$\frac{(ex+d)\log(cex+cd)^3 - 3(ex+d)\log(cex+cd)^2 - 6ex + 6(ex+d)\log(cex+cd)}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(e*x+d))^3,x, algorithm="fricas")
```

```
[Out] ((e*x + d)*log(c*e*x + c*d)^3 - 3*(e*x + d)*log(c*e*x + c*d)^2 - 6*e*x + 6*
(e*x + d)*log(c*e*x + c*d))/e
```

giac [A] time = 0.21, size = 71, normalized size = 1.16

$$(xe+d)e^{(-1)}\log((xe+d)c)^3 - 3(xe+d)e^{(-1)}\log((xe+d)c)^2 + 6(xe+d)e^{(-1)}\log((xe+d)c) - 6(xe+d)e^{(-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(e*x+d))^3,x, algorithm="giac")
```

```
[Out] (x*e + d)*e^(-1)*log((x*e + d)*c)^3 - 3*(x*e + d)*e^(-1)*log((x*e + d)*c)^2
 + 6*(x*e + d)*e^(-1)*log((x*e + d)*c) - 6*(x*e + d)*e^(-1)
```

maple [A] time = 0.04, size = 98, normalized size = 1.61

$$x\ln(cex+cd)^3 + \frac{d\ln(cex+cd)^3}{e} - 3x\ln(cex+cd)^2 - \frac{3d\ln(cex+cd)^2}{e} + 6x\ln(cex+cd) + \frac{6d\ln(cex+cd)}{e} - 6x -$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln((e*x+d)*c)^3,x)
```

```
[Out] x*ln(c*e*x+c*d)^3+d/e*ln(c*e*x+c*d)^3-3*x*ln(c*e*x+c*d)^2-3*d/e*ln(c*e*x+c*
d)^2+6*x*ln(c*e*x+c*d)+6*d/e*ln(c*e*x+c*d)-6*x-6*d/e
```

maxima [B] time = 0.78, size = 125, normalized size = 2.05

$$-3e\left(\frac{x}{e} - \frac{d\log(ex+d)}{e^2}\right)\log((ex+d)c)^2 + x\log((ex+d)c)^3 - e\left(\frac{3\left(d\log(ex+d)^2 - 2ex + 2d\log(ex+d)\right)\log}{e^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(e*x+d))^3,x, algorithm="maxima")
```

```
[Out] -3*e*(x/e - d*log(e*x + d)/e^2)*log((e*x + d)*c)^2 + x*log((e*x + d)*c)^3 -
 e*(3*(d*log(e*x + d)^2 - 2*e*x + 2*d*log(e*x + d))*log((e*x + d)*c)/e^2 -
(d*log(e*x + d)^3 + 3*d*log(e*x + d)^2 - 6*e*x + 6*d*log(e*x + d))/e^2)
```

mupad [B] time = 0.24, size = 88, normalized size = 1.44

$$6x\ln(cd+cex) - 6x - 3x\ln(cd+cex)^2 + x\ln(cd+cex)^3 - \frac{3d\ln(cd+cex)^2}{e} + \frac{d\ln(cd+cex)^3}{e} + \frac{6d\ln(d}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(c*(d + e*x))^3,x)
```

```
[Out] 6*x*log(c*d + c*e*x) - 6*x - 3*x*log(c*d + c*e*x)^2 + x*log(c*d + c*e*x)^3
- (3*d*log(c*d + c*e*x)^2)/e + (d*log(c*d + c*e*x)^3)/e + (6*d*log(d + e*x)
)/e
```

sympy [A] time = 0.41, size = 68, normalized size = 1.11

$$-6e\left(-\frac{d\log\left(d+ex\right)}{e^2}+\frac{x}{e}\right)+6x\log\left(c\left(d+ex\right)\right)+\frac{\left(-3d-3ex\right)\log\left(c\left(d+ex\right)\right)^2}{e}+\frac{\left(d+ex\right)\log\left(c\left(d+ex\right)\right)^3}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(c*(e*x+d))**3,x)
```

```
[Out] -6*e*(-d*log(d + e*x)/e**2 + x/e) + 6*x*log(c*(d + e*x)) + (-3*d - 3*e*x)*l
og(c*(d + e*x))**2/e + (d + e*x)*log(c*(d + e*x))**3/e
```

3.3 $\int \log^2(c(d+ex))\,dx$

Optimal. Leaf size=41

$$\frac{(d+ex)\log^2(c(d+ex))}{e}-\frac{2(d+ex)\log(c(d+ex))}{e}+2x$$

```
[Out] 2*x-2*(e*x+d)*ln(c*(e*x+d))/e+(e*x+d)*ln(c*(e*x+d))^2/e
```

Rubi [A] time = 0.02, antiderivative size = 41, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.300, Rules used = {2389, 2296, 2295}

$$\frac{(d+ex)\log^2(c(d+ex))}{e}-\frac{2(d+ex)\log(c(d+ex))}{e}+2x$$

Antiderivative was successfully verified.

```
[In] Int[Log[c*(d + e*x)]^2,x]
```

```
[Out] 2*x - (2*(d + e*x)*Log[c*(d + e*x)])/e + ((d + e*x)*Log[c*(d + e*x)]^2)/e
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rubi steps

$$\begin{aligned}\int \log^2(c(d+ex))\,dx &= \frac{\text{Subst}\left(\int \log^2(cx)\,dx,x,d+ex\right)}{e}\\ &= \frac{(d+ex)\log^2(c(d+ex))}{e}-\frac{2\,\text{Subst}(\int \log(cx)\,dx,x,d+ex)}{e}\\ &= 2x-\frac{2(d+ex)\log(c(d+ex))}{e}+\frac{(d+ex)\log^2(c(d+ex))}{e}\end{aligned}$$

Mathematica [A] time = 0.00, size = 40, normalized size = 0.98

$$\frac{(d+ex)\log^2(c(d+ex))-2(d+ex)\log(c(d+ex))+2ex}{e}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(d + e*x)]^2,x]
```

```
[Out] (2*e*x - 2*(d + e*x)*Log[c*(d + e*x)] + (d + e*x)*Log[c*(d + e*x)]^2)/e
```

fricas [A] time = 0.71, size = 42, normalized size = 1.02

$$\frac{(ex+d)\log(cex+cd)^2 + 2\,ex - 2\,(ex+d)\log(cex+cd)}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(e*x+d))^2,x, algorithm="fricas")
```

```
[Out] ((e*x + d)*log(c*e*x + c*d)^2 + 2*e*x - 2*(e*x + d)*log(c*e*x + c*d))/e
```

giac [A] time = 0.20, size = 50, normalized size = 1.22

$$(xe+d)e^{(-1)}\log((xe+d)c)^2 - 2\,(xe+d)e^{(-1)}\log((xe+d)c) + 2\,(xe+d)e^{(-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(e*x+d))^2,x, algorithm="giac")
```

```
[Out] (x*e + d)*e^(-1)*log((x*e + d)*c)^2 - 2*(x*e + d)*e^(-1)*log((x*e + d)*c) +
 2*(x*e + d)*e^(-1)
```

maple [A] time = 0.04, size = 67, normalized size = 1.63

$$x\ln(cex+cd)^2 + \frac{d\ln(cex+cd)^2}{e} - 2x\ln(cex+cd) - \frac{2d\ln(cex+cd)}{e} + 2x + \frac{2d}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] x*ln(c*e*x+c*d)^2+d/e*ln(c*e*x+c*d)^2-2*x*ln(c*e*x+c*d)-2*d/e*ln(c*e*x+c*d)
+2*x+2*d/e
```

maxima [A] time = 0.61, size = 71, normalized size = 1.73

$$-2\,e\left(\frac{x}{e} - \frac{d\log(ex+d)}{e^2}\right)\log((ex+d)c) + x\log((ex+d)c)^2 - \frac{d\log(ex+d)^2 - 2\,ex + 2\,d\log(ex+d)}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(e*x+d))^2,x, algorithm="maxima")
```

```
[Out] -2*e*(x/e - d*log(e*x + d)/e^2)*log((e*x + d)*c) + x*log((e*x + d)*c)^2 - (
d*log(e*x + d)^2 - 2*e*x + 2*d*log(e*x + d))/e
```

mupad [B] time = 0.22, size = 57, normalized size = 1.39

$$2\,x - 2\,x\,\ln(c\,d + c\,e\,x) + x\ln(c\,d + c\,e\,x)^2 + \frac{d\ln(c\,d + c\,e\,x)^2}{e} - \frac{2\,d\,\ln(d + e\,x)}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 2*x - 2*x*log(c*d + c*e*x) + x*log(c*d + c*e*x)^2 + (d*log(c*d + c*e*x)^2)/
e - (2*d*log(d + e*x))/e
```

sympy [A] time = 0.35, size = 46, normalized size = 1.12

$$2e\left(-\frac{d\log(d+ex)}{e^2} + \frac{x}{e}\right) - 2x\log(c(d+ex)) + \frac{(d+ex)\log(c(d+ex))^2}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(c*(e*x+d))**2,x)
```

```
[Out] 2*e*(-d*log(d + e*x)/e**2 + x/e) - 2*x*log(c*(d + e*x)) + (d + e*x)*log(c*(
d + e*x))**2/e
```

3.4 $\int \log(c(d+ex))\,dx$

Optimal. Leaf size=21

$$\frac{(d+ex)\log(c(d+ex))}{e}-x$$

[Out] -x+(e*x+d)*ln(c*(e*x+d))/e

Rubi [A] time = 0.01, antiderivative size = 21, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {2389, 2295}

$$\frac{(d+ex)\log(c(d+ex))}{e}-x$$

Antiderivative was successfully verified.

[In] Int[Log[c*(d + e*x)],x]

[Out] -x + ((d + e*x)*Log[c*(d + e*x)])/e

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rubi steps

$$\begin{aligned}\int \log(c(d+ex))\,dx&=\frac{\text{Subst}(\int \log(cx)\,dx,x,d+ex)}{e}\\&=-x+\frac{(d+ex)\log(c(d+ex))}{e}\end{aligned}$$

Mathematica [A] time = 0.00, size = 21, normalized size = 1.00

$$\frac{(d+ex)\log(c(d+ex))}{e}-x$$

Antiderivative was successfully verified.

[In] Integrate[Log[c*(d + e*x)],x]

[Out] -x + ((d + e*x)*Log[c*(d + e*x)])/e

fricas [A] time = 2.02, size = 25, normalized size = 1.19

$$-\frac{ex-(ex+d)\log(cex+cd)}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(log(c*(e*x+d)),x, algorithm="fricas")

[Out] -(e*x - (e*x + d)*log(c*e*x + c*d))/e

giac [**A**] time = 0.19, size = 33, normalized size = 1.57

$$\frac{\left((xe+d)c\log\left((xe+d)c\right)-(xe+d)c\right)e^{(-1)}}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(e*x+d)),x, algorithm="giac")
[Out] ((x*e + d)*c*log((x*e + d)*c) - (x*e + d)*c)*e^(-1)/c
```

maple [**A**] time = 0.04, size = 36, normalized size = 1.71

$$x\ln\left(cex+cd\right)+\frac{d\ln\left(cex+cd\right)}{e}-x-\frac{d}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln((e*x+d)*c),x)
[Out] x*ln(c*e*x+c*d)+d/e*ln(c*e*x+c*d)-x-d/e
```

maxima [**A**] time = 0.53, size = 31, normalized size = 1.48

$$\frac{(ex+d)c\log\left((ex+d)c\right)-(ex+d)c}{ce}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(e*x+d)),x, algorithm="maxima")
[Out] ((e*x + d)*c*log((e*x + d)*c) - (e*x + d)*c)/(c*e)
```

mupad [**B**] time = 0.06, size = 25, normalized size = 1.19

$$x\ \ln\left(c\ \left(d+e\,x\right)\right)-x+\frac{d\ \ln\left(d+e\,x\right)}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(c*(d + e*x)),x)
[Out] x*log(c*(d + e*x)) - x + (d*log(d + e*x))/e
```

sympy [**A**] time = 0.15, size = 26, normalized size = 1.24

$$-e\left(-\frac{d\log\left(d+ex\right)}{e^{2}}+\frac{x}{e}\right)+x\log\left(c\left(d+ex\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(c*(e*x+d)),x)
[Out] -e*(-d*log(d + e*x)/e**2 + x/e) + x*log(c*(d + e*x))
```

3.5 $\int \frac{1}{\log(c(d+ex))} dx$

Optimal. Leaf size=15

$$\frac{\text{li}(c(d+ex))}{ce}$$

```
[Out] Li(c*(e*x+d))/c/e
```

Rubi [A] time = 0.01, antiderivative size = 15, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}} = 0.200$, Rules used = {2389, 2298}

$$\frac{\text{li}(c(d+ex))}{ce}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c*(d + e*x)]^(-1),x]
```

```
[Out] LogIntegral[c*(d + e*x)]/(c*e)
```

Rule 2298

```
Int[Log[(c_.)*(x_)]^(-1), x_Symbol] :> Simp[LogIntegral[c*x]/c, x] /; FreeQ
[c, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rubi steps

$$\begin{aligned} \int \frac{1}{\log(c(d+ex))} dx &= \frac{\text{Subst}\left(\int \frac{1}{\log(cx)} dx, x, d+ex\right)}{e} \\ &= \frac{\text{li}(c(d+ex))}{ce} \end{aligned}$$

Mathematica [A] time = 0.01, size = 15, normalized size = 1.00

$$\frac{\text{li}(c(d+ex))}{ce}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(d + e*x)]^(-1),x]
```

```
[Out] LogIntegral[c*(d + e*x)]/(c*e)
```

fricas [A] time = 0.64, size = 16, normalized size = 1.07

$$\frac{\text{log\_integral}(cex+cd)}{ce}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d)),x, algorithm="fricas")
```

```
[Out] log_integral(c*e*x + c*d)/(c*e)
```

giac [A] time = 0.20, size = 16, normalized size = 1.07

$$\frac{\mathrm{Ei}\left(\log\left((xe+d)c\right)\right)e^{(-1)}}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d)),x, algorithm="giac")
[Out] Ei(log((x*e + d)*c))*e^(-1)/c
```

maple [F(-1)] time = 180.00, size = 0, normalized size = 0.00

hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/ln((e*x+d)*c),x)
[Out] int(1/ln((e*x+d)*c),x)
```

maxima [A] time = 1.09, size = 17, normalized size = 1.13

$$\frac{\mathrm{Ei}\left(\log\left(cex+cd\right)\right)}{ce}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d)),x, algorithm="maxima")
[Out] Ei(log(c*e*x + c*d))/(c*e)
```

mupad [B] time = 0.21, size = 15, normalized size = 1.00

$$\frac{\mathrm{logint}\left(c\,\left(d+e\,x\right)\right)}{c\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/log(c*(d + e*x)),x)
[Out] logint(c*(d + e*x))/(c*e)
```

sympy [A] time = 0.75, size = 12, normalized size = 0.80

$$\frac{\mathrm{li}\left(cd+cex\right)}{ce}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/ln(c*(e*x+d)),x)
[Out] li(c*d + c*e*x)/(c*e)
```

3.6 $\int \frac{1}{\log^2(c(d+ex))} \, dx$

Optimal. Leaf size=36

$$\frac{\text{li}(c(d+ex))}{ce} - \frac{d+ex}{e\log(c(d+ex))}$$

```
[Out] Li(c*(e*x+d))/c/e+(-e*x-d)/e/ln(c*(e*x+d))
```

Rubi [A] time = 0.02, antiderivative size = 36, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}} = 0.300$, Rules used = {2389, 2297, 2298}

$$\frac{\text{li}(c(d+ex))}{ce} - \frac{d+ex}{e\log(c(d+ex))}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c*(d + e*x)]^(-2),x]
```

```
[Out] -((d + e*x)/(e*Log[c*(d + e*x)])) + LogIntegral[c*(d + e*x)]/(c*e)
```

Rule 2297

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[(x*(a + b
*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
gerQ[2*p]
```

Rule 2298

```
Int[Log[(c_.)*(x_)]^(-1), x_Symbol] :> Simp[LogIntegral[c*x]/c, x] /; FreeQ
[c, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rubi steps

$$\begin{aligned}
\int \frac{1}{\log^2(c(d+ex))} \, dx &= \frac{\text{Subst}\left(\int \frac{1}{\log^2(cx)} \, dx, x, d+ex\right)}{e} \\
&= -\frac{d+ex}{e\log(c(d+ex))} + \frac{\text{Subst}\left(\int \frac{1}{\log(cx)} \, dx, x, d+ex\right)}{e} \\
&= -\frac{d+ex}{e\log(c(d+ex))} + \frac{\text{li}(c(d+ex))}{ce}
\end{aligned}$$

Mathematica [A] time = 0.01, size = 36, normalized size = 1.00

$$\frac{\text{li}(c(d+ex))}{ce} - \frac{d+ex}{e\log(c(d+ex))}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(d + e*x)]^(-2),x]
```

```
[Out] -((d + e*x)/(e*Log[c*(d + e*x)])) + LogIntegral[c*(d + e*x)]/(c*e)
```

fricas [A] time = 0.50, size = 47, normalized size = 1.31

$$-\frac{cex + cd - \log\left(cex + cd\right)\operatorname{log\_integral}\left(cex + cd\right)}{ce\log\left(cex + cd\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^2,x, algorithm="fricas")
```

```
[Out] -(c*e*x + c*d - log(c*e*x + c*d)*log_integral(c*e*x + c*d))/(c*e*log(c*e*x
+ c*d))
```

giac [A] time = 0.18, size = 38, normalized size = 1.06

$$\frac{\operatorname{Ei}\left(\log\left((xe + d)c\right)\right)e^{(-1)}}{c} - \frac{(xe + d)e^{(-1)}}{\log\left((xe + d)c\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^2,x, algorithm="giac")
```

```
[Out] Ei(log((x*e + d)*c))*e^(-1)/c - (x*e + d)*e^(-1)/log((x*e + d)*c)
```

maple [A] time = 0.05, size = 54, normalized size = 1.50

$$-\frac{x}{\ln\left(cex + cd\right)} - \frac{\operatorname{Ei}\left(1, -\ln\left(cex + cd\right)\right)}{ce} - \frac{d}{e\ln\left(cex + cd\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/ln(c*e*x+c*d)*x-1/e/ln(c*e*x+c*d)*d-1/c/e*Ei(1,-ln(c*e*x+c*d))
```

maxima [A] time = 0.98, size = 20, normalized size = 0.56

$$\frac{\Gamma\left(-1, -\log\left(cex + cd\right)\right)}{ce}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^2,x, algorithm="maxima")
```

```
[Out] gamma(-1, -log(c*e*x + c*d))/(c*e)
```

mupad [B] time = 0.23, size = 36, normalized size = 1.00

$$\frac{\operatorname{logint}\left(c\,\left(d+e\,x\right)\right)}{c\,e} - \frac{d+e\,x}{e\,\ln\left(c\,\left(d+e\,x\right)\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] logint(c*(d + e*x))/(c*e) - (d + e*x)/(e*log(c*(d + e*x)))
```

sympy [A] time = 0.80, size = 29, normalized size = 0.81

$$\frac{-d - ex}{e\log\left(c\left(d + ex\right)\right)} + \frac{\operatorname{li}\left(cd + cex\right)}{ce}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] (-d - e*x)/(e*log(c*(d + e*x))) + li(c*d + c*e*x)/(c*e)
```

3.7 $\int \frac{1}{\log^3(c(d+ex))} dx$

Optimal. Leaf size=63

$$\frac{\text{li}(c(d+ex))}{2ce}-\frac{d+ex}{2e\log^2(c(d+ex))}-\frac{d+ex}{2e\log(c(d+ex))}$$

```
[Out] 1/2*Li(c*(e*x+d))/c/e+1/2*(-e*x-d)/e/ln(c*(e*x+d))^2+1/2*(-e*x-d)/e/ln(c*(e
*x+d))
```

Rubi [A] time = 0.02, antiderivative size = 63, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.300, Rules used = {2389, 2297, 2298}

$$\frac{\text{li}(c(d+ex))}{2ce}-\frac{d+ex}{2e\log^2(c(d+ex))}-\frac{d+ex}{2e\log(c(d+ex))}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c*(d + e*x)]^(-3),x]
```

```
[Out] -(d + e*x)/(2*e*Log[c*(d + e*x)]^2) - (d + e*x)/(2*e*Log[c*(d + e*x)]) + Lo
gIntegral[c*(d + e*x)]/(2*c*e)
```

Rule 2297

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[(x*(a + b
*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
gerQ[2*p]
```

Rule 2298

```
Int[Log[(c_.)*(x_)]^(-1), x_Symbol] :> Simp[LogIntegral[c*x]/c, x] /; FreeQ
[c, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rubi steps

$$\begin{aligned}
\int \frac{1}{\log^3(c(d+ex))} dx &= \frac{\text{Subst}\left(\int \frac{1}{\log^3(cx)} dx, x, d+ex\right)}{e}\\
&= -\frac{d+ex}{2e\log^2(c(d+ex))}+\frac{\text{Subst}\left(\int \frac{1}{\log^2(cx)} dx, x, d+ex\right)}{2e}\\
&= -\frac{d+ex}{2e\log^2(c(d+ex))}-\frac{d+ex}{2e\log(c(d+ex))}+\frac{\text{Subst}\left(\int \frac{1}{\log(cx)} dx, x, d+ex\right)}{2e}\\
&= -\frac{d+ex}{2e\log^2(c(d+ex))}-\frac{d+ex}{2e\log(c(d+ex))}+\frac{\text{li}(c(d+ex))}{2ce}
\end{aligned}$$

Mathematica [A] time = 0.02, size = 47, normalized size = 0.75

$$\frac{\frac{\text{li}(c(d+ex))}{c}-\frac{(d+ex)(\log(c(d+ex))+1)}{\log^2(c(d+ex))}}{2e}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(d + e*x)]^(-3),x]
```

```
[Out] (-(((d + e*x)*(1 + Log[c*(d + e*x)]))/Log[c*(d + e*x)]^2) + LogIntegral[c*(
d + e*x)]/c)/(2*e)
```

fricas [A] time = 0.61, size = 67, normalized size = 1.06

$$-\frac{cex-\log(cex+cd)^2\,\text{log\_integral}(cex+cd)+cd+(cex+cd)\log(cex+cd)}{2\,ce\log(cex+cd)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^3,x, algorithm="fricas")
```

```
[Out] -1/2*(c*e*x - log(c*e*x + c*d)^2*log_integral(c*e*x + c*d) + c*d + (c*e*x +
 c*d)*log(c*e*x + c*d))/(c*e*log(c*e*x + c*d)^2)
```

giac [A] time = 0.23, size = 60, normalized size = 0.95

$$\frac{\text{Ei}\left(\log((xe+d)c)\right)e^{(-1)}}{2c}-\frac{(xe+d)e^{(-1)}}{2\log((xe+d)c)}-\frac{(xe+d)e^{(-1)}}{2\log((xe+d)c)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^3,x, algorithm="giac")
```

```
[Out] 1/2*Ei(log((x*e + d)*c))*e^(-1)/c - 1/2*(x*e + d)*e^(-1)/log((x*e + d)*c) -
 1/2*(x*e + d)*e^(-1)/log((x*e + d)*c)^2
```

maple [A] time = 0.04, size = 85, normalized size = 1.35

$$-\frac{x}{2\ln(cex+cd)}-\frac{\text{Ei}(1,-\ln(cex+cd))}{2ce}-\frac{d}{2e\ln(cex+cd)}-\frac{x}{2\ln(cex+cd)^2}-\frac{d}{2e\ln(cex+cd)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/ln((e*x+d)*c)^3,x)
```

```
[Out] -1/2/ln(c*e*x+c*d)^2*x-1/2/e/ln(c*e*x+c*d)^2*d-1/2*x/ln(c*e*x+c*d)-1/2*d/e/
ln(c*e*x+c*d)-1/2/c/e*Ei(1,-ln(c*e*x+c*d))
```

maxima [A] time = 0.96, size = 21, normalized size = 0.33

$$-\frac{\Gamma\left(-2,-\log(cex+cd)\right)}{ce}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^3,x, algorithm="maxima")
```

```
[Out] -gamma(-2, -log(c*e*x + c*d))/(c*e)
```

mupad [B] time = 0.28, size = 64, normalized size = 1.02

$$\frac{\text{logint}(c\,(d+e\,x))}{2\,c\,e}-\frac{\frac{c\,d}{2}+\ln(c\,(d+e\,x))\left(\frac{c\,d}{2}+\frac{c\,e\,x}{2}\right)+\frac{c\,e\,x}{2}}{c\,e\ln(c\,(d+e\,x))^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/log(c*(d + e*x))^3,x)
```

```
[Out] logint(c*(d + e*x))/(2*c*e) - ((c*d)/2 + log(c*(d + e*x))*((c*d)/2 + (c*e*x
)/2) + (c*e*x)/2)/(c*e*log(c*(d + e*x))^2)
```

sympy [**A**] time = 0.82, size = 48, normalized size = 0.76

$$\frac{-d-ex+(-d-ex)\log\left(c\left(d+ex\right)\right)}{2e\log\left(c\left(d+ex\right)\right)^{2}}+\frac{\operatorname{li}\left(cd+cex\right)}{2ce}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/ln(c*(e*x+d))**3,x)
```

```
[Out] (-d - e*x + (-d - e*x)*log(c*(d + e*x)))/(2*e*log(c*(d + e*x))**2) + li(c*d
 + c*e*x)/(2*c*e)
```

3.8 $\int \frac{1}{\log^4(c(d+ex))} dx$

Optimal. Leaf size=85

$$\frac{\mathrm{li}(c(d+ex))}{6ce} - \frac{d+ex}{3e\log^3(c(d+ex))} - \frac{d+ex}{6e\log^2(c(d+ex))} - \frac{d+ex}{6e\log(c(d+ex))}$$

```
[Out] 1/6*Li(c*(e*x+d))/c/e+1/3*(-e*x-d)/e/ln(c*(e*x+d))^3+1/6*(-e*x-d)/e/ln(c*(e
*x+d))^2+1/6*(-e*x-d)/e/ln(c*(e*x+d))
```

Rubi [A] time = 0.03, antiderivative size = 85, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.300, Rules used = {2389, 2297, 2298}

$$\frac{\mathrm{li}(c(d+ex))}{6ce} - \frac{d+ex}{6e\log^2(c(d+ex))} - \frac{d+ex}{3e\log^3(c(d+ex))} - \frac{d+ex}{6e\log(c(d+ex))}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c*(d + e*x)]^(-4),x]
```

```
[Out] -(d + e*x)/(3*e*Log[c*(d + e*x)]^3) - (d + e*x)/(6*e*Log[c*(d + e*x)]^2) -
(d + e*x)/(6*e*Log[c*(d + e*x)]) + LogIntegral[c*(d + e*x)]/(6*c*e)
```

Rule 2297

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[(x*(a + b
*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
gerQ[2*p]
```

Rule 2298

```
Int[Log[(c_.)*(x_)]^(-1), x_Symbol] :> Simp[LogIntegral[c*x]/c, x] /; FreeQ
[c, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rubi steps

$$\int \frac{1}{\log^4(c(d+ex))}\,dx = \frac{\text{Subst}\left(\int \frac{1}{\log^4(cx)}\,dx, x, d+ex\right)}{e}$$
$$= -\frac{d+ex}{3e\log^3(c(d+ex))} + \frac{\text{Subst}\left(\int \frac{1}{\log^3(cx)}\,dx, x, d+ex\right)}{3e}$$
$$= -\frac{d+ex}{3e\log^3(c(d+ex))} - \frac{d+ex}{6e\log^2(c(d+ex))} + \frac{\text{Subst}\left(\int \frac{1}{\log^2(cx)}\,dx, x, d+ex\right)}{6e}$$
$$= -\frac{d+ex}{3e\log^3(c(d+ex))} - \frac{d+ex}{6e\log^2(c(d+ex))} - \frac{d+ex}{6e\log(c(d+ex))} + \frac{\text{Subst}\left(\int \frac{1}{\log(cx)}\,dx, x, d+ex\right)}{6e}$$
$$= -\frac{d+ex}{3e\log^3(c(d+ex))} - \frac{d+ex}{6e\log^2(c(d+ex))} - \frac{d+ex}{6e\log(c(d+ex))} + \frac{\text{li}(c(d+ex))}{6ce}$$

Mathematica [A] time = 0.02, size = 57, normalized size = 0.67

$$\frac{\frac{\text{li}(c(d+ex))}{c} - \frac{(d+ex)\left(\log^2(c(d+ex))+\log(c(d+ex))+2\right)}{\log^3(c(d+ex))}}{6e}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(d + e*x)]^(-4),x]
```

```
[Out] (-(((d + e*x)*(2 + Log[c*(d + e*x)] + Log[c*(d + e*x)]^2))/Log[c*(d + e*x)]
^3) + LogIntegral[c*(d + e*x)]/c)/(6*e)
```

fricas [A] time = 0.96, size = 90, normalized size = 1.06

$$\frac{\log(cex+cd)^3 \,\text{log\_integral}(cex+cd) - 2\,cex - (cex+cd)\log(cex+cd)^2 - 2\,cd - (cex+cd)\log(cex+cd)}{6\,ce\log(cex+cd)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^4,x, algorithm="fricas")
```

```
[Out] 1/6*(log(c*e*x + c*d)^3*log_integral(c*e*x + c*d) - 2*c*e*x - (c*e*x + c*d)
*log(c*e*x + c*d)^2 - 2*c*d - (c*e*x + c*d)*log(c*e*x + c*d))/(c*e*log(c*e*
x + c*d)^3)
```

giac [A] time = 0.19, size = 81, normalized size = 0.95

$$\frac{\text{Ei}\left(\log((xe+d)c)\right)e^{(-1)}}{6\,c} - \frac{(xe+d)e^{(-1)}}{6\,\log((xe+d)c)} - \frac{(xe+d)e^{(-1)}}{6\,\log((xe+d)c)^2} - \frac{(xe+d)e^{(-1)}}{3\,\log((xe+d)c)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^4,x, algorithm="giac")
```

```
[Out] 1/6*Ei(log((x*e + d)*c))*e^(-1)/c - 1/6*(x*e + d)*e^(-1)/log((x*e + d)*c) -
 1/6*(x*e + d)*e^(-1)/log((x*e + d)*c)^2 - 1/3*(x*e + d)*e^(-1)/log((x*e +
d)*c)^3
```

maple [A] time = 0.04, size = 116, normalized size = 1.36

$$-\frac{x}{6\ln(cex+cd)} - \frac{\text{Ei}(1,-\ln(cex+cd))}{6ce} - \frac{d}{6e\ln(cex+cd)} - \frac{x}{6\ln(cex+cd)^2} - \frac{d}{6e\ln(cex+cd)^2} - \frac{x}{3\ln(cex+cd)^3} -$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/ln((e*x+d)*c)^4,x)
```

```
[Out] -1/3/ln(c*e*x+c*d)^3*x-1/3/e/ln(c*e*x+c*d)^3*d-1/6*x/ln(c*e*x+c*d)^2-1/6*d/
e/ln(c*e*x+c*d)^2-1/6*x/ln(c*e*x+c*d)-1/6*d/e/ln(c*e*x+c*d)-1/6/c/e*Ei(1,-l
n(c*e*x+c*d))
```

maxima [A] time = 1.25, size = 20, normalized size = 0.24

$$\frac{\Gamma\left(-3, -\log\left(cex + cd\right)\right)}{ce}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^4,x, algorithm="maxima")
```

```
[Out] gamma(-3, -log(c*e*x + c*d))/(c*e)
```

mupad [B] time = 0.19, size = 67, normalized size = 0.79

$$-\frac{(d+e\,x)\,\left(\frac{1}{6\,\ln(c\,(d+e\,x))}+\frac{1}{6\,\ln(c\,(d+e\,x))^2}+\frac{1}{3\,\ln(c\,(d+e\,x))^3}\right)}{e}-\frac{\mathrm{expint}\left(-\ln\left(c\,\left(d+e\,x\right)\right)\right)}{6\,c\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/log(c*(d + e*x))^4,x)
```

```
[Out] - ((d + e*x)*(1/(6*log(c*(d + e*x))) + 1/(6*log(c*(d + e*x))^2) + 1/(3*log(
c*(d + e*x))^3)))/e - expint(-log(c*(d + e*x)))/(6*c*e)
```

sympy [A] time = 0.84, size = 71, normalized size = 0.84

$$\frac{-d-ex+\left(-\frac{d}{2}-\frac{ex}{2}\right)\log\left(c\left(d+ex\right)\right)^2+\left(-\frac{d}{2}-\frac{ex}{2}\right)\log\left(c\left(d+ex\right)\right)}{3e\log\left(c\left(d+ex\right)\right)^3}+\frac{\mathrm{li}\left(cd+cex\right)}{6ce}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/ln(c*(e*x+d))**4,x)
```

```
[Out] (-d - e*x + (-d/2 - e*x/2)*log(c*(d + e*x))**2 + (-d/2 - e*x/2)*log(c*(d +
e*x)))/(3*e*log(c*(d + e*x))**3) + li(c*d + c*e*x)/(6*c*e)
```

3.9 $\int \log^{\frac{5}{2}}(c(d+ex))\,dx$

Optimal. Leaf size=98

$$-\frac{15\sqrt{\pi}\,\mathrm{erfi}\left(\sqrt{\log(c(d+ex))}\right)}{8ce}+\frac{(d+ex)\log^{\frac{5}{2}}(c(d+ex))}{e}-\frac{5(d+ex)\log^{\frac{3}{2}}(c(d+ex))}{2e}+\frac{15(d+ex)\sqrt{\log(c(d+ex}}{4e}$$

```
[Out] -5/2*(e*x+d)*ln(c*(e*x+d))^(3/2)/e+(e*x+d)*ln(c*(e*x+d))^(5/2)/e-15/8*erfi(
ln(c*(e*x+d))^(1/2))*Pi^(1/2)/c/e+15/4*(e*x+d)*ln(c*(e*x+d))^(1/2)/e
```

Rubi [A] time = 0.05, antiderivative size = 98, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}} = 0.417$, Rules used = {2389, 2296, 2299, 2180, 2204}

$$-\frac{15\sqrt{\pi}\,\mathrm{Erfi}\left(\sqrt{\log(c(d+ex))}\right)}{8ce}+\frac{(d+ex)\log^{\frac{5}{2}}(c(d+ex))}{e}-\frac{5(d+ex)\log^{\frac{3}{2}}(c(d+ex))}{2e}+\frac{15(d+ex)\sqrt{\log(c(d+e}}{4e}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c*(d + e*x)]^(5/2),x]
```

```
[Out] (-15*Sqrt[Pi]*Erfi[Sqrt[Log[c*(d + e*x)]]])/(8*c*e) + (15*(d + e*x)*Sqrt[Lo
g[c*(d + e*x)]])/(4*e) - (5*(d + e*x)*Log[c*(d + e*x)]^(3/2))/(2*e) + ((d +
 e*x)*Log[c*(d + e*x)]^(5/2))/e
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2299

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[1/(n*c^(1
/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b,
 c, p}, x] && IntegerQ[1/n]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rubi steps

$$\int \log^{\frac{5}{2}}(c(d+ex))\,dx = \frac{\text{Subst}\left(\int \log^{\frac{5}{2}}(cx)\,dx, x, d+ex\right)}{e}$$

$$= \frac{(d+ex)\log^{\frac{5}{2}}(c(d+ex))}{e} - \frac{5\,\text{Subst}\left(\int \log^{\frac{3}{2}}(cx)\,dx, x, d+ex\right)}{2e}$$

$$= -\frac{5(d+ex)\log^{\frac{3}{2}}(c(d+ex))}{2e} + \frac{(d+ex)\log^{\frac{5}{2}}(c(d+ex))}{e} + \frac{15\,\text{Subst}\left(\int \sqrt{\log(cx)}\,dx, x, d+\right.}{4e}$$

$$= \frac{15(d+ex)\sqrt{\log(c(d+ex))}}{4e} - \frac{5(d+ex)\log^{\frac{3}{2}}(c(d+ex))}{2e} + \frac{(d+ex)\log^{\frac{5}{2}}(c(d+ex))}{e} - \frac{15\,\text{S}}{}$$

$$= \frac{15(d+ex)\sqrt{\log(c(d+ex))}}{4e} - \frac{5(d+ex)\log^{\frac{3}{2}}(c(d+ex))}{2e} + \frac{(d+ex)\log^{\frac{5}{2}}(c(d+ex))}{e} - \frac{15\,\text{S}}{}$$

$$= \frac{15(d+ex)\sqrt{\log(c(d+ex))}}{4e} - \frac{5(d+ex)\log^{\frac{3}{2}}(c(d+ex))}{2e} + \frac{(d+ex)\log^{\frac{5}{2}}(c(d+ex))}{e} - \frac{15\,\text{S}}{}$$

$$= -\frac{15\sqrt{\pi}\,\text{erfi}\left(\sqrt{\log(c(d+ex))}\right)}{8ce} + \frac{15(d+ex)\sqrt{\log(c(d+ex))}}{4e} - \frac{5(d+ex)\log^{\frac{3}{2}}(c(d+ex))}{2e}$$

Mathematica [A] time = 0.01, size = 75, normalized size = 0.77

$$\frac{2c(d+ex)\sqrt{\log(c(d+ex))}\left(4\log^2(c(d+ex)) - 10\log(c(d+ex)) + 15\right) - 15\sqrt{\pi}\,\text{erfi}\left(\sqrt{\log(c(d+ex))}\right)}{8ce}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(d + e*x)]^(5/2),x]
[Out] (-15*Sqrt[Pi]*Erfi[Sqrt[Log[c*(d + e*x)]]] + 2*c*(d + e*x)*Sqrt[Log[c*(d +
e*x)]]*(15 - 10*Log[c*(d + e*x)] + 4*Log[c*(d + e*x)]^2))/(8*c*e)
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(e*x+d))^(5/2),x, algorithm="fricas")
[Out] Exception raised: TypeError >> Error detected within library code: integ
rate: implementation incomplete (constant residues)
```

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

$$\int \log\left((ex+d)c\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(e*x+d))^(5/2),x, algorithm="giac")
[Out] integrate(log((e*x + d)*c)^(5/2), x)
```

maple [F] time = 0.11, size = 0, normalized size = 0.00

$$\int \ln\left((ex+d)\,c\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln((e*x+d)*c)^(5/2),x)
```

```
[Out] int(ln((e*x+d)*c)^(5/2),x)
```

maxima [C] time = 0.71, size = 78, normalized size = 0.80

$$\frac{2\,(cex+cd)\Big(4\,\log(cex+cd)^{\frac{5}{2}}-10\,\log(cex+cd)^{\frac{3}{2}}+15\,\sqrt{\log(cex+cd)}\Big)+15i\,\sqrt{\pi}\,\operatorname{erf}\Big(i\,\sqrt{\log(cex+cd)}\Big)}{8\,ce}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(e*x+d))^(5/2),x, algorithm="maxima")
```

```
[Out] 1/8*(2*(c*e*x + c*d)*(4*log(c*e*x + c*d)^(5/2) - 10*log(c*e*x + c*d)^(3/2)
+ 15*sqrt(log(c*e*x + c*d))) + 15*I*sqrt(pi)*erf(I*sqrt(log(c*e*x + c*d))))
/(c*e)
```

mupad [B] time = 0.21, size = 96, normalized size = 0.98

$$\frac{\ln(c\,(d+e\,x))^{5/2}\,\Big(\frac{15\,\sqrt{\pi}\,\operatorname{erfc}\big(\sqrt{-\ln(c\,(d+e\,x))}\big)}{8}+c\,(d+e\,x)\,\Big(\frac{15\,\sqrt{-\ln(c\,(d+e\,x))}}{4}+\frac{5\,(-\ln(c\,(d+e\,x)))^{3/2}}{2}+(-\ln(c\,(d+e\,x))}{c\,e\,(-\ln(c\,(d+e\,x)))^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(c*(d + e*x))^(5/2),x)
```

```
[Out] (log(c*(d + e*x))^(5/2)*((15*pi^(1/2)*erfc((-log(c*(d + e*x)))^(1/2)))/8 +
c*(d + e*x)*((15*(-log(c*(d + e*x)))^(1/2))/4 + (5*(-log(c*(d + e*x)))^(3/2
))/2 + (-log(c*(d + e*x)))^(5/2))))/(c*e*(-log(c*(d + e*x)))^(5/2))
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(c*(e*x+d))**(5/2),x)
```

```
[Out] Timed out
```

3.10 $\int \log^{\frac{3}{2}}(c(d+ex))\,dx$

Optimal. Leaf size=74

$$\frac{3\sqrt{\pi}\,\mathrm{erfi}\left(\sqrt{\log(c(d+ex))}\right)}{4ce}+\frac{(d+ex)\log^{\frac{3}{2}}(c(d+ex))}{e}-\frac{3(d+ex)\sqrt{\log(c(d+ex))}}{2e}$$

```
[Out] (e*x+d)*ln(c*(e*x+d))^(3/2)/e+3/4*erfi(ln(c*(e*x+d))^(1/2))*Pi^(1/2)/c/e-3/
2*(e*x+d)*ln(c*(e*x+d))^(1/2)/e
```

Rubi [A] time = 0.04, antiderivative size = 74, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.417, Rules used = {2389, 2296, 2299, 2180, 2204}

$$\frac{3\sqrt{\pi}\,\mathrm{Erfi}\left(\sqrt{\log(c(d+ex))}\right)}{4ce}+\frac{(d+ex)\log^{\frac{3}{2}}(c(d+ex))}{e}-\frac{3(d+ex)\sqrt{\log(c(d+ex))}}{2e}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c*(d + e*x)]^(3/2),x]
```

```
[Out] (3*Sqrt[Pi]*Erfi[Sqrt[Log[c*(d + e*x)]]])/(4*c*e) - (3*(d + e*x)*Sqrt[Log[c
*(d + e*x)]])/(2*e) + ((d + e*x)*Log[c*(d + e*x)]^(3/2))/e
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2299

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[1/(n*c^(1
/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b,
 c, p}, x] && IntegerQ[1/n]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rubi steps

$$\int \log^{\frac{3}{2}}(c(d+ex))\,dx = \frac{\text{Subst}\left(\int \log^{\frac{3}{2}}(cx)\,dx, x, d+ex\right)}{e}$$
$$= \frac{(d+ex)\log^{\frac{3}{2}}(c(d+ex))}{e} - \frac{3\,\text{Subst}\left(\int \sqrt{\log(cx)}\,dx, x, d+ex\right)}{2e}$$
$$= -\frac{3(d+ex)\sqrt{\log(c(d+ex))}}{2e} + \frac{(d+ex)\log^{\frac{3}{2}}(c(d+ex))}{e} + \frac{3\,\text{Subst}\left(\int \frac{1}{\sqrt{\log(cx)}}\,dx, x, d+\right.}{4e}$$
$$= -\frac{3(d+ex)\sqrt{\log(c(d+ex))}}{2e} + \frac{(d+ex)\log^{\frac{3}{2}}(c(d+ex))}{e} + \frac{3\,\text{Subst}\left(\int \frac{e^x}{\sqrt{x}}\,dx, x, \log(c(d\right.}{4ce}$$
$$= -\frac{3(d+ex)\sqrt{\log(c(d+ex))}}{2e} + \frac{(d+ex)\log^{\frac{3}{2}}(c(d+ex))}{e} + \frac{3\,\text{Subst}\left(\int e^{x^2}\,dx, x, \sqrt{\log(c(\right.}}{2ce}$$
$$= \frac{3\sqrt{\pi}\,\text{erfi}\left(\sqrt{\log(c(d+ex))}\right)}{4ce} - \frac{3(d+ex)\sqrt{\log(c(d+ex))}}{2e} + \frac{(d+ex)\log^{\frac{3}{2}}(c(d+ex))}{e}$$

Mathematica [A] time = 0.01, size = 63, normalized size = 0.85

$$\frac{3\sqrt{\pi}\,\text{erfi}\left(\sqrt{\log(c(d+ex))}\right) + 2c(d+ex)\sqrt{\log(c(d+ex))}\,(2\log(c(d+ex))-3)}{4ce}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(d + e*x)]^(3/2),x]
```

```
[Out] (3*Sqrt[Pi]*Erfi[Sqrt[Log[c*(d + e*x)]]] + 2*c*(d + e*x)*Sqrt[Log[c*(d + e*
x)]]*(-3 + 2*Log[c*(d + e*x)]))/(4*c*e)
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(e*x+d))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

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

$$\int \log\left((ex+d)c\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(e*x+d))^(3/2),x, algorithm="giac")
```

```
[Out] integrate(log((e*x + d)*c)^(3/2), x)
```

maple [F] time = 0.08, size = 0, normalized size = 0.00

$$\int \ln\left((ex+d)\,c\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln((e*x+d)*c)^(3/2),x)
```

```
[Out] int(ln((e*x+d)*c)^(3/2),x)
```

maxima [C] time = 0.72, size = 65, normalized size = 0.88

$$\frac{2\,(cex+cd)\left(2\,\log\left(cex+cd\right)^{\frac{3}{2}}-3\,\sqrt{\log\left(cex+cd\right)}\right)-3i\,\sqrt{\pi}\,\operatorname{erf}\left(i\,\sqrt{\log\left(cex+cd\right)}\right)}{4\,ce}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(e*x+d))^(3/2),x, algorithm="maxima")
```

```
[Out] 1/4*(2*(c*e*x + c*d)*(2*log(c*e*x + c*d)^(3/2) - 3*sqrt(log(c*e*x + c*d)))
- 3*I*sqrt(pi)*erf(I*sqrt(log(c*e*x + c*d))))/(c*e)
```

mupad [B] time = 0.17, size = 82, normalized size = 1.11

$$\frac{\ln\left(c\,\left(d+e\,x\right)\right)^{3/2}\,\left(\frac{3\,\sqrt{\pi}\,\operatorname{erfc}\left(\sqrt{-\ln(c\,(d+e\,x))}\right)}{4}+c\,\left(\frac{3\,\sqrt{-\ln(c\,(d+e\,x))}}{2}+\left(-\ln\left(c\,\left(d+e\,x\right)\right)\right)^{3/2}\right)\,\left(d+e\,x\right)\right)}{c\,e\,\left(-\ln\left(c\,\left(d+e\,x\right)\right)\right)^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(c*(d + e*x))^(3/2),x)
```

```
[Out] (log(c*(d + e*x))^(3/2)*((3*pi^(1/2)*erfc((-log(c*(d + e*x)))^(1/2)))/4 + c
*((3*(-log(c*(d + e*x)))^(1/2))/2 + (-log(c*(d + e*x)))^(3/2))*(d + e*x)))/
(c*e*(-log(c*(d + e*x)))^(3/2))
```

sympy [A] time = 132.61, size = 105, normalized size = 1.42

$$\begin{cases} \tilde{\infty} x & \text{for}\: c = 0 \\ x \log{\left(cd \right)}^{\frac{3}{2}} & \text{for}\: e = 0 \\ \frac{\left(- \sqrt{- \log{\left(cd + cex \right)}} \left(cd + cex\right) \left(\log{\left(cd + cex \right)} - \frac{3}{2}\right) + \frac{3 \sqrt{\pi} \operatorname{erfc}{\left(\sqrt{- \log{\left(cd + cex \right)}} \right)}}{4}\right) \log{\left(cd + cex \right)}^{\frac{3}{2}}}{ce \left(- \log{\left(cd + cex \right)}\right)^{\frac{3}{2}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(c*(e*x+d))**(3/2),x)
```

```
[Out] Piecewise((zoo*x, Eq(c, 0)), (x*log(c*d)**(3/2), Eq(e, 0)), ((-sqrt(-log(c*
d + c*e*x))*(c*d + c*e*x)*(log(c*d + c*e*x) - 3/2) + 3*sqrt(pi)*erfc(sqrt(-
log(c*d + c*e*x)))/4)*log(c*d + c*e*x)**(3/2)/(c*e*(-log(c*d + c*e*x))**(3/
2)), True))
```

3.11 $\int \sqrt{\log(c(d+ex))} \, dx$

Optimal. Leaf size=50

$$\frac{(d+ex)\sqrt{\log(c(d+ex))}}{e} - \frac{\sqrt{\pi}\,\text{erfi}\left(\sqrt{\log(c(d+ex))}\right)}{2ce}$$

```
[Out] -1/2*erfi(ln(c*(e*x+d))^(1/2))*Pi^(1/2)/c/e+(e*x+d)*ln(c*(e*x+d))^(1/2)/e
```

Rubi [A] time = 0.03, antiderivative size = 50, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}} = 0.417$, Rules used = {2389, 2296, 2299, 2180, 2204}

$$\frac{(d+ex)\sqrt{\log(c(d+ex))}}{e} - \frac{\sqrt{\pi}\,\text{Erfi}\left(\sqrt{\log(c(d+ex))}\right)}{2ce}$$

Antiderivative was successfully verified.

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

```
[Out] -(Sqrt[Pi]*Erfi[Sqrt[Log[c*(d + e*x)]]])/(2*c*e) + ((d + e*x)*Sqrt[Log[c*(d
 + e*x)]])/e
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2299

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[1/(n*c^(1
/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b,
 c, p}, x] && IntegerQ[1/n]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rubi steps

$$\int \sqrt{\log(c(d+ex))}\,dx = \frac{\text{Subst}\left(\int \sqrt{\log(cx)}\,dx, x, d+ex\right)}{e}$$
$$= \frac{(d+ex)\sqrt{\log(c(d+ex))}}{e} - \frac{\text{Subst}\left(\int \frac{1}{\sqrt{\log(cx)}}\,dx, x, d+ex\right)}{2e}$$
$$= \frac{(d+ex)\sqrt{\log(c(d+ex))}}{e} - \frac{\text{Subst}\left(\int \frac{e^x}{\sqrt{x}}\,dx, x, \log(c(d+ex))\right)}{2ce}$$
$$= \frac{(d+ex)\sqrt{\log(c(d+ex))}}{e} - \frac{\text{Subst}\left(\int e^{x^2}\,dx, x, \sqrt{\log(c(d+ex))}\right)}{ce}$$
$$= -\frac{\sqrt{\pi}\,\text{erfi}\left(\sqrt{\log(c(d+ex))}\right)}{2ce} + \frac{(d+ex)\sqrt{\log(c(d+ex))}}{e}$$

Mathematica [A] time = 0.01, size = 50, normalized size = 1.00

$$\frac{(d+ex)\sqrt{\log(c(d+ex))}}{e} - \frac{\sqrt{\pi}\,\text{erfi}\left(\sqrt{\log(c(d+ex))}\right)}{2ce}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[Log[c*(d + e*x)]],x]
[Out] -1/2*(Sqrt[Pi]*Erfi[Sqrt[Log[c*(d + e*x)]]])/(c*e) + ((d + e*x)*Sqrt[Log[c*
(d + e*x)]])/e
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(e*x+d))^(1/2),x, algorithm="fricas")
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [A] time = 0.24, size = 55, normalized size = 1.10

$$-\frac{\sqrt{\pi}\,i\,\text{erf}\left(-i\sqrt{\log(cxe+cd)}\right)e^{(-1)}}{2\,c} + \frac{(cxe+cd)e^{(-1)}\sqrt{\log(cxe+cd)}}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(e*x+d))^(1/2),x, algorithm="giac")
[Out] -1/2*sqrt(pi)*i*erf(-i*sqrt(log(c*x*e + c*d)))*e^(-1)/c + (c*x*e + c*d)*e^(
-1)*sqrt(log(c*x*e + c*d))/c
```

maple [F] time = 0.19, size = 0, normalized size = 0.00

$$\int \sqrt{\ln((ex+d)c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

maxima [C] time = 0.62, size = 49, normalized size = 0.98

$$-\frac{-i\sqrt{\pi}\ \mathrm{erf}\left(i\sqrt{\log\left(cex+cd\right)}\right)-2\left(cex+cd\right)\sqrt{\log\left(cex+cd\right)}}{2\,ce}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(e*x+d))^(1/2),x, algorithm="maxima")
```

```
[Out] -1/2*(-I*sqrt(pi)*erf(I*sqrt(log(c*e*x + c*d))) - 2*(c*e*x + c*d)*sqrt(log(
c*e*x + c*d)))/(c*e)
```

mupad [B] time = 0.18, size = 46, normalized size = 0.92

$$\frac{\sqrt{\ln\left(c\ \left(d+e\,x\right)\right)}\ \left(d+e\,x\right)}{e}+\frac{\sqrt{\pi}\ \mathrm{erf}\left(\sqrt{\ln\left(c\ \left(d+e\,x\right)\right)}\ 1\mathrm{i}\right)\ 1\mathrm{i}}{2\,c\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] (log(c*(d + e*x))^(1/2)*(d + e*x))/e + (pi^(1/2)*erf(log(c*(d + e*x))^(1/2)
*1i)*1i)/(2*c*e)
```

sympy [A] time = 2.24, size = 90, normalized size = 1.80

$$\begin{cases} \tilde{\infty} x & \text{for}\: c = 0 \\ x \sqrt{\log{\left(c d \right)}} & \text{for}\: e = 0 \\ \frac{\left(\sqrt{- \log{\left(c d + c e x \right)}} \left(c d + c e x\right) + \frac{\sqrt{\pi} \operatorname{erfc}{\left(\sqrt{- \log{\left(c d + c e x \right)}} \right)}}{2}\right) \sqrt{\log{\left(c d + c e x \right)}}}{c e \sqrt{- \log{\left(c d + c e x \right)}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Piecewise((zoo*x, Eq(c, 0)), (x*sqrt(log(c*d)), Eq(e, 0)), ((sqrt(-log(c*d
+ c*e*x))*(c*d + c*e*x) + sqrt(pi)*erfc(sqrt(-log(c*d + c*e*x)))/2)*sqrt(lo
g(c*d + c*e*x))/(c*e*sqrt(-log(c*d + c*e*x))), True))
```

3.12 $\int \frac{1}{\sqrt{\log(c(d+ex))}}\,dx$

Optimal. Leaf size=25

$$\frac{\sqrt{\pi}\,\mathrm{erfi}\left(\sqrt{\log(c(d+ex))}\right)}{ce}$$

[Out] erfi(ln(c*(e*x+d))^(1/2))*Pi^(1/2)/c/e

Rubi [A] time = 0.02, antiderivative size = 25, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {2389, 2299, 2180, 2204}

$$\frac{\sqrt{\pi}\,\mathrm{Erfi}\left(\sqrt{\log(c(d+ex))}\right)}{ce}$$

Antiderivative was successfully verified.

[In] Int[1/Sqrt[Log[c*(d + e*x)]],x]

[Out] (Sqrt[Pi]*Erfi[Sqrt[Log[c*(d + e*x)]]])/(c*e)

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2299

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[1/(n*c^(1
/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b,
 c, p}, x] && IntegerQ[1/n]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rubi steps

$$\begin{aligned}
\int \frac{1}{\sqrt{\log(c(d+ex))}}\,dx &= \frac{\mathrm{Subst}\left(\int \frac{1}{\sqrt{\log(cx)}}\,dx, x, d+ex\right)}{e}\\
&= \frac{\mathrm{Subst}\left(\int \frac{e^x}{\sqrt{x}}\,dx, x, \log(c(d+ex))\right)}{ce}\\
&= \frac{2\,\mathrm{Subst}\left(\int e^{x^2}\,dx, x, \sqrt{\log(c(d+ex))}\right)}{ce}\\
&= \frac{\sqrt{\pi}\,\mathrm{erfi}\left(\sqrt{\log(c(d+ex))}\right)}{ce}
\end{aligned}$$

Mathematica [A] time = 0.00, size = 25, normalized size = 1.00

$$\frac{\sqrt{\pi}\,\mathrm{erfi}\left(\sqrt{\log(c(d+ex))}\right)}{ce}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/Sqrt[Log[c*(d + e*x)]],x]
[Out] (Sqrt[Pi]*Erfi[Sqrt[Log[c*(d + e*x)]]])/(c*e)
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^(1/2),x, algorithm="fricas")
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [A] time = 0.24, size = 26, normalized size = 1.04

$$\frac{\sqrt{\pi}\,i\,\mathrm{erf}\left(-i\sqrt{\log\left(cxe+cd\right)}\right)e^{(-1)}}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^(1/2),x, algorithm="giac")
[Out] sqrt(pi)*i*erf(-i*sqrt(log(c*x*e + c*d)))*e^(-1)/c
```

maple [F] time = 0.05, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{\ln\left(\left(ex+d\right)c\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

maxima [C] time = 0.66, size = 25, normalized size = 1.00

$$-\frac{i\,\sqrt{\pi}\,\mathrm{erf}\left(i\,\sqrt{\log\left(cex+cd\right)}\right)}{ce}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^(1/2),x, algorithm="maxima")
[Out] -I*sqrt(pi)*erf(I*sqrt(log(c*e*x + c*d)))/(c*e)
```

mupad [B] time = 0.15, size = 45, normalized size = 1.80

$$\frac{\sqrt{\pi}\,\sqrt{-\ln\left(c\,\left(d+e\,x\right)\right)}\,\mathrm{erfc}\left(\sqrt{-\ln\left(c\,\left(d+e\,x\right)\right)}\right)}{c\,e\,\sqrt{\ln\left(c\,\left(d+e\,x\right)\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] (pi^(1/2)*(-log(c*(d + e*x)))^(1/2)*erfc((-log(c*(d + e*x)))^(1/2)))/(c*e*l
og(c*(d + e*x))^(1/2))
```

sympy [A] time = 2.15, size = 63, normalized size = 2.52

$$\begin{cases} 0 & \text{for } c = 0 \\ \frac{x}{\sqrt{\log(cd)}} & \text{for } e = 0 \\ \frac{\sqrt{\pi}\sqrt{-\log(cd+cex)}\operatorname{erfc}\left(\sqrt{-\log(cd+cex)}\right)}{ce\sqrt{\log(cd+cex)}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Piecewise((0, Eq(c, 0)), (x/sqrt(log(c*d)), Eq(e, 0)), (sqrt(pi)*sqrt(-log(
c*d + c*e*x))*erfc(sqrt(-log(c*d + c*e*x)))/(c*e*sqrt(log(c*d + c*e*x))), T
rue))
```

3.13 $\int \frac{1}{\log^{\frac{3}{2}}(c(d+ex))}\,dx$

Optimal. Leaf size=49

$$\frac{2\sqrt{\pi}\,\text{erfi}\left(\sqrt{\log(c(d+ex))}\right)}{ce}-\frac{2(d+ex)}{e\sqrt{\log(c(d+ex))}}$$

```
[Out] 2*erfi(ln(c*(e*x+d))^(1/2))*Pi^(1/2)/c/e-2*(e*x+d)/e/ln(c*(e*x+d))^(1/2)
```

Rubi [A] time = 0.03, antiderivative size = 49, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.417, Rules used = {2389, 2297, 2299, 2180, 2204}

$$\frac{2\sqrt{\pi}\,\text{Erfi}\left(\sqrt{\log(c(d+ex))}\right)}{ce}-\frac{2(d+ex)}{e\sqrt{\log(c(d+ex))}}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c*(d + e*x)]^(-3/2),x]
```

```
[Out] (2*Sqrt[Pi]*Erfi[Sqrt[Log[c*(d + e*x)]]])/(c*e) - (2*(d + e*x))/(e*Sqrt[Log
[c*(d + e*x)]])
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2297

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[(x*(a + b
*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
gerQ[2*p]
```

Rule 2299

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[1/(n*c^(1
/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b,
 c, p}, x] && IntegerQ[1/n]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rubi steps

$$
\begin{aligned}
\int \frac{1}{\log^{\frac{3}{2}}(c(d+ex))}\,dx &= \frac{\text{Subst}\left(\int \frac{1}{\log^{\frac{3}{2}}(cx)}\,dx,x,d+ex\right)}{e}\\
&= -\frac{2(d+ex)}{e\sqrt{\log(c(d+ex))}} + \frac{2\,\text{Subst}\left(\int \frac{1}{\sqrt{\log(cx)}}\,dx,x,d+ex\right)}{e}\\
&= -\frac{2(d+ex)}{e\sqrt{\log(c(d+ex))}} + \frac{2\,\text{Subst}\left(\int \frac{e^x}{\sqrt{x}}\,dx,x,\log(c(d+ex))\right)}{ce}\\
&= -\frac{2(d+ex)}{e\sqrt{\log(c(d+ex))}} + \frac{4\,\text{Subst}\left(\int e^{x^2}\,dx,x,\sqrt{\log(c(d+ex))}\right)}{ce}\\
&= \frac{2\sqrt{\pi}\,\text{erfi}\left(\sqrt{\log(c(d+ex))}\right)}{ce} - \frac{2(d+ex)}{e\sqrt{\log(c(d+ex))}}
\end{aligned}
$$

Mathematica [A] time = 0.02, size = 58, normalized size = 1.18

$$
\frac{2\sqrt{-\log(c(d+ex))}\,\Gamma\left(\frac{1}{2},-\log(c(d+ex))\right)-2c(d+ex)}{ce\sqrt{\log(c(d+ex))}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(d + e*x)]^(-3/2),x]
[Out] (-2*c*(d + e*x) + 2*Gamma[1/2, -Log[c*(d + e*x)]]*Sqrt[-Log[c*(d + e*x)]])/
(c*e*Sqrt[Log[c*(d + e*x)]])
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^(3/2),x, algorithm="fricas")
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

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

$$
\int \frac{1}{\log\left((ex+d)c\right)^{\frac{3}{2}}}\,dx
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^(3/2),x, algorithm="giac")
[Out] integrate(log((e*x + d)*c)^(-3/2), x)
```

maple [F] time = 0.05, size = 0, normalized size = 0.00

$$
\int \frac{1}{\ln\left((ex+d)\,c\right)^{\frac{3}{2}}}\,dx
$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int(1/ln((e*x+d)*c)^(3/2),x)
```

maxima [A] time = 1.07, size = 45, normalized size = 0.92

$$-\frac{\sqrt{-\log\left(cex+cd\right)}\,\Gamma\left(-\frac{1}{2},-\log\left(cex+cd\right)\right)}{ce\sqrt{\log\left(cex+cd\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^(3/2),x, algorithm="maxima")
```

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

mupad [B] time = 0.16, size = 67, normalized size = 1.37

$$-\frac{2\,\left(d+e\,x\right)}{e\,\sqrt{\ln\left(c\,\left(d+e\,x\right)\right)}}-\frac{2\,\sqrt{\pi}\,{\left(-\ln\left(c\,\left(d+e\,x\right)\right)\right)}^{3/2}\,\mathrm{erfc}\left(\sqrt{-\ln\left(c\,\left(d+e\,x\right)\right)}\right)}{c\,e\,{\ln\left(c\,\left(d+e\,x\right)\right)}^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] - (2*(d + e*x))/(e*log(c*(d + e*x))^(1/2)) - (2*pi^(1/2)*(-log(c*(d + e*x))
)^(3/2)*erfc((-log(c*(d + e*x)))^(1/2)))/(c*e*log(c*(d + e*x))^(3/2))
```

sympy [A] time = 29.71, size = 92, normalized size = 1.88

$$\begin{cases} 0 & \text{for}\: c = 0 \\ \frac{x}{\log{\left(cd \right)}^{\frac{3}{2}}} & \text{for}\: e = 0 \\ \frac{\left(- \log{\left(cd + cex \right)}\right)^{\frac{3}{2}} \left(- 2 \sqrt{\pi} \operatorname{erfc}{\left(\sqrt{- \log{\left(cd + cex \right)}} \right)} + \frac{2 \left(cd + cex\right)}{\sqrt{- \log{\left(cd + cex \right)}}}\right)}{ce \log{\left(cd + cex \right)}^{\frac{3}{2}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Piecewise((0, Eq(c, 0)), (x/log(c*d)**(3/2), Eq(e, 0)), ((-log(c*d + c*e*x)
)**(3/2)*(-2*sqrt(pi)*erfc(sqrt(-log(c*d + c*e*x))) + 2*(c*d + c*e*x)/sqrt(
-log(c*d + c*e*x)))/(c*e*log(c*d + c*e*x)**(3/2)), True))
```

3.14 $\int \frac{1}{\log^{\frac{5}{2}}(c(d+ex))}\,dx$

Optimal. Leaf size=77

$$\frac{4\sqrt{\pi}\,\mathrm{erfi}\left(\sqrt{\log(c(d+ex))}\right)}{3ce}-\frac{2(d+ex)}{3e\log^{\frac{3}{2}}(c(d+ex))}-\frac{4(d+ex)}{3e\sqrt{\log(c(d+ex))}}$$

```
[Out] -2/3*(e*x+d)/e/ln(c*(e*x+d))^(3/2)+4/3*erfi(ln(c*(e*x+d))^(1/2))*Pi^(1/2)/c
/e-4/3*(e*x+d)/e/ln(c*(e*x+d))^(1/2)
```

Rubi [A] time = 0.04, antiderivative size = 77, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.417, Rules used = {2389, 2297, 2299, 2180, 2204}

$$\frac{4\sqrt{\pi}\,\mathrm{Erfi}\left(\sqrt{\log(c(d+ex))}\right)}{3ce}-\frac{2(d+ex)}{3e\log^{\frac{3}{2}}(c(d+ex))}-\frac{4(d+ex)}{3e\sqrt{\log(c(d+ex))}}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c*(d + e*x)]^(-5/2),x]
```

```
[Out] (4*Sqrt[Pi]*Erfi[Sqrt[Log[c*(d + e*x)]]])/(3*c*e) - (2*(d + e*x))/(3*e*Log[
c*(d + e*x)]^(3/2)) - (4*(d + e*x))/(3*e*Sqrt[Log[c*(d + e*x)]])
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2297

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[(x*(a + b
*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
gerQ[2*p]
```

Rule 2299

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[1/(n*c^(1
/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b,
 c, p}, x] && IntegerQ[1/n]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rubi steps

$$\int \frac{1}{\log^{\frac{5}{2}}(c(d+ex))}\,dx = \frac{\text{Subst}\left(\int \frac{1}{\log^{\frac{5}{2}}(cx)}\,dx, x, d+ex\right)}{e}$$

$$= -\frac{2(d+ex)}{3e\log^{\frac{3}{2}}(c(d+ex))} + \frac{2\,\text{Subst}\left(\int \frac{1}{\log^{\frac{3}{2}}(cx)}\,dx, x, d+ex\right)}{3e}$$

$$= -\frac{2(d+ex)}{3e\log^{\frac{3}{2}}(c(d+ex))} - \frac{4(d+ex)}{3e\sqrt{\log(c(d+ex))}} + \frac{4\,\text{Subst}\left(\int \frac{1}{\sqrt{\log(cx)}}\,dx, x, d+ex\right)}{3e}$$

$$= -\frac{2(d+ex)}{3e\log^{\frac{3}{2}}(c(d+ex))} - \frac{4(d+ex)}{3e\sqrt{\log(c(d+ex))}} + \frac{4\,\text{Subst}\left(\int \frac{e^x}{\sqrt{x}}\,dx, x, \log(c(d+ex))\right)}{3ce}$$

$$= -\frac{2(d+ex)}{3e\log^{\frac{3}{2}}(c(d+ex))} - \frac{4(d+ex)}{3e\sqrt{\log(c(d+ex))}} + \frac{8\,\text{Subst}\left(\int e^{x^2}\,dx, x, \sqrt{\log(c(d+ex))}\right)}{3ce}$$

$$= \frac{4\sqrt{\pi}\,\text{erfi}\left(\sqrt{\log(c(d+ex))}\right)}{3ce} - \frac{2(d+ex)}{3e\log^{\frac{3}{2}}(c(d+ex))} - \frac{4(d+ex)}{3e\sqrt{\log(c(d+ex))}}$$

Mathematica [A] time = 0.03, size = 72, normalized size = 0.94

$$-\frac{2\left(c(d+ex)(2\log(c(d+ex))+1)+2(-\log(c(d+ex)))^{3/2}\Gamma\left(\frac{1}{2},-\log(c(d+ex))\right)\right)}{3ce\log^{\frac{3}{2}}(c(d+ex))}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(d + e*x)]^(-5/2),x]
```

```
[Out] (-2*(2*Gamma[1/2, -Log[c*(d + e*x)]]*(-Log[c*(d + e*x)])^(3/2) + c*(d + e*x
)*(1 + 2*Log[c*(d + e*x)])))/(3*c*e*Log[c*(d + e*x)]^(3/2))
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

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

$$\int \frac{1}{\log\left((ex+d)c\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^(5/2),x, algorithm="giac")
```

```
[Out] integrate(log((e*x + d)*c)^(-5/2), x)
```

maple [F] time = 0.05, size = 0, normalized size = 0.00

$$\int \frac{1}{\ln \left(\left(ex+d\right)c\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/ln((e*x+d)*c)^(5/2),x)
```

```
[Out] int(1/ln((e*x+d)*c)^(5/2),x)
```

maxima [A] time = 0.96, size = 45, normalized size = 0.58

$$-\frac{\left(-\log\left(cex+cd\right)\right)^{\frac{3}{2}}\Gamma\left(-\frac{3}{2},-\log\left(cex+cd\right)\right)}{ce\log\left(cex+cd\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^(5/2),x, algorithm="maxima")
```

```
[Out] -(-log(c*e*x + c*d))^(3/2)*gamma(-3/2, -log(c*e*x + c*d))/(c*e*log(c*e*x +
c*d)^(3/2))
```

mupad [B] time = 0.18, size = 113, normalized size = 1.47

$$\frac{4\sqrt{\pi}\,\left(-\ln\left(c\,\left(d+e\,x\right)\right)\right)^{5/2}\mathrm{erfc}\left(\sqrt{-\ln\left(c\,\left(d+e\,x\right)\right)}\right)}{3\,c\,e\ln\left(c\,\left(d+e\,x\right)\right)^{5/2}}-\frac{4\,d\ln\left(c\,\left(d+e\,x\right)\right)^2+2\,d\,\ln\left(c\,\left(d+e\,x\right)\right)+2\,e\,x\,\ln\left(c\,\left(d+e\right.\right.}{3\,e\ln\left(c\,\left(d+e\,x\right)\right)^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/log(c*(d + e*x))^(5/2),x)
```

```
[Out] (4*pi^(1/2)*(-log(c*(d + e*x)))^(5/2)*erfc((-log(c*(d + e*x)))^(1/2)))/(3*c
*e*log(c*(d + e*x))^(5/2)) - (4*d*log(c*(d + e*x))^2 + 2*d*log(c*(d + e*x))
 + 2*e*x*log(c*(d + e*x)) + 4*e*x*log(c*(d + e*x))^2)/(3*e*log(c*(d + e*x))
^(5/2))
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/ln(c*(e*x+d))**(5/2),x)
```

```
[Out] Timed out
```

3.15 $\int \frac{1}{\log^{\frac{7}{2}}(c(d+ex))} dx$

Optimal. Leaf size=101

$$\frac{8\sqrt{\pi}\,\text{erfi}\left(\sqrt{\log(c(d+ex))}\right)}{15ce} - \frac{4(d+ex)}{15e\log^{\frac{3}{2}}(c(d+ex))} - \frac{2(d+ex)}{5e\log^{\frac{5}{2}}(c(d+ex))} - \frac{8(d+ex)}{15e\sqrt{\log(c(d+ex))}}$$

```
[Out] -2/5*(e*x+d)/e/ln(c*(e*x+d))^(5/2)-4/15*(e*x+d)/e/ln(c*(e*x+d))^(3/2)+8/15*
erfi(ln(c*(e*x+d))^(1/2))*Pi^(1/2)/c/e-8/15*(e*x+d)/e/ln(c*(e*x+d))^(1/2)
```

Rubi [A] time = 0.05, antiderivative size = 101, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.417, Rules used = {2389, 2297, 2299, 2180, 2204}

$$\frac{8\sqrt{\pi}\,\text{Erfi}\left(\sqrt{\log(c(d+ex))}\right)}{15ce} - \frac{4(d+ex)}{15e\log^{\frac{3}{2}}(c(d+ex))} - \frac{2(d+ex)}{5e\log^{\frac{5}{2}}(c(d+ex))} - \frac{8(d+ex)}{15e\sqrt{\log(c(d+ex))}}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c*(d + e*x)]^(-7/2),x]
```

```
[Out] (8*Sqrt[Pi]*Erfi[Sqrt[Log[c*(d + e*x)]]])/(15*c*e) - (2*(d + e*x))/(5*e*Log
[c*(d + e*x)]^(5/2)) - (4*(d + e*x))/(15*e*Log[c*(d + e*x)]^(3/2)) - (8*(d
+ e*x))/(15*e*Sqrt[Log[c*(d + e*x)]])
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2297

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[(x*(a + b
*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
gerQ[2*p]
```

Rule 2299

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[1/(n*c^(1
/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b,
 c, p}, x] && IntegerQ[1/n]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rubi steps

$$\int \frac{1}{\log^{\frac{7}{2}}(c(d+ex))}\,dx = \frac{\text{Subst}\left(\int \frac{1}{\log^{\frac{7}{2}}(cx)}\,dx, x, d+ex\right)}{e}$$

$$= -\frac{2(d+ex)}{5e\log^{\frac{5}{2}}(c(d+ex))} + \frac{2\,\text{Subst}\left(\int \frac{1}{\log^{\frac{5}{2}}(cx)}\,dx, x, d+ex\right)}{5e}$$

$$= -\frac{2(d+ex)}{5e\log^{\frac{5}{2}}(c(d+ex))} - \frac{4(d+ex)}{15e\log^{\frac{3}{2}}(c(d+ex))} + \frac{4\,\text{Subst}\left(\int \frac{1}{\log^{\frac{3}{2}}(cx)}\,dx, x, d+ex\right)}{15e}$$

$$= -\frac{2(d+ex)}{5e\log^{\frac{5}{2}}(c(d+ex))} - \frac{4(d+ex)}{15e\log^{\frac{3}{2}}(c(d+ex))} - \frac{8(d+ex)}{15e\sqrt{\log(c(d+ex))}} + \frac{8\,\text{Subst}\left(\int \frac{1}{\sqrt{\log(cx)}}\,d\right.}{15e}$$

$$= -\frac{2(d+ex)}{5e\log^{\frac{5}{2}}(c(d+ex))} - \frac{4(d+ex)}{15e\log^{\frac{3}{2}}(c(d+ex))} - \frac{8(d+ex)}{15e\sqrt{\log(c(d+ex))}} + \frac{8\,\text{Subst}\left(\int \frac{e^x}{\sqrt{x}}\,dx, x\right.}{15ce}$$

$$= -\frac{2(d+ex)}{5e\log^{\frac{5}{2}}(c(d+ex))} - \frac{4(d+ex)}{15e\log^{\frac{3}{2}}(c(d+ex))} - \frac{8(d+ex)}{15e\sqrt{\log(c(d+ex))}} + \frac{16\,\text{Subst}\left(\int e^{x^2}\,dx, x\right.}{15}$$

$$= \frac{8\sqrt{\pi}\,\text{erfi}\left(\sqrt{\log(c(d+ex))}\right)}{15ce} - \frac{2(d+ex)}{5e\log^{\frac{5}{2}}(c(d+ex))} - \frac{4(d+ex)}{15e\log^{\frac{3}{2}}(c(d+ex))} - \frac{8(d+ex)}{15e\sqrt{\log(c(d}}$$

Mathematica [A] time = 0.04, size = 85, normalized size = 0.84

$$\frac{8(-\log(c(d+ex)))^{5/2}\Gamma\left(\frac{1}{2}, -\log(c(d+ex))\right) - 2c(d+ex)\left(4\log^2(c(d+ex)) + 2\log(c(d+ex)) + 3\right)}{15ce\log^{\frac{5}{2}}(c(d+ex))}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(d + e*x)]^(-7/2),x]
```

```
[Out] (8*Gamma[1/2, -Log[c*(d + e*x)]]*(-Log[c*(d + e*x)])^(5/2) - 2*c*(d + e*x)*
(3 + 2*Log[c*(d + e*x)] + 4*Log[c*(d + e*x)]^2))/(15*c*e*Log[c*(d + e*x)]^(
5/2))
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^(7/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

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

$$\int \frac{1}{\log\left((ex+d)c\right)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^(7/2),x, algorithm="giac")
```

```
[Out] integrate(log((e*x + d)*c)^(-7/2), x)
```

maple [F] time = 0.05, size = 0, normalized size = 0.00

$$\int \frac{1}{\ln\left(\left(ex+d\right)c\right)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/ln((e*x+d)*c)^(7/2),x)
```

```
[Out] int(1/ln((e*x+d)*c)^(7/2),x)
```

maxima [A] time = 1.05, size = 45, normalized size = 0.45

$$-\frac{\left(-\log\left(cex+cd\right)\right)^{\frac{5}{2}}\Gamma\left(-\frac{5}{2},-\log\left(cex+cd\right)\right)}{ce\log\left(cex+cd\right)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^(7/2),x, algorithm="maxima")
```

```
[Out] -(-log(c*e*x + c*d))^(5/2)*gamma(-5/2, -log(c*e*x + c*d))/(c*e*log(c*e*x +
c*d)^(5/2))
```

mupad [B] time = 0.19, size = 140, normalized size = 1.39

$$-\frac{4\,d\ln\left(c\,\left(d+e\,x\right)\right)^2+8\,d\ln\left(c\,\left(d+e\,x\right)\right)^3+6\,d\,\ln\left(c\,\left(d+e\,x\right)\right)+6\,e\,x\,\ln\left(c\,\left(d+e\,x\right)\right)+4\,e\,x\ln\left(c\,\left(d+e\,x\right)\right)^2+}{15\,e\ln\left(c\,\left(d+e\,x\right)\right)^{7/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/log(c*(d + e*x))^(7/2),x)
```

```
[Out] - (4*d*log(c*(d + e*x))^2 + 8*d*log(c*(d + e*x))^3 + 6*d*log(c*(d + e*x)) +
 6*e*x*log(c*(d + e*x)) + 4*e*x*log(c*(d + e*x))^2 + 8*e*x*log(c*(d + e*x))
^3)/(15*e*log(c*(d + e*x))^(7/2)) - (8*pi^(1/2)*(-log(c*(d + e*x)))^(7/2)*e
rfc((-log(c*(d + e*x)))^(1/2)))/(15*c*e*log(c*(d + e*x))^(7/2))
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/ln(c*(e*x+d))**(7/2),x)
```

```
[Out] Timed out
```

3.16 $\int \log^p(c(d+ex))\,dx$

Optimal. Leaf size=45

$$\frac{(-\log(c(d+ex)))^{-p}\log^p(c(d+ex))\Gamma(p+1,-\log(c(d+ex)))}{ce}$$

```
[Out] GAMMA(1+p,-ln(c*(e*x+d)))*ln(c*(e*x+d))^p/c/e/((-ln(c*(e*x+d)))^p)
```

Rubi [A] time = 0.03, antiderivative size = 45, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}} = 0.300$, Rules used = {2389, 2299, 2181}

$$\frac{(-\log(c(d+ex)))^{-p}\log^p(c(d+ex))\text{Gamma}(p+1,-\log(c(d+ex)))}{ce}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c*(d + e*x)]^p,x]
```

```
[Out] (Gamma[1 + p, -Log[c*(d + e*x)]]*Log[c*(d + e*x)]^p)/(c*e*(-Log[c*(d + e*x)
])^p)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] && !I
ntegerQ[m]
```

Rule 2299

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[1/(n*c^(1
/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b,
 c, p}, x] && IntegerQ[1/n]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rubi steps

$$\begin{aligned}
\int \log^p(c(d+ex))\,dx &= \frac{\text{Subst}\left(\int \log^p(cx)\,dx, x, d+ex\right)}{e}\\
&= \frac{\text{Subst}\left(\int e^x x^p\,dx, x, \log(c(d+ex))\right)}{ce}\\
&= \frac{\Gamma(1+p,-\log(c(d+ex)))(-\log(c(d+ex)))^{-p}\log^p(c(d+ex))}{ce}
\end{aligned}$$

Mathematica [A] time = 0.02, size = 45, normalized size = 1.00

$$\frac{(-\log(c(d+ex)))^{-p}\log^p(c(d+ex))\Gamma(p+1,-\log(c(d+ex)))}{ce}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(d + e*x)]^p,x]
```

```
[Out] (Gamma[1 + p, -Log[c*(d + e*x)]]*Log[c*(d + e*x)]^p)/(c*e*(-Log[c*(d + e*x)
])^p)
```

fricas [A] time = 0.69, size = 26, normalized size = 0.58

$$\frac{\cos\left(\pi p\right)\Gamma\left(p+1,-\log\left(cex+cd\right)\right)}{ce}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(e*x+d))^p,x, algorithm="fricas")
```

```
[Out] cos(pi*p)*gamma(p + 1, -log(c*e*x + c*d))/(c*e)
```

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

$$\int \log\left((ex+d)c\right)^{p}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(e*x+d))^p,x, algorithm="giac")
```

```
[Out] integrate(log((e*x + d)*c)^p, x)
```

maple [F] time = 0.06, size = 0, normalized size = 0.00

$$\int \ln\left(\left(ex+d\right)c\right)^{p}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln((e*x+d)*c)^p,x)
```

```
[Out] int(ln((e*x+d)*c)^p,x)
```

maxima [A] time = 1.06, size = 53, normalized size = 1.18

$$-\frac{\left(-\log\left(cex+cd\right)\right)^{-p-1}\log\left(cex+cd\right)^{p+1}\Gamma\left(p+1,-\log\left(cex+cd\right)\right)}{ce}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(e*x+d))^p,x, algorithm="maxima")
```

```
[Out] -(-log(c*e*x + c*d))^(-p - 1)*log(c*e*x + c*d)^(p + 1)*gamma(p + 1, -log(c*
e*x + c*d))/(c*e)
```

mupad [B] time = 0.18, size = 45, normalized size = 1.00

$$\frac{\ln\left(c\,\left(d+e\,x\right)\right)^{p}\,\Gamma\left(p+1,-\ln\left(c\,\left(d+e\,x\right)\right)\right)}{c\,e\,\left(-\ln\left(c\,\left(d+e\,x\right)\right)\right)^{p}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(c*(d + e*x))^p,x)
```

```
[Out] (log(c*(d + e*x))^p*igamma(p + 1, -log(c*(d + e*x))))/(c*e*(-log(c*(d + e*x
)))^p)
```

sympy [A] time = 6.94, size = 54, normalized size = 1.20

$$\begin{cases} \tilde{\infty}^p x & \text{for } c = 0 \\ x \log(cd)^p & \text{for } e = 0 \\ \frac{(-\log(cd+cex))^{-p} \log(cd+cex)^p \Gamma(p+1, -\log(cd+cex))}{ce} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(c*(e*x+d))**p,x)
```

```
[Out] Piecewise((zoo**p*x, Eq(c, 0)), (x*log(c*d)**p, Eq(e, 0)), ((-log(c*d + c*e
*x))**(-p)*log(c*d + c*e*x)**p*uppergamma(p + 1, -log(c*d + c*e*x))/(c*e),
True))
```

3.17 $\int \left(a+b\log\left(c(d+ex)^n\right)\right)^4 \, dx$

Optimal. Leaf size=131

$$-24ab^3n^3x+\frac{12b^2n^2(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{e}-\frac{4bn(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{e}+\frac{(d+ex)\left(a+b\,\mathrm{lo}\right.}{e}$$

```
[Out] -24*a*b^3*n^3*x+24*b^4*n^4*x-24*b^4*n^3*(e*x+d)*ln(c*(e*x+d)^n)/e+12*b^2*n^
2*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^2/e-4*b*n*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^3/e
+(e*x+d)*(a+b*ln(c*(e*x+d)^n))^4/e
```

Rubi [A] time = 0.07, antiderivative size = 131, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188, Rules used = {2389, 2296, 2295}

$$\frac{12b^2n^2(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{e}-24ab^3n^3x-\frac{4bn(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{e}+\frac{(d+ex)\left(a+b\log\right.}{e}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^4,x]
```

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

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rubi steps

$$\int \left(a+b\log \left(c(d+ex)^n\right)\right)^4 dx = \frac{\text{Subst}\left(\int \left(a+b\log \left(cx^n\right)\right)^4 dx, x, d+ex\right)}{e}$$

$$= \frac{(d+ex)\left(a+b\log \left(c(d+ex)^n\right)\right)^4}{e} - \frac{(4bn)\,\text{Subst}\left(\int \left(a+b\log \left(cx^n\right)\right)^3 dx, x, d+\right.}{e}$$

$$= -\frac{4bn(d+ex)\left(a+b\log \left(c(d+ex)^n\right)\right)^3}{e} + \frac{(d+ex)\left(a+b\log \left(c(d+ex)^n\right)\right)^4}{e} + \frac{(1}{}$$

$$= \frac{12b^2n^2(d+ex)\left(a+b\log \left(c(d+ex)^n\right)\right)^2}{e} - \frac{4bn(d+ex)\left(a+b\log \left(c(d+ex)^n\right)\right)^3}{e}$$

$$= -24ab^3n^3x + \frac{12b^2n^2(d+ex)\left(a+b\log \left(c(d+ex)^n\right)\right)^2}{e} - \frac{4bn(d+ex)\left(a+b\log\right.}{e}$$

$$= -24ab^3n^3x + 24b^4n^4x - \frac{24b^4n^3(d+ex)\log \left(c(d+ex)^n\right)}{e} + \frac{12b^2n^2(d+ex)\left(a+\right.}{e}$$

Mathematica [A] time = 0.06, size = 112, normalized size = 0.85

$$\frac{(d+ex)\left(a+b\log \left(c(d+ex)^n\right)\right)^4 - 4bn\left((d+ex)\left(a+b\log \left(c(d+ex)^n\right)\right)^3 - 3bn\left((d+ex)\left(a+b\log \left(c(d+ex)^n\right)\right)^2\right.\right.}{e}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^4,x]
```

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

fricas [B] time = 0.62, size = 614, normalized size = 4.69

$$\frac{b^4ex\log(c)^4 + \left(b^4en^4x + b^4dn^4\right)\log(ex+d)^4 - 4\left(b^4en - ab^3e\right)x\log(c)^3 - 4\left(b^4dn^4 - ab^3dn^3 + \left(b^4en^4 - ab^3en^3\right)\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^4,x, algorithm="fricas")
```

```
[Out] (b^4*e*x*log(c)^4 + (b^4*e*n^4*x + b^4*d*n^4)*log(e*x + d)^4 - 4*(b^4*e*n -
 a*b^3*e)*x*log(c)^3 - 4*(b^4*d*n^4 - a*b^3*d*n^3 + (b^4*e*n^4 - a*b^3*e*n^
3)*x - (b^4*e*n^3*x + b^4*d*n^3)*log(c))*log(e*x + d)^3 + 6*(2*b^4*e*n^2 -
2*a*b^3*e*n + a^2*b^2*e)*x*log(c)^2 + 6*(2*b^4*d*n^4 - 2*a*b^3*d*n^3 + a^2*
b^2*d*n^2 + (b^4*e*n^2*x + b^4*d*n^2)*log(c)^2 + (2*b^4*e*n^4 - 2*a*b^3*e*n
^3 + a^2*b^2*e*n^2)*x - 2*(b^4*d*n^3 - a*b^3*d*n^2 + (b^4*e*n^3 - a*b^3*e*n
^2)*x)*log(c))*log(e*x + d)^2 - 4*(6*b^4*e*n^3 - 6*a*b^3*e*n^2 + 3*a^2*b^2*
e*n - a^3*b*e)*x*log(c) + (24*b^4*e*n^4 - 24*a*b^3*e*n^3 + 12*a^2*b^2*e*n^2
 - 4*a^3*b*e*n + a^4*e)*x - 4*(6*b^4*d*n^4 - 6*a*b^3*d*n^3 + 3*a^2*b^2*d*n^
2 - a^3*b*d*n - (b^4*e*n*x + b^4*d*n)*log(c)^3 + 3*(b^4*d*n^2 - a*b^3*d*n +
 (b^4*e*n^2 - a*b^3*e*n)*x)*log(c)^2 + (6*b^4*e*n^4 - 6*a*b^3*e*n^3 + 3*a^2
*b^2*e*n^2 - a^3*b*e*n)*x - 3*(2*b^4*d*n^3 - 2*a*b^3*d*n^2 + a^2*b^2*d*n +
(2*b^4*e*n^3 - 2*a*b^3*e*n^2 + a^2*b^2*e*n)*x)*log(c))*log(e*x + d))/e
```

giac [B] time = 0.29, size = 778, normalized size = 5.94

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^4,x, algorithm="giac")
```

```
[Out] (x*e + d)*b^4*n^4*e^(-1)*log(x*e + d)^4 - 4*(x*e + d)*b^4*n^4*e^(-1)*log(x*
e + d)^3 + 4*(x*e + d)*b^4*n^3*e^(-1)*log(x*e + d)^3*log(c) + 12*(x*e + d)*
b^4*n^4*e^(-1)*log(x*e + d)^2 + 4*(x*e + d)*a*b^3*n^3*e^(-1)*log(x*e + d)^3
 - 12*(x*e + d)*b^4*n^3*e^(-1)*log(x*e + d)^2*log(c) + 6*(x*e + d)*b^4*n^2*
e^(-1)*log(x*e + d)^2*log(c)^2 - 24*(x*e + d)*b^4*n^4*e^(-1)*log(x*e + d) -
 12*(x*e + d)*a*b^3*n^3*e^(-1)*log(x*e + d)^2 + 24*(x*e + d)*b^4*n^3*e^(-1)
*log(x*e + d)*log(c) + 12*(x*e + d)*a*b^3*n^2*e^(-1)*log(x*e + d)^2*log(c)
- 12*(x*e + d)*b^4*n^2*e^(-1)*log(x*e + d)*log(c)^2 + 4*(x*e + d)*b^4*n*e^(
-1)*log(x*e + d)*log(c)^3 + 24*(x*e + d)*b^4*n^4*e^(-1) + 24*(x*e + d)*a*b^
3*n^3*e^(-1)*log(x*e + d) + 6*(x*e + d)*a^2*b^2*n^2*e^(-1)*log(x*e + d)^2 -
 24*(x*e + d)*b^4*n^3*e^(-1)*log(c) - 24*(x*e + d)*a*b^3*n^2*e^(-1)*log(x*e
 + d)*log(c) + 12*(x*e + d)*b^4*n^2*e^(-1)*log(c)^2 + 12*(x*e + d)*a*b^3*n*
e^(-1)*log(x*e + d)*log(c)^2 - 4*(x*e + d)*b^4*n*e^(-1)*log(c)^3 + (x*e + d
)*b^4*e^(-1)*log(c)^4 - 24*(x*e + d)*a*b^3*n^3*e^(-1) - 12*(x*e + d)*a^2*b^
2*n^2*e^(-1)*log(x*e + d) + 24*(x*e + d)*a*b^3*n^2*e^(-1)*log(c) + 12*(x*e
+ d)*a^2*b^2*n*e^(-1)*log(x*e + d)*log(c) - 12*(x*e + d)*a*b^3*n*e^(-1)*log
(c)^2 + 4*(x*e + d)*a*b^3*e^(-1)*log(c)^3 + 12*(x*e + d)*a^2*b^2*n^2*e^(-1)
 + 4*(x*e + d)*a^3*b*n*e^(-1)*log(x*e + d) - 12*(x*e + d)*a^2*b^2*n*e^(-1)*
log(c) + 6*(x*e + d)*a^2*b^2*e^(-1)*log(c)^2 - 4*(x*e + d)*a^3*b*n*e^(-1) +
 4*(x*e + d)*a^3*b*e^(-1)*log(c) + (x*e + d)*a^4*e^(-1)
```

maple [C] time = 1.63, size = 15871, normalized size = 121.15

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)^4,x)
```

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

maxima [B] time = 0.83, size = 500, normalized size = 3.82

$$b^4x\log\left((ex+d)^nc\right)^4+4\,ab^3x\log\left((ex+d)^nc\right)^3-4\,a^3ben\left(\frac{x}{e}-\frac{d\log(ex+d)}{e^2}\right)+6\,a^2b^2x\log\left((ex+d)^nc\right)^2+4\,a^3bx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^4,x, algorithm="maxima")
```

```
[Out] b^4*x*log((e*x + d)^n*c)^4 + 4*a*b^3*x*log((e*x + d)^n*c)^3 - 4*a^3*b*e*n*(
x/e - d*log(e*x + d)/e^2) + 6*a^2*b^2*x*log((e*x + d)^n*c)^2 + 4*a^3*b*x*lo
g((e*x + d)^n*c) - 6*(2*e*n*(x/e - d*log(e*x + d)/e^2)*log((e*x + d)^n*c) +
 (d*log(e*x + d)^2 - 2*e*x + 2*d*log(e*x + d))*n^2/e)*a^2*b^2 - 4*(3*e*n*(x
/e - d*log(e*x + d)/e^2)*log((e*x + d)^n*c)^2 - e*n*((d*log(e*x + d)^3 + 3*
d*log(e*x + d)^2 - 6*e*x + 6*d*log(e*x + d))*n^2/e^2 - 3*(d*log(e*x + d)^2
- 2*e*x + 2*d*log(e*x + d))*n*log((e*x + d)^n*c)/e^2))*a*b^3 - (4*e*n*(x/e
- d*log(e*x + d)/e^2)*log((e*x + d)^n*c)^3 + (e*n*((d*log(e*x + d)^4 + 4*d*
log(e*x + d)^3 + 12*d*log(e*x + d)^2 - 24*e*x + 24*d*log(e*x + d))*n^2/e^3
- 4*(d*log(e*x + d)^3 + 3*d*log(e*x + d)^2 - 6*e*x + 6*d*log(e*x + d))*n*lo
g((e*x + d)^n*c)/e^3) + 6*(d*log(e*x + d)^2 - 2*e*x + 2*d*log(e*x + d))*n*l
og((e*x + d)^n*c)^2/e^2)*e*n)*b^4 + a^4*x
```

mupad [B] time = 0.36, size = 275, normalized size = 2.10

$$\ln\left(c\,(d+e\,x)^n\right)^2\,\left(\frac{6\,\left(d\,a^2\,b^2-2\,d\,a\,b^3\,n+2\,d\,b^4\,n^2\right)}{e}+6\,b^2\,x\,\left(a^2-2\,a\,b\,n+2\,b^2\,n^2\right)\right)+x\,\left(a^4-4\,a^3\,b\,n+12\,a^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^4,x)
```

```
[Out] log(c*(d + e*x)^n)^2*((6*(a^2*b^2*d + 2*b^4*d*n^2 - 2*a*b^3*d*n))/e + 6*b^2
*x*(a^2 + 2*b^2*n^2 - 2*a*b*n)) + x*(a^4 + 24*b^4*n^4 - 24*a*b^3*n^3 + 12*a
^2*b^2*n^2 - 4*a^3*b*n) + log(c*(d + e*x)^n)^4*(b^4*x + (b^4*d)/e) + log(c*
(d + e*x)^n)^3*((4*(a*b^3*d - b^4*d*n))/e + 4*b^3*x*(a - b*n)) - (log(d + e
*x)*(24*b^4*d*n^4 + 12*a^2*b^2*d*n^2 - 4*a^3*b*d*n - 24*a*b^3*d*n^3))/e + 4
*b*x*log(c*(d + e*x)^n)*(a^3 - 6*b^3*n^3 + 6*a*b^2*n^2 - 3*a^2*b*n)
```

sympy [A] time = 6.97, size = 1059, normalized size = 8.08

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**4,x)
```

```
[Out] Piecewise((a**4*x + 4*a**3*b*d*n*log(d + e*x)/e + 4*a**3*b*n*x*log(d + e*x)
 - 4*a**3*b*n*x + 4*a**3*b*x*log(c) + 6*a**2*b**2*d*n**2*log(d + e*x)**2/e
- 12*a**2*b**2*d*n**2*log(d + e*x)/e + 12*a**2*b**2*d*n*log(c)*log(d + e*x)
/e + 6*a**2*b**2*n**2*x*log(d + e*x)**2 - 12*a**2*b**2*n**2*x*log(d + e*x)
+ 12*a**2*b**2*n**2*x + 12*a**2*b**2*n*x*log(c)*log(d + e*x) - 12*a**2*b**2
*n*x*log(c) + 6*a**2*b**2*x*log(c)**2 + 4*a*b**3*d*n**3*log(d + e*x)**3/e -
 12*a*b**3*d*n**3*log(d + e*x)**2/e + 24*a*b**3*d*n**3*log(d + e*x)/e + 12*
a*b**3*d*n**2*log(c)*log(d + e*x)**2/e - 24*a*b**3*d*n**2*log(c)*log(d + e*
x)/e + 12*a*b**3*d*n*log(c)**2*log(d + e*x)/e + 4*a*b**3*n**3*x*log(d + e*x
)**3 - 12*a*b**3*n**3*x*log(d + e*x)**2 + 24*a*b**3*n**3*x*log(d + e*x) - 2
4*a*b**3*n**3*x + 12*a*b**3*n**2*x*log(c)*log(d + e*x)**2 - 24*a*b**3*n**2*
x*log(c)*log(d + e*x) + 24*a*b**3*n**2*x*log(c) + 12*a*b**3*n*x*log(c)**2*l
og(d + e*x) - 12*a*b**3*n*x*log(c)**2 + 4*a*b**3*x*log(c)**3 + b**4*d*n**4*
log(d + e*x)**4/e - 4*b**4*d*n**4*log(d + e*x)**3/e + 12*b**4*d*n**4*log(d
+ e*x)**2/e - 24*b**4*d*n**4*log(d + e*x)/e + 4*b**4*d*n**3*log(c)*log(d +
e*x)**3/e - 12*b**4*d*n**3*log(c)*log(d + e*x)**2/e + 24*b**4*d*n**3*log(c)
*log(d + e*x)/e + 6*b**4*d*n**2*log(c)**2*log(d + e*x)**2/e - 12*b**4*d*n**
2*log(c)**2*log(d + e*x)/e + 4*b**4*d*n*log(c)**3*log(d + e*x)/e + b**4*n**
4*x*log(d + e*x)**4 - 4*b**4*n**4*x*log(d + e*x)**3 + 12*b**4*n**4*x*log(d
+ e*x)**2 - 24*b**4*n**4*x*log(d + e*x) + 24*b**4*n**4*x + 4*b**4*n**3*x*lo
g(c)*log(d + e*x)**3 - 12*b**4*n**3*x*log(c)*log(d + e*x)**2 + 24*b**4*n**3
*x*log(c)*log(d + e*x) - 24*b**4*n**3*x*log(c) + 6*b**4*n**2*x*log(c)**2*lo
g(d + e*x)**2 - 12*b**4*n**2*x*log(c)**2*log(d + e*x) + 12*b**4*n**2*x*log(
c)**2 + 4*b**4*n*x*log(c)**3*log(d + e*x) - 4*b**4*n*x*log(c)**3 + b**4*x*l
og(c)**4, Ne(e, 0)), (x*(a + b*log(c*d**n))**4, True))
```

3.18 $\int \left(a+b\log\left(c(d+ex)^n\right)\right)^3 \, dx$

Optimal. Leaf size=99

$$6ab^2n^2x-\frac{3bn(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{e}+\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{e}+\frac{6b^3n^2(d+ex)\log\left(c(d+ex\right.}{e}$$

```
[Out] 6*a*b^2*n^2*x-6*b^3*n^3*x+6*b^3*n^2*(e*x+d)*ln(c*(e*x+d)^n)/e-3*b*n*(e*x+d)
*(a+b*ln(c*(e*x+d)^n))^2/e+(e*x+d)*(a+b*ln(c*(e*x+d)^n))^3/e
```

Rubi [A] time = 0.05, antiderivative size = 99, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188, Rules used = {2389, 2296, 2295}

$$6ab^2n^2x-\frac{3bn(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{e}+\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{e}+\frac{6b^3n^2(d+ex)\log\left(c(d+ex\right.}{e}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^3,x]
```

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

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rubi steps

$$\begin{aligned}
\int \left(a+b\log\left(c(d+ex)^n\right)\right)^3 \, dx &= \frac{\text{Subst}\left(\int \left(a+b\log\left(cx^n\right)\right)^3 \, dx,x,d+ex\right)}{e}\\
&= \frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{e}-\frac{(3bn)\,\text{Subst}\left(\int \left(a+b\log\left(cx^n\right)\right)^2 \, dx,x,d\right.}{e}\\
&= -\frac{3bn(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{e}+\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{e}+\\
&= 6ab^2n^2x-\frac{3bn(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{e}+\frac{(d+ex)\left(a+b\log\left(c(d+\right.\right.}{e}\\
&= 6ab^2n^2x-6b^3n^3x+\frac{6b^3n^2(d+ex)\log\left(c(d+ex)^n\right)}{e}-\frac{3bn(d+ex)\left(a+b\log\right.}{e}
\end{aligned}$$

Mathematica [A] time = 0.01, size = 85, normalized size = 0.86

$$\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^3-3bn\left((d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2-2bn\left(ex(a-bn)+b(d+ex)\log\left(c(d+\right.\right.\right.}{e}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^3,x]
```

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

fricas [B] time = 0.56, size = 324, normalized size = 3.27

$$\frac{b^3ex\log(c)^3+\left(b^3en^3x+b^3dn^3\right)\log\left(ex+d\right)^3-3\left(b^3en-ab^2e\right)x\log(c)^2-3\left(b^3dn^3-ab^2dn^2+\left(b^3en^3-ab^2en^2\right)\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] (b^3*e*x*log(c)^3 + (b^3*e*n^3*x + b^3*d*n^3)*log(e*x + d)^3 - 3*(b^3*e*n -
 a*b^2*e)*x*log(c)^2 - 3*(b^3*d*n^3 - a*b^2*d*n^2 + (b^3*e*n^3 - a*b^2*e*n^
2)*x - (b^3*e*n^2*x + b^3*d*n^2)*log(c))*log(e*x + d)^2 + 3*(2*b^3*e*n^2 -
2*a*b^2*e*n + a^2*b*e)*x*log(c) - (6*b^3*e*n^3 - 6*a*b^2*e*n^2 + 3*a^2*b*e*
n - a^3*e)*x + 3*(2*b^3*d*n^3 - 2*a*b^2*d*n^2 + a^2*b*d*n + (b^3*e*n*x + b^
3*d*n)*log(c)^2 + (2*b^3*e*n^3 - 2*a*b^2*e*n^2 + a^2*b*e*n)*x - 2*(b^3*d*n^
2 - a*b^2*d*n + (b^3*e*n^2 - a*b^2*e*n)*x)*log(c))*log(e*x + d))/e
```

giac [B] time = 0.19, size = 409, normalized size = 4.13

$$(xe+d)b^3n^3e^{(-1)}\log\left(xe+d\right)^3-3\left(xe+d\right)b^3n^3e^{(-1)}\log\left(xe+d\right)^2+3\left(xe+d\right)b^3n^2e^{(-1)}\log\left(xe+d\right)^2\log(c)+6\left(xe+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] (x*e + d)*b^3*n^3*e^(-1)*log(x*e + d)^3 - 3*(x*e + d)*b^3*n^3*e^(-1)*log(x*
e + d)^2 + 3*(x*e + d)*b^3*n^2*e^(-1)*log(x*e + d)^2*log(c) + 6*(x*e + d)*b
^3*n^3*e^(-1)*log(x*e + d) + 3*(x*e + d)*a*b^2*n^2*e^(-1)*log(x*e + d)^2 -
6*(x*e + d)*b^3*n^2*e^(-1)*log(x*e + d)*log(c) + 3*(x*e + d)*b^3*n*e^(-1)*l
og(x*e + d)*log(c)^2 - 6*(x*e + d)*b^3*n^3*e^(-1) - 6*(x*e + d)*a*b^2*n^2*e
^(-1)*log(x*e + d) + 6*(x*e + d)*b^3*n^2*e^(-1)*log(c) + 6*(x*e + d)*a*b^2*
n*e^(-1)*log(x*e + d)*log(c) - 3*(x*e + d)*b^3*n*e^(-1)*log(c)^2 + (x*e + d
)*b^3*e^(-1)*log(c)^3 + 6*(x*e + d)*a*b^2*n^2*e^(-1) + 3*(x*e + d)*a^2*b*n*
e^(-1)*log(x*e + d) - 6*(x*e + d)*a*b^2*n*e^(-1)*log(c) + 3*(x*e + d)*a*b^2
*e^(-1)*log(c)^2 - 3*(x*e + d)*a^2*b*n*e^(-1) + 3*(x*e + d)*a^2*b*e^(-1)*lo
g(c) + (x*e + d)*a^3*e^(-1)
```

maple [C] time = 0.70, size = 4872, normalized size = 49.21

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)^3,x)
```

```
[Out] a^3*x+x*b^3*ln((e*x+d)^n)^3-6*b^3*n^3*x+6*a*b^2*n^2*x-3*I/e*ln(c)*Pi*ln(e*x
+d)*b^3*d*n*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-3*I/e*Pi*ln(e*x
+d)*a*b^2*d*n*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+3/4*b*(8*ln(e
*x+d)*a*b*d*n-4*b^2*d*n^2*ln(e*x+d)^2+4*b^2*e*x*ln(c)^2-8*ln(e*x+d)*b^2*d*n
^2+4*a^2*e*x+4*I*Pi*ln(e*x+d)*b^2*d*n*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)
```

```
^2+4*I*ln(c)*Pi*b^2*e*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+4*I*ln(c)*Pi*b^2*e*
x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-4*I*Pi*b^2*e*n*x*csgn(I*c)*csgn(I
*c*(e*x+d)^n)^2-Pi^2*b^2*e*x*csgn(I*c*(e*x+d)^n)^6+8*ln(c)*ln(e*x+d)*b^2*d*
n+8*b^2*e*n^2*x-8*b^2*e*n*x*ln(c)+8*a*b*e*x*ln(c)-4*I*Pi*b^2*e*n*x*csgn(I*(
e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+4*I*Pi*a*b*e*x*csgn(I*c)*csgn(I*c*(e*x+d)^n
)^2+4*I*Pi*a*b*e*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+4*I*Pi*ln(e*x+d)
*b^2*d*n*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-4*I*ln(c)*Pi*b^2*e*x*csgn(I*c*(e*x
+d)^n)^3+4*I*Pi*b^2*e*n*x*csgn(I*c*(e*x+d)^n)^3-4*I*Pi*a*b*e*x*csgn(I*c*(e*
x+d)^n)^3-4*I*ln(c)*Pi*b^2*e*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)
^n)+4*I*Pi*b^2*e*n*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-4*I*Pi
*ln(e*x+d)*b^2*d*n*csgn(I*c*(e*x+d)^n)^3+2*Pi^2*b^2*e*x*csgn(I*c)^2*csgn(I*
(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^3+2*Pi^2*b^2*e*x*csgn(I*c)*csgn(I*(e*x+d)^n)
^2*csgn(I*c*(e*x+d)^n)^3-4*Pi^2*b^2*e*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*
c*(e*x+d)^n)^4-Pi^2*b^2*e*x*csgn(I*c)^2*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d
)^n)^2-8*a*b*e*n*x+2*Pi^2*b^2*e*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^5-P
i^2*b^2*e*x*csgn(I*c)^2*csgn(I*c*(e*x+d)^n)^4+2*Pi^2*b^2*e*x*csgn(I*c)*csgn
(I*c*(e*x+d)^n)^5-Pi^2*b^2*e*x*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^4-4*
I*Pi*a*b*e*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-4*I*Pi*ln(e*x+
d)*b^2*d*n*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n))/e*ln((e*x+d)^n)
+ln(c)^3*b^3*x+3/2*b^2*(-I*Pi*b*e*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e
*x+d)^n)+I*Pi*b*e*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*Pi*b*e*x*csgn(I*(e*x+
d)^n)*csgn(I*c*(e*x+d)^n)^2-I*Pi*b*e*x*csgn(I*c*(e*x+d)^n)^3+2*b*e*x*ln(c)+
2*b*d*n*ln(e*x+d)-2*b*e*n*x+2*a*e*x)/e*ln((e*x+d)^n)^2-3*a^2*b*n*x+3*ln(c)*
a^2*b*x+3*ln(c)^2*a*b^2*x-3*ln(c)^2*b^3*n*x+6*ln(c)*b^3*n^2*x-3/4*Pi^2*a*b^
2*x*csgn(I*c)^2*csgn(I*c*(e*x+d)^n)^4-3/e*ln(c)*b^3*d*n^2*ln(e*x+d)^2+3/e*l
n(c)^2*ln(e*x+d)*b^3*d*n-6/e*ln(c)*ln(e*x+d)*b^3*d*n^2-3/e*a*b^2*d*n^2*ln(e
*x+d)^2-6/e*ln(e*x+d)*a*b^2*d*n^2+3/e*ln(e*x+d)*a^2*b*d*n-3*I*Pi*b^3*n^2*x*
csgn(I*c*(e*x+d)^n)^3-3/2*I*Pi*a^2*b*x*csgn(I*c*(e*x+d)^n)^3-1/8*I*Pi^3*b^3
*x*csgn(I*(e*x+d)^n)^3*csgn(I*c*(e*x+d)^n)^6+3/8*I*Pi^3*b^3*x*csgn(I*(e*x+d
)^n)^2*csgn(I*c*(e*x+d)^n)^7-3/8*I*Pi^3*b^3*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e
*x+d)^n)^8-3/8*I*Pi^3*b^3*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^8+3/8*I*Pi^3*b^3*
x*csgn(I*c)^2*csgn(I*c*(e*x+d)^n)^7-1/8*I*Pi^3*b^3*x*csgn(I*c)^3*csgn(I*c*(
e*x+d)^n)^6-3/2*I*ln(c)^2*Pi*b^3*x*csgn(I*c*(e*x+d)^n)^3+6/e*ln(c)*ln(e*x+d
)*a*b^2*d*n-3/4/e*Pi^2*ln(e*x+d)*b^3*d*n*csgn(I*c*(e*x+d)^n)^6+3/2*ln(c)*Pi
^2*b^3*x*csgn(I*c)*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^3-3/4*ln(c)*Pi^2
*b^3*x*csgn(I*c)^2*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^2-3*ln(c)*Pi^2*b
^3*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^4+3/2*ln(c)*Pi^2*b^3*x
*csgn(I*c)^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^3-3/2*Pi^2*b^3*n*x*csgn(
I*c)*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^3+3/4*Pi^2*b^3*n*x*csgn(I*c)^2
*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^2+3*Pi^2*b^3*n*x*csgn(I*c)*csgn(I*
(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^4-3/2*Pi^2*b^3*n*x*csgn(I*c)^2*csgn(I*(e*x+d
)^n)*csgn(I*c*(e*x+d)^n)^3+3/2*Pi^2*a*b^2*x*csgn(I*c)*csgn(I*(e*x+d)^n)^2*c
sgn(I*c*(e*x+d)^n)^3-3/4*Pi^2*a*b^2*x*csgn(I*c)^2*csgn(I*(e*x+d)^n)^2*csgn(
I*c*(e*x+d)^n)^2-3*Pi^2*a*b^2*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d
)^n)^4+3/2*Pi^2*a*b^2*x*csgn(I*c)^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^3
+3/2*I/e*Pi*b^3*d*n^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*ln(e*
x+d)^2+3*I/e*ln(c)*Pi*ln(e*x+d)*b^3*d*n*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^
n)^2+3*I/e*ln(c)*Pi*ln(e*x+d)*b^3*d*n*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+3*I/e
*Pi*b^3*d*n^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*ln(e*x+d)+3*I
/e*Pi*ln(e*x+d)*a*b^2*d*n*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+3*I/e*Pi*
ln(e*x+d)*a*b^2*d*n*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-3/4*ln(c)*Pi^2*b^3*x*cs
gn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^4+3/2*ln(c)*Pi^2*b^3*x*csgn(I*(e*x+d)
^n)*csgn(I*c*(e*x+d)^n)^5+3/2*ln(c)*Pi^2*b^3*x*csgn(I*c)*csgn(I*c*(e*x+d)^n
)^5-3/4*ln(c)*Pi^2*b^3*x*csgn(I*c)^2*csgn(I*c*(e*x+d)^n)^4+3/4*Pi^2*b^3*n*x
*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^4-3/2*Pi^2*b^3*n*x*csgn(I*(e*x+d)^
n)*csgn(I*c*(e*x+d)^n)^5-3/2*Pi^2*b^3*n*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^5+3
/4*Pi^2*b^3*n*x*csgn(I*c)^2*csgn(I*c*(e*x+d)^n)^4-3/4*Pi^2*a*b^2*x*csgn(I*(
e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^4+3/2*Pi^2*a*b^2*x*csgn(I*(e*x+d)^n)*csgn(I
*c*(e*x+d)^n)^5+3/2*Pi^2*a*b^2*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^5-6*ln(c)*a*
```

```
b^2*n*x+1/e*b^3*d*n^3*ln(e*x+d)^3+3/e*b^3*d*n^3*ln(e*x+d)^2-3/4*ln(c)*Pi^2*
b^3*x*csgn(I*c*(e*x+d)^n)^6+3/4*Pi^2*b^3*n*x*csgn(I*c*(e*x+d)^n)^6-3/4*Pi^2
*a*b^2*x*csgn(I*c*(e*x+d)^n)^6+1/8*I*Pi^3*b^3*x*csgn(I*c*(e*x+d)^n)^9+6*b^3
*d*n^3/e*ln(e*x+d)-3/4/e*Pi^2*ln(e*x+d)*b^3*d*n*csgn(I*c)^2*csgn(I*(e*x+d)^
n)^2*csgn(I*c*(e*x+d)^n)^2-3/e*Pi^2*ln(e*x+d)*b^3*d*n*csgn(I*c)*csgn(I*(e*x
+d)^n)*csgn(I*c*(e*x+d)^n)^4+3/2/e*Pi^2*ln(e*x+d)*b^3*d*n*csgn(I*c)^2*csgn(
I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^3+3*I*ln(c)*Pi*b^3*n*x*csgn(I*c)*csgn(I*(e
*x+d)^n)*csgn(I*c*(e*x+d)^n)-3*I*ln(c)*Pi*a*b^2*x*csgn(I*c)*csgn(I*(e*x+d)^
n)*csgn(I*c*(e*x+d)^n)+3*I*Pi*a*b^2*n*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*
c*(e*x+d)^n)-3/2*I/e*Pi*b^3*d*n^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*l
n(e*x+d)^2-3/2*I/e*Pi*b^3*d*n^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*ln(e*x+d)^2
-3*I/e*ln(c)*Pi*ln(e*x+d)*b^3*d*n*csgn(I*c*(e*x+d)^n)^3-3*I/e*Pi*b^3*d*n^2*
csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*ln(e*x+d)-3*I/e*Pi*b^3*d*n^2*csgn(I
*c)*csgn(I*c*(e*x+d)^n)^2*ln(e*x+d)-3*I/e*Pi*ln(e*x+d)*a*b^2*d*n*csgn(I*c*(
e*x+d)^n)^3+3/2/e*Pi^2*ln(e*x+d)*b^3*d*n*csgn(I*c)*csgn(I*(e*x+d)^n)^2*csgn
(I*c*(e*x+d)^n)^3-3/4/e*Pi^2*ln(e*x+d)*b^3*d*n*csgn(I*(e*x+d)^n)^2*csgn(I*c
*(e*x+d)^n)^4+3/2/e*Pi^2*ln(e*x+d)*b^3*d*n*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+
d)^n)^5+3/2/e*Pi^2*ln(e*x+d)*b^3*d*n*csgn(I*c)*csgn(I*c*(e*x+d)^n)^5-3/4/e*
Pi^2*ln(e*x+d)*b^3*d*n*csgn(I*c)^2*csgn(I*c*(e*x+d)^n)^4+3/2*I/e*Pi*b^3*d*n
^2*csgn(I*c*(e*x+d)^n)^3*ln(e*x+d)^2+3*I/e*Pi*b^3*d*n^2*csgn(I*c*(e*x+d)^n)
^3*ln(e*x+d)-3/2*I*ln(c)^2*Pi*b^3*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e
*x+d)^n)-3*I*ln(c)*Pi*b^3*n*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-3*I*l
n(c)*Pi*b^3*n*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-3*I*Pi*b^3*n^2*x*csgn(I*c)*
csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+3*I*ln(c)*Pi*a*b^2*x*csgn(I*(e*x+d)^n
)*csgn(I*c*(e*x+d)^n)^2+3*I*ln(c)*Pi*a*b^2*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^
2-3*I*Pi*a*b^2*n*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-3*I*Pi*a*b^2*n*x
*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-3/2*I*Pi*a^2*b*x*csgn(I*c)*csgn(I*(e*x+d)^
n)*csgn(I*c*(e*x+d)^n)+3/8*I*Pi^3*b^3*x*csgn(I*c)*csgn(I*(e*x+d)^n)^3*csgn(
I*c*(e*x+d)^n)^5-3/8*I*Pi^3*b^3*x*csgn(I*c)^2*csgn(I*(e*x+d)^n)^3*csgn(I*c*
(e*x+d)^n)^4+1/8*I*Pi^3*b^3*x*csgn(I*c)^3*csgn(I*(e*x+d)^n)^3*csgn(I*c*(e*x
+d)^n)^3-9/8*I*Pi^3*b^3*x*csgn(I*c)*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)
^6+9/8*I*Pi^3*b^3*x*csgn(I*c)^2*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^5-3
/8*I*Pi^3*b^3*x*csgn(I*c)^3*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^4+9/8*I
*Pi^3*b^3*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^7-9/8*I*Pi^3*b^
3*x*csgn(I*c)^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^6+3/8*I*Pi^3*b^3*x*cs
gn(I*c)^3*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^5+3/2*I*ln(c)^2*Pi*b^3*x*cs
gn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+3/2*I*ln(c)^2*Pi*b^3*x*csgn(I*c)*csgn
(I*c*(e*x+d)^n)^2+3*I*ln(c)*Pi*b^3*n*x*csgn(I*c*(e*x+d)^n)^3+3*I*Pi*b^3*n^2
*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+3*I*Pi*b^3*n^2*x*csgn(I*c)*csgn(
I*c*(e*x+d)^n)^2-3*I*ln(c)*Pi*a*b^2*x*csgn(I*c*(e*x+d)^n)^3+3*I*Pi*a*b^2*n*
x*csgn(I*c*(e*x+d)^n)^3+3/2*I*Pi*a^2*b*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)
^n)^2+3/2*I*Pi*a^2*b*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2
```

maxima [B] time = 0.71, size = 282, normalized size = 2.85

$$b^3x\log\left((ex+d)^nc\right)^3-3\,a^2ben\left(\frac{x}{e}-\frac{d\log(ex+d)}{e^2}\right)+3\,ab^2x\log\left((ex+d)^nc\right)^2+3\,a^2bx\log\left((ex+d)^nc\right)-3\left(2\,en\left(\frac{x}{e}-\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] b^3*x*log((e*x + d)^n*c)^3 - 3*a^2*b*e*n*(x/e - d*log(e*x + d)/e^2) + 3*a*b
^2*x*log((e*x + d)^n*c)^2 + 3*a^2*b*x*log((e*x + d)^n*c) - 3*(2*e*n*(x/e -
d*log(e*x + d)/e^2)*log((e*x + d)^n*c) + (d*log(e*x + d)^2 - 2*e*x + 2*d*lo
g(e*x + d))*n^2/e)*a*b^2 - (3*e*n*(x/e - d*log(e*x + d)/e^2)*log((e*x + d)^
n*c)^2 - e*n*((d*log(e*x + d)^3 + 3*d*log(e*x + d)^2 - 6*e*x + 6*d*log(e*x
+ d))*n^2/e^2 - 3*(d*log(e*x + d)^2 - 2*e*x + 2*d*log(e*x + d))*n*log((e*x
+ d)^n*c)/e^2))*b^3 + a^3*x
```

mupad [B] time = 0.26, size = 172, normalized size = 1.74

$$x\,\left(a^3-3\,a^2\,b\,n+6\,a\,b^2\,n^2-6\,b^3\,n^3\right)+\ln\left(c\,(d+e\,x)^n\right)^3\,\left(b^3\,x+\frac{b^3\,d}{e}\right)+\ln\left(c\,(d+e\,x)^n\right)^2\,\left(\frac{3\,\left(a\,b^2\,d-b^3\,d\,n\right)}{e}+3\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^3,x)
```

```
[Out] x*(a^3 - 6*b^3*n^3 + 6*a*b^2*n^2 - 3*a^2*b*n) + log(c*(d + e*x)^n)^3*(b^3*x
 + (b^3*d)/e) + log(c*(d + e*x)^n)^2*((3*(a*b^2*d - b^3*d*n))/e + 3*b^2*x*(
a - b*n)) + (log(d + e*x)*(6*b^3*d*n^3 + 3*a^2*b*d*n - 6*a*b^2*d*n^2))/e +
3*b*x*log(c*(d + e*x)^n)*(a^2 + 2*b^2*n^2 - 2*a*b*n)
```

sympy [A] time = 3.32, size = 527, normalized size = 5.32

$$\begin{cases} a^3x+\frac{3a^2bdn\log(d+ex)}{e}+3a^2bnx\log(d+ex)-3a^2bnx+3a^2bx\log(c)+\frac{3ab^2dn^2\log(d+ex)^2}{e}-\frac{6ab^2dn^2\log(d+ex)}{e}+\frac{6a \\ x\left(a+b\log(cd^n)\right)^3 \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**3,x)
```

```
[Out] Piecewise((a**3*x + 3*a**2*b*d*n*log(d + e*x)/e + 3*a**2*b*n*x*log(d + e*x)
 - 3*a**2*b*n*x + 3*a**2*b*x*log(c) + 3*a*b**2*d*n**2*log(d + e*x)**2/e - 6
*a*b**2*d*n**2*log(d + e*x)/e + 6*a*b**2*d*n*log(c)*log(d + e*x)/e + 3*a*b*
*2*n**2*x*log(d + e*x)**2 - 6*a*b**2*n**2*x*log(d + e*x) + 6*a*b**2*n**2*x
+ 6*a*b**2*n*x*log(c)*log(d + e*x) - 6*a*b**2*n*x*log(c) + 3*a*b**2*x*log(c
)**2 + b**3*d*n**3*log(d + e*x)**3/e - 3*b**3*d*n**3*log(d + e*x)**2/e + 6*
b**3*d*n**3*log(d + e*x)/e + 3*b**3*d*n**2*log(c)*log(d + e*x)**2/e - 6*b**
3*d*n**2*log(c)*log(d + e*x)/e + 3*b**3*d*n*log(c)**2*log(d + e*x)/e + b**3
*n**3*x*log(d + e*x)**3 - 3*b**3*n**3*x*log(d + e*x)**2 + 6*b**3*n**3*x*log
(d + e*x) - 6*b**3*n**3*x + 3*b**3*n**2*x*log(c)*log(d + e*x)**2 - 6*b**3*n
**2*x*log(c)*log(d + e*x) + 6*b**3*n**2*x*log(c) + 3*b**3*n*x*log(c)**2*log
(d + e*x) - 3*b**3*n*x*log(c)**2 + b**3*x*log(c)**3, Ne(e, 0)), (x*(a + b*l
og(c*d**n))**3, True))
```

3.19 $\int \left(a+b\log\left(c(d+ex)^n\right)\right)^2\,dx$

Optimal. Leaf size=65

$$\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{e}-2abnx-\frac{2b^2n(d+ex)\log\left(c(d+ex)^n\right)}{e}+2b^2n^2x$$

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

Rubi [A] time = 0.03, antiderivative size = 65, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188, Rules used = {2389, 2296, 2295}

$$\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{e}-2abnx-\frac{2b^2n(d+ex)\log\left(c(d+ex)^n\right)}{e}+2b^2n^2x$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^2,x]
```

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

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rubi steps

$$\begin{aligned}\int \left(a+b\log\left(c(d+ex)^n\right)\right)^2\,dx &= \frac{\text{Subst}\left(\int \left(a+b\log\left(cx^n\right)\right)^2\,dx,x,d+ex\right)}{e}\\ &= \frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{e}-\frac{(2bn)\,\text{Subst}\left(\int \left(a+b\log\left(cx^n\right)\right)\,dx,x,d+e\right.}{e}\\ &= -2abnx+\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{e}-\frac{\left(2b^2n\right)\text{Subst}\left(\int \log\left(cx^n\right)\,dx,x,c\right.}{e}\\ &= -2abnx+2b^2n^2x-\frac{2b^2n(d+ex)\log\left(c(d+ex)^n\right)}{e}+\frac{(d+ex)\left(a+b\log\left(c(d+e\right.\right.}{e}\end{aligned}$$

Mathematica [A] time = 0.01, size = 59, normalized size = 0.91

$$\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{e}-2bn\left(ax+\frac{b(d+ex)\log\left(c(d+ex)^n\right)}{e}-bnx\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^2,x]
```

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

fricas [B] time = 1.28, size = 140, normalized size = 2.15

$$\frac{b^2ex\log(c)^2 + \left(b^2en^2x + b^2dn^2\right)\log(ex+d)^2 - 2\left(b^2en - abe\right)x\log(c) + \left(2\,b^2en^2 - 2\,aben + a^2e\right)x - 2\left(b^2dn^2\right.}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

giac [B] time = 0.17, size = 178, normalized size = 2.74

$$(xe+d)b^2n^2e^{(-1)}\log(xe+d)^2 - 2\,(xe+d)b^2n^2e^{(-1)}\log(xe+d) + 2\,(xe+d)b^2ne^{(-1)}\log(xe+d)\log(c) + 2\,(xe+d$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] (x*e + d)*b^2*n^2*e^(-1)*log(x*e + d)^2 - 2*(x*e + d)*b^2*n^2*e^(-1)*log(x*
e + d) + 2*(x*e + d)*b^2*n*e^(-1)*log(x*e + d)*log(c) + 2*(x*e + d)*b^2*n^2
*e^(-1) + 2*(x*e + d)*a*b*n*e^(-1)*log(x*e + d) - 2*(x*e + d)*b^2*n*e^(-1)*
log(c) + (x*e + d)*b^2*e^(-1)*log(c)^2 - 2*(x*e + d)*a*b*n*e^(-1) + 2*(x*e
+ d)*a*b*e^(-1)*log(c) + (x*e + d)*a^2*e^(-1)
```

maple [A] time = 0.07, size = 130, normalized size = 2.00

$$-\frac{2b^2d\,n^2\ln(ex+d)}{e} + 2b^2n^2x - 2b^2nx\ln\left(c\,\mathrm{e}^{n\ln(ex+d)}\right) + b^2x\ln\left(c\,\mathrm{e}^{n\ln(ex+d)}\right)^2 + \frac{2abdn\ln(ex+d)}{e} - 2abnx + 2abx\ln$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)^2,x)
```

```
[Out] a^2*x+b^2*x*ln(c*exp(n*ln(e*x+d)))^2+b^2*d/e*ln(c*exp(n*ln(e*x+d)))^2+2*b^2
*n^2*x-2*b^2*n*x*ln(c*exp(n*ln(e*x+d)))-2*n^2*b^2*d/e*ln(e*x+d)+2*a*b*x*ln(
c*(e*x+d)^n)-2*a*b*n*x+2*a*b/e*n*d*ln(e*x+d)
```

maxima [B] time = 0.60, size = 131, normalized size = 2.02

$$-2\,aben\left(\frac{x}{e} - \frac{d\log(ex+d)}{e^2}\right) + b^2x\log\left((ex+d)^nc\right)^2 + 2\,abx\log\left((ex+d)^nc\right) - \left(2\,en\left(\frac{x}{e} - \frac{d\log(ex+d)}{e^2}\right)\log\left((ex\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

mupad [B] time = 0.20, size = 94, normalized size = 1.45

$$x\left(a^2-2\,a\,b\,n+2\,b^2\,n^2\right)+\ln\left(c\,{\left(d+e\,x\right)}^n\right)^2\,\left(b^2\,x+\frac{b^2\,d}{e}\right)-\frac{\ln\left(d+e\,x\right)\,\left(2\,b^2\,d\,n^2-2\,a\,b\,d\,n\right)}{e}+2\,b\,x\,\ln\left(c\,{\left(d+e\,x\right)}^n\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^2,x)
```

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

sympy [A] time = 1.47, size = 211, normalized size = 3.25

$$\begin{cases} a^2x+\frac{2abdn\log\left(d+ex\right)}{e}+2abnx\log\left(d+ex\right)-2abnx+2abx\log\left(c\right)+\frac{b^2dn^2\log\left(d+ex\right)^2}{e}-\frac{2b^2dn^2\log\left(d+ex\right)}{e}+\frac{2b^2dn\log\left(c\right)\log}{e} \\ x\left(a+b\log\left(cd^n\right)\right)^2 \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2,x)
```

```
[Out] Piecewise((a**2*x + 2*a*b*d*n*log(d + e*x)/e + 2*a*b*n*x*log(d + e*x) - 2*a
*b*n*x + 2*a*b*x*log(c) + b**2*d*n**2*log(d + e*x)**2/e - 2*b**2*d*n**2*log
(d + e*x)/e + 2*b**2*d*n*log(c)*log(d + e*x)/e + b**2*n**2*x*log(d + e*x)**
2 - 2*b**2*n**2*x*log(d + e*x) + 2*b**2*n**2*x + 2*b**2*n*x*log(c)*log(d +
e*x) - 2*b**2*n*x*log(c) + b**2*x*log(c)**2, Ne(e, 0)), (x*(a + b*log(c*d**
n))**2, True))
```

3.20 $\int (a + b\log(c(d+ex)^n))\,dx$

Optimal. Leaf size=29

$$ax + \frac{b(d+ex)\log(c(d+ex)^n)}{e} - bnx$$

```
[Out] a*x-b*n*x+b*(e*x+d)*ln(c*(e*x+d)^n)/e
```

Rubi [A] time = 0.01, antiderivative size = 29, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$, Rules used = {2389, 2295}

$$ax + \frac{b(d+ex)\log(c(d+ex)^n)}{e} - bnx$$

Antiderivative was successfully verified.

```
[In] Int[a + b*Log[c*(d + e*x)^n],x]
```

```
[Out] a*x - b*n*x + (b*(d + e*x)*Log[c*(d + e*x)^n])/e
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rubi steps

$$\begin{aligned}
\int (a + b\log(c(d+ex)^n))\,dx &= ax + b\int \log(c(d+ex)^n)\,dx \\
&= ax + \frac{b\,\text{Subst}\left(\int \log(cx^n)\,dx, x, d+ex\right)}{e} \\
&= ax - bnx + \frac{b(d+ex)\log(c(d+ex)^n)}{e}
\end{aligned}$$

Mathematica [A] time = 0.01, size = 29, normalized size = 1.00

$$ax + \frac{b(d+ex)\log(c(d+ex)^n)}{e} - bnx$$

Antiderivative was successfully verified.

```
[In] Integrate[a + b*Log[c*(d + e*x)^n],x]
```

```
[Out] a*x - b*n*x + (b*(d + e*x)*Log[c*(d + e*x)^n])/e
```

fricas [A] time = 1.43, size = 40, normalized size = 1.38

$$\frac{bex\log(c) - (ben - ae)x + (benx + bdn)\log(ex+d)}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*log(c*(e*x+d)^n),x, algorithm="fricas")
```

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

giac [A] time = 0.16, size = 46, normalized size = 1.59

$$\left((xe+d)ne^{(-1)}\log(xe+d)-(xe+d)ne^{(-1)}+(xe+d)e^{(-1)}\log(c)\right)b+ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*log(c*(e*x+d)^n),x, algorithm="giac")
```

```
[Out] ((x*e + d)*n*e^(-1)*log(x*e + d) - (x*e + d)*n*e^(-1) + (x*e + d)*e^(-1)*lo
g(c))*b + a*x
```

maple [A] time = 0.04, size = 36, normalized size = 1.24

$$\frac{bdn\ln(ex+d)}{e}-bnx+bx\ln\left(c\,(ex+d)^{n}\right)+ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(b*ln(c*(e*x+d)^n)+a,x)
```

```
[Out] a*x+b*x*ln(c*(e*x+d)^n)-b*n*x+b/e*n*d*ln(e*x+d)
```

maxima [A] time = 0.67, size = 40, normalized size = 1.38

$$-ben\left(\frac{x}{e}-\frac{d\log(ex+d)}{e^{2}}\right)+bx\log\left((ex+d)^{n}c\right)+ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*log(c*(e*x+d)^n),x, algorithm="maxima")
```

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

mupad [B] time = 0.15, size = 35, normalized size = 1.21

$$x\,(a-b\,n)+b\,x\,\ln\left(c\,(d+e\,x)^{n}\right)+\frac{b\,d\,n\,\ln(d+e\,x)}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(a + b*log(c*(d + e*x)^n),x)
```

```
[Out] x*(a - b*n) + b*x*log(c*(d + e*x)^n) + (b*d*n*log(d + e*x))/e
```

sympy [A] time = 0.48, size = 42, normalized size = 1.45

$$ax+b\left(\begin{cases}\frac{dn\log(d+ex)}{e}+nx\log(d+ex)-nx+x\log(c) & \text{for } e\neq 0\\ x\log(cd^{n}) & \text{otherwise}\end{cases}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*ln(c*(e*x+d)**n),x)
```

```
[Out] a*x + b*Piecewise((d*n*log(d + e*x)/e + n*x*log(d + e*x) - n*x + x*log(c),
Ne(e, 0)), (x*log(c*d**n), True))
```

3.21 $\int \frac{1}{a+b\log(c(d+ex)^n)}\,dx$

Optimal. Leaf size=63

$$\frac{e^{-\frac{a}{bn}}(d+ex)\,(c(d+ex)^n)^{-1/n}\,\mathrm{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{ben}$$

```
[Out] (e*x+d)*Ei((a+b*ln(c*(e*x+d)^n))/b/n)/b/e/exp(a/b/n)/n/((c*(e*x+d)^n)^(1/n)
)
```

Rubi [A] time = 0.05, antiderivative size = 63, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188, Rules used = {2389, 2300, 2178}

$$\frac{e^{-\frac{a}{bn}}(d+ex)\,(c(d+ex)^n)^{-1/n}\,\mathrm{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{ben}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^(-1),x]
```

```
[Out] ((d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(b*e*E^(a/(b*n)
)*n*(c*(d + e*x)^n)^n^(-1))
```

Rule 2178

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - (c*f)/d))*ExpIntegralEi[(f*g*(c + d*x)*Log[F])/d])/d, x] /; F
reeQ[{F, c, d, e, f, g}, x] && !$UseGamma === True
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rubi steps

$$\begin{aligned}
\int \frac{1}{a+b\log\left(c(d+ex)^n\right)}\,dx &= \frac{\mathrm{Subst}\left(\int \frac{1}{a+b\log(cx^n)}\,dx, x, d+ex\right)}{e}\\
&= \frac{\left((d+ex)\left(c(d+ex)^n\right)^{-1/n}\right)\mathrm{Subst}\left(\int \frac{e^{\frac{x}{n}}}{a+bx}\,dx, x, \log\left(c(d+ex)^n\right)\right)}{en}\\
&= \frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\mathrm{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{ben}
\end{aligned}$$

Mathematica [A] time = 0.07, size = 63, normalized size = 1.00

$$\frac{e^{-\frac{a}{bn}}(d+ex)\,(c(d+ex)^n)^{-1/n}\,\mathrm{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{ben}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^(-1),x]
```

```
[Out] ((d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(b*e*E^(a/(b*n)
)*n*(c*(d + e*x)^n)^n^(-1))
```

fricas [A] time = 0.72, size = 46, normalized size = 0.73

$$\frac{e^{\left(-\frac{b\log(c)+a}{bn}\right)}\operatorname{log\_integral}\left((ex+d)e^{\left(\frac{b\log(c)+a}{bn}\right)}\right)}{ben}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
```

```
[Out] e^(-(b*log(c) + a)/(b*n))*log_integral((e*x + d)*e^((b*log(c) + a)/(b*n)))/
(b*e*n)
```

giac [A] time = 0.17, size = 49, normalized size = 0.78

$$\frac{\operatorname{Ei}\left(\frac{\log(c)}{n}+\frac{a}{bn}+\log\left(xe+d\right)\right)e^{\left(-\frac{a}{bn}-1\right)}}{bc^{\left(\frac{1}{n}\right)}n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
```

```
[Out] Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) - 1)/(b*c^(1/n)*n)
```

maple [C] time = 0.66, size = 311, normalized size = 4.94

$$-\frac{(ex+d)\,c^{-\frac{1}{n}}\left((ex+d)^{n}\right)^{-\frac{1}{n}}\operatorname{Ei}\left(1,-\ln\left(ex+d\right)-\frac{-i\pi b\operatorname{csgn}(ic)\operatorname{csgn}\left(i(ex+d)^{n}\right)\operatorname{csgn}\left(ic(ex+d)^{n}\right)+i\pi b\operatorname{csgn}(ic)\operatorname{csgn}\left(ic(ex+d)^{n}\right)^{2}+i\pi b\operatorname{csg}}{}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/e/b/n*(e*x+d)*((e*x+d)^n)^(-1/n)*c^(-1/n)*exp(-1/2*(-I*b*Pi*csgn(I*c)*cs
gn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+
I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3
+2*a)/b/n)*Ei(1,-ln(e*x+d)-1/2*(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*
c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n
)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*b*ln(c)+2*b*(ln((e*x
+d)^n)-n*ln(e*x+d))+2*a)/b/n)
```

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

$$\int\frac{1}{b\log\left((ex+d)^{n}c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
```

```
[Out] integrate(1/(b*log((e*x + d)^n*c) + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{1}{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*log(c*(d + e*x)^n)),x)
[Out] int(1/(a + b*log(c*(d + e*x)^n)), x)
```

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

$$\int \frac{1}{a + b \log \left(c \left(d + e x\right)^{n}\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(e*x+d)**n)),x)
[Out] Integral(1/(a + b*log(c*(d + e*x)**n)), x)
```

3.22 $\int \frac{1}{\left(a+b\log(c(d+ex)^n)\right)^2}\,dx$

Optimal. Leaf size=96

$$\frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{b^2en^2}-\frac{d+ex}{ben\left(a+b\log\left(c(d+ex)^n\right)\right)}$$

```
[Out] (e*x+d)*Ei((a+b*ln(c*(e*x+d)^n))/b/n)/b^2/e/exp(a/b/n)/n^2/((c*(e*x+d)^n)^(
1/n))+(-e*x-d)/b/e/n/(a+b*ln(c*(e*x+d)^n))
```

Rubi [A] time = 0.06, antiderivative size = 96, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {2389, 2297, 2300, 2178}

$$\frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{b^2en^2}-\frac{d+ex}{ben\left(a+b\log\left(c(d+ex)^n\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^(-2),x]
```

```
[Out] ((d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(b^2*e*E^(a/(b*
n))*n^2*(c*(d + e*x)^n)^n^(-1)) - (d + e*x)/(b*e*n*(a + b*Log[c*(d + e*x)^n
]))
```

Rule 2178

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - (c*f)/d))*ExpIntegralEi[(f*g*(c + d*x)*Log[F])/d])/d, x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2297

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[(x*(a + b
*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
gerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rubi steps

$$\int \frac{1}{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}\,dx = \frac{\text{Subst}\left(\int \frac{1}{\left(a+b\log(cx^n)\right)^2}\,dx, x, d+ex\right)}{e}$$
$$= -\frac{d+ex}{ben\left(a+b\log\left(c(d+ex)^n\right)\right)} + \frac{\text{Subst}\left(\int \frac{1}{a+b\log(cx^n)}\,dx, x, d+ex\right)}{ben}$$
$$= -\frac{d+ex}{ben\left(a+b\log\left(c(d+ex)^n\right)\right)} + \frac{\left((d+ex)\left(c(d+ex)^n\right)^{-1/n}\right)\text{Subst}\left(\int \frac{e^{\frac{x}{n}}}{a+bx}\,dx, \ldots\right.}{ben^2}$$
$$= \frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{b^2en^2} - \frac{d+ex}{ben\left(a+b\log\left(c(d+ex)^n\right)\right.}$$

Mathematica [A] time = 0.07, size = 123, normalized size = 1.28

$$-\frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\left(bne^{\frac{a}{bn}}\left(c(d+ex)^n\right)^{\frac{1}{n}} - \left(a+b\log\left(c(d+ex)^n\right)\right)\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)\right)}{b^2en^2\left(a+b\log\left(c(d+ex)^n\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^(-2),x]
```

```
[Out] -(((d + e*x)*(b*E^(a/(b*n))*n*(c*(d + e*x)^n)^n^(-1) - ExpIntegralEi[(a + b
*Log[c*(d + e*x)^n])/(b*n)]*(a + b*Log[c*(d + e*x)^n])))/(b^2*e*E^(a/(b*n))
*n^2*(c*(d + e*x)^n)^n^(-1)*(a + b*Log[c*(d + e*x)^n])))
```

fricas [A] time = 0.68, size = 117, normalized size = 1.22

$$-\frac{\left((benx+bdn)e^{\left(\frac{b\log(c)+a}{bn}\right)} - \left(bn\log(ex+d)+b\log(c)+a\right)\text{log\_integral}\left((ex+d)e^{\left(\frac{b\log(c)+a}{bn}\right)}\right)\right)e^{\left(-\frac{b\log(c)+a}{bn}\right)}}{b^3en^3\log(ex+d)+b^3en^2\log(c)+ab^2en^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="fricas")
```

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

giac [B] time = 0.20, size = 307, normalized size = 3.20

$$\frac{bn\text{Ei}\left(\frac{\log(c)}{n}+\frac{a}{bn}+\log(xe+d)\right)e^{\left(-\frac{a}{bn}\right)}\log(xe+d)}{\left(b^3n^3e\log(xe+d)+b^3n^2e\log(c)+ab^2n^2e\right)c^{\left(\frac{1}{n}\right)}} - \frac{(xe+d)bn}{b^3n^3e\log(xe+d)+b^3n^2e\log(c)+ab^2n^2e} + \frac{b\text{Ei}\left(\frac{\log(c)}{n}\right.}{\left(b^3n^3e\log(x\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="giac")
```

```
[Out] b*n*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n))*log(x*e + d)/((b^3*n
^3*e*log(x*e + d) + b^3*n^2*e*log(c) + a*b^2*n^2*e)*c^(1/n)) - (x*e + d)*b*
n/(b^3*n^3*e*log(x*e + d) + b^3*n^2*e*log(c) + a*b^2*n^2*e) + b*Ei(log(c)/n
 + a/(b*n) + log(x*e + d))*e^(-a/(b*n))*log(c)/((b^3*n^3*e*log(x*e + d) + b
```

```
^3*n^2*e*log(c) + a*b^2*n^2*e)*c^(1/n)) + a*Ei(log(c)/n + a/(b*n) + log(x*e
 + d))*e^(-a/(b*n))/((b^3*n^3*e*log(x*e + d) + b^3*n^2*e*log(c) + a*b^2*n^2
*e)*c^(1/n))
```

maple [C] time = 0.66, size = 456, normalized size = 4.75

$$-\frac{(ex+d)\,c^{-\frac{1}{n}}\left((ex+d)^{n}\right)^{-\frac{1}{n}}\operatorname{Ei}\left(1,-\ln(ex+d)-\frac{-i\pi b\operatorname{csgn}(ic)\operatorname{csgn}\left(i(ex+d)^{n}\right)\operatorname{csgn}\left(ic(ex+d)^{n}\right)+i\pi b\operatorname{csgn}(ic)\operatorname{csgn}\left(ic(ex+d)^{n}\right)^{2}+i\pi b\operatorname{csg}}{}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -2/(2*b*ln(c)+2*b*ln((e*x+d)^n)-I*Pi*b*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c
*(e*x+d)^n)+I*Pi*b*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*Pi*b*csgn(I*(e*x+d)^n)
*csgn(I*c*(e*x+d)^n)^2-I*Pi*b*csgn(I*c*(e*x+d)^n)^3+2*a)/b/n/e*(e*x+d)-1/b^
2/n^2/e*(e*x+d)*((e*x+d)^n)^(-1/n)*c^(-1/n)*exp(-1/2*(-I*Pi*b*csgn(I*c)*csg
n(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*Pi*b*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I
*Pi*b*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*Pi*b*csgn(I*c*(e*x+d)^n)^3+
2*a)/b/n)*Ei(1,-ln(e*x+d)-1/2*(-I*Pi*b*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c
*(e*x+d)^n)+I*Pi*b*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*Pi*b*csgn(I*(e*x+d)^n)
*csgn(I*c*(e*x+d)^n)^2-I*Pi*b*csgn(I*c*(e*x+d)^n)^3+2*b*ln(c)+2*a+2*(-n*ln(
e*x+d)+ln((e*x+d)^n))*b)/b/n)
```

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

$$-\frac{ex+d}{b^{2}en\log\left((ex+d)^{n}\right)+b^{2}en\log(c)+aben}+\int\frac{1}{b^{2}n\log\left((ex+d)^{n}\right)+b^{2}n\log(c)+abn}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="maxima")
```

```
[Out] -(e*x + d)/(b^2*e*n*log((e*x + d)^n) + b^2*e*n*log(c) + a*b*e*n) + integrat
e(1/(b^2*n*log((e*x + d)^n) + b^2*n*log(c) + a*b*n), x)
```

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

$$\int\frac{1}{\left(a+b\,\ln\left(c\,(d+e\,x)^{n}\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int(1/(a + b*log(c*(d + e*x)^n))^2, x)
```

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

$$\int\frac{1}{\left(a+b\log\left(c\,(d+ex)^{n}\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**(-2), x)
```

3.23 $\int \frac{1}{(a+b\log(c(d+ex)^n))^3}\,dx$

Optimal. Leaf size=135

$$\frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{2b^3en^3}-\frac{d+ex}{2b^2en^2\left(a+b\log\left(c(d+ex)^n\right)\right)}-\frac{d+ex}{2ben\left(a+b\log\left(c(d+ex)^n\right)\right)}$$

```
[Out] 1/2*(e*x+d)*Ei((a+b*ln(c*(e*x+d)^n))/b/n)/b^3/e/exp(a/b/n)/n^3/((c*(e*x+d)^
n)^(1/n))+1/2*(-e*x-d)/b/e/n/(a+b*ln(c*(e*x+d)^n))^2+1/2*(-e*x-d)/b^2/e/n^2
/(a+b*ln(c*(e*x+d)^n))
```

Rubi [A] time = 0.08, antiderivative size = 135, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {2389, 2297, 2300, 2178}

$$\frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{2b^3en^3}-\frac{d+ex}{2b^2en^2\left(a+b\log\left(c(d+ex)^n\right)\right)}-\frac{d+ex}{2ben\left(a+b\log\left(c(d+ex)^n\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^(-3),x]
```

```
[Out] ((d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(2*b^3*e*E^(a/(
b*n))*n^3*(c*(d + e*x)^n)^n^(-1)) - (d + e*x)/(2*b*e*n*(a + b*Log[c*(d + e*
x)^n])^2) - (d + e*x)/(2*b^2*e*n^2*(a + b*Log[c*(d + e*x)^n]))
```

Rule 2178

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - (c*f)/d))*ExpIntegralEi[(f*g*(c + d*x)*Log[F])/d])/d, x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2297

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[(x*(a + b
*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
gerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rubi steps

$$\int \frac{1}{\left(a+b\log\left(c(d+ex)^n\right)\right)^3}\,dx = \frac{\text{Subst}\left(\int \frac{1}{\left(a+b\log(cx^n)\right)^3}\,dx, x, d+ex\right)}{e}$$

$$= -\frac{d+ex}{2ben\left(a+b\log\left(c(d+ex)^n\right)\right)^2} + \frac{\text{Subst}\left(\int \frac{1}{\left(a+b\log(cx^n)\right)^2}\,dx, x, d+ex\right)}{2ben}$$

$$= -\frac{d+ex}{2ben\left(a+b\log\left(c(d+ex)^n\right)\right)^2} - \frac{d+ex}{2b^2en^2\left(a+b\log\left(c(d+ex)^n\right)\right)} + \frac{\text{Subst}\left(\int \frac{}{a+}\right.}{}$$

$$= -\frac{d+ex}{2ben\left(a+b\log\left(c(d+ex)^n\right)\right)^2} - \frac{d+ex}{2b^2en^2\left(a+b\log\left(c(d+ex)^n\right)\right)} + \frac{\left((d+ex)\left(c\right.\right.}{}$$

$$= \frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{2b^3en^3} - \frac{d+ex}{2ben\left(a+b\log\left(c(d+ex)^n\right)\right)^2}$$

Mathematica [A] time = 0.10, size = 144, normalized size = 1.07

$$-\frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\left(bne^{\frac{a}{bn}}\left(c(d+ex)^n\right)^{\frac{1}{n}}\left(a+b\log\left(c(d+ex)^n\right)+bn\right) - \left(a+b\log\left(c(d+ex)^n\right)\right)^2\operatorname{Ei}\left(\frac{a+b}{}\right.\right.}{2b^3en^3\left(a+b\log\left(c(d+ex)^n\right)\right)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^(-3),x]
```

```
[Out] -1/2*((d + e*x)*(-(ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)]*(a + b*L
og[c*(d + e*x)^n])^2) + b*E^(a/(b*n))*n*(c*(d + e*x)^n)^n^(-1)*(a + b*n + b
*Log[c*(d + e*x)^n])))/(b^3*e*E^(a/(b*n))*n^3*(c*(d + e*x)^n)^n^(-1)*(a + b
*Log[c*(d + e*x)^n])^2)
```

fricas [B] time = 0.68, size = 263, normalized size = 1.95

$$-\frac{\left(\left(b^2dn^2 + abdn + \left(b^2en^2 + aben\right)x + \left(b^2en^2x + b^2dn^2\right)\log(ex+d) + \left(b^2enx + b^2dn\right)\log(c)\right)e^{\left(\frac{b\log(c)+a}{bn}\right)} - \left(b^2n^2\right.\right.}{2\left(b^5en^5\log(ex+d)^2 + b^5en^3\log(c)^2 + 2\,ab^4e\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^3,x, algorithm="fricas")
```

```
[Out] -1/2*((b^2*d*n^2 + a*b*d*n + (b^2*e*n^2 + a*b*e*n)*x + (b^2*e*n^2*x + b^2*d
*n^2)*log(e*x + d) + (b^2*e*n*x + b^2*d*n)*log(c))*e^((b*log(c) + a)/(b*n))
 - (b^2*n^2*log(e*x + d)^2 + b^2*log(c)^2 + 2*a*b*log(c) + a^2 + 2*(b^2*n*l
og(c) + a*b*n)*log(e*x + d))*log_integral((e*x + d)*e^((b*log(c) + a)/(b*n)
)))*e^(-(b*log(c) + a)/(b*n))/(b^5*e*n^5*log(e*x + d)^2 + b^5*e*n^3*log(c)^
2 + 2*a*b^4*e*n^3*log(c) + a^2*b^3*e*n^3 + 2*(b^5*e*n^4*log(c) + a*b^4*e*n^
4)*log(e*x + d))
```

giac [B] time = 0.27, size = 1322, normalized size = 9.79

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^3,x, algorithm="giac")
```

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

maple [C] time = 0.66, size = 734, normalized size = 5.44

$$-\frac{(ex+d)\,c^{-\frac{1}{n}}\left((ex+d)^{n}\right)^{-\frac{1}{n}}\operatorname{Ei}\left(1,-\ln(ex+d)-\frac{-i\pi b\operatorname{csgn}(ic)\operatorname{csgn}\left(i(ex+d)^{n}\right)\operatorname{csgn}\left(ic(ex+d)^{n}\right)+i\pi b\operatorname{csgn}(ic)\operatorname{csgn}\left(ic(ex+d)^{n}\right)^{2}+i\pi b}{}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -(2*b*e*n*x+2*b*d*n+I*Pi*b*e*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*Pi*b*d*csg
n(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*Pi*b*d*csgn(I*c)*csgn(I*(e*x+d)^n)*c
sgn(I*c*(e*x+d)^n)+I*Pi*b*d*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-I*Pi*b*e*x*csgn
(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*Pi*b*e*x*csgn(I*(e*x+d)^n)*cs
gn(I*c*(e*x+d)^n)^2-I*Pi*b*e*x*csgn(I*c*(e*x+d)^n)^3-I*Pi*b*d*csgn(I*c*(e*x
+d)^n)^3+2*b*e*x*ln(c)+2*b*e*x*ln((e*x+d)^n)+2*b*d*ln(c)+2*a*e*x+2*b*d*ln((
e*x+d)^n)+2*a*d)/(-I*Pi*b*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I
*Pi*b*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*Pi*b*csgn(I*(e*x+d)^n)*csgn(I*c*(e*
x+d)^n)^2-I*Pi*b*csgn(I*c*(e*x+d)^n)^3+2*b*ln(c)+2*b*ln((e*x+d)^n)+2*a)^2/b
^2/n^2/e-1/2/b^3/n^3/e*(e*x+d)*c^(-1/n)*((e*x+d)^n)^(-1/n)*exp(-1/2*(-I*Pi*
b*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*Pi*b*csgn(I*c)*csgn(I*c
*(e*x+d)^n)^2+I*Pi*b*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*Pi*b*csgn(I*
c*(e*x+d)^n)^3+2*a)/b/n)*Ei(1,-ln(e*x+d)-1/2*(-I*Pi*b*csgn(I*c)*csgn(I*(e*x
+d)^n)*csgn(I*c*(e*x+d)^n)+I*Pi*b*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*Pi*b*cs
gn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*Pi*b*csgn(I*c*(e*x+d)^n)^3+2*b*ln(c
)+2*a+2*(-n*ln(e*x+d)+ln((e*x+d)^n))*b)/b/n)
```

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

$$-\frac{\left(dn + d\log(c)\right)b + ad + \left(\left(en + e\log(c)\right)b + ae\right)x + (bex + bd)\log\left((ex+d)^n\right)}{2\left(b^4en^2\log\left((ex+d)^n\right)^2 + b^4en^2\log(c)^2 + 2\,ab^3en^2\log(c) + a^2b^2en^2 + 2\left(b^4en^2\log(c) + ab^3en^2\right)\log\left((ex+d)^n\right)\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^3,x, algorithm="maxima")
```

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

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

$$\int \frac{1}{\left(a + b\,\ln\left(c\,(d + e\,x)^n\right)\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int(1/(a + b*log(c*(d + e*x)^n))^3, x)
```

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

$$\int \frac{1}{\left(a + b\log\left(c\,(d + ex)^n\right)\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**(-3), x)
```

3.24 $\int \left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}\,dx$

Optimal. Leaf size=179

$$-\frac{15\sqrt{\pi}\,b^{5/2}n^{5/2}e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{8e}+\frac{15b^2n^2(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{4e}+$$

```
[Out] -5/2*b*n*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^(3/2)/e+(e*x+d)*(a+b*ln(c*(e*x+d)^n)
)^(5/2)/e-15/8*b^(5/2)*n^(5/2)*(e*x+d)*erfi((a+b*ln(c*(e*x+d)^n))^(1/2)/b^(
1/2)/n^(1/2))*Pi^(1/2)/e/exp(a/b/n)/((c*(e*x+d)^n)^(1/n))+15/4*b^2*n^2*(e*x
+d)*(a+b*ln(c*(e*x+d)^n))^(1/2)/e
```

Rubi [A] time = 0.15, antiderivative size = 179, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.278$, Rules used = {2389, 2296, 2300, 2180, 2204}

$$-\frac{15\sqrt{\pi}\,b^{5/2}n^{5/2}e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{8e}+\frac{15b^2n^2(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{4e}+$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^(5/2),x]
```

```
[Out] (-15*b^(5/2)*n^(5/2)*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]
/(Sqrt[b]*Sqrt[n])])/(8*e*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)) + (15*b^2*n^2
*(d + e*x)*Sqrt[a + b*Log[c*(d + e*x)^n]])/(4*e) - (5*b*n*(d + e*x)*(a + b*
Log[c*(d + e*x)^n])^(3/2))/(2*e) + ((d + e*x)*(a + b*Log[c*(d + e*x)^n])^(5
/2))/e
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rubi steps

$$\int \left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}\,dx = \frac{\text{Subst}\left(\int \left(a+b\log\left(cx^n\right)\right)^{5/2}\,dx, x, d+ex\right)}{e}$$
$$= \frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}}{e} - \frac{(5bn)\,\text{Subst}\left(\int \left(a+b\log\left(cx^n\right)\right)^{3/2}\,dx, x,\right.}{2e}$$
$$= -\frac{5bn(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}{2e} + \frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}}{e}$$
$$= \frac{15b^2n^2(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{4e} - \frac{5bn(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/}}{2e}$$
$$= \frac{15b^2n^2(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{4e} - \frac{5bn(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/}}{2e}$$
$$= \frac{15b^2n^2(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{4e} - \frac{5bn(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/}}{2e}$$
$$= -\frac{15b^{5/2}e^{-\frac{a}{bn}}n^{5/2}\sqrt{\pi}\,(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{8e} + \frac{15b^2n^2(d}{}$$

Mathematica [A] time = 0.27, size = 152, normalized size = 0.85

$$\frac{(d+ex)\left(8\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2} - 5bn\left(3\sqrt{\pi}\,b^{3/2}n^{3/2}e^{-\frac{a}{bn}}\left(c(d+ex)^n\right)^{-1/n}\text{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right) + 2\sqrt{a+b\log}\right.\right.}{8e}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^(5/2),x]
```

```
[Out] ((d + e*x)*(8*(a + b*Log[c*(d + e*x)^n])^(5/2) - 5*b*n*((3*b^(3/2)*n^(3/2)*
Sqrt[Pi]*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])])/(E^(a/(b*n
))*(c*(d + e*x)^n)^n^(-1)) + 2*Sqrt[a + b*Log[c*(d + e*x)^n]]*(2*a - 3*b*n
+ 2*b*Log[c*(d + e*x)^n]))))/(8*e)
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

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

$$\int \left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^(5/2), x)
```

maple [F] time = 0.89, size = 0, normalized size = 0.00

$$\int \left(b\ln\left(c\,(ex+d)^{n}\right)+a\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)^(5/2),x)
[Out] int((b*ln(c*(e*x+d)^n)+a)^(5/2),x)
```

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

$$\int \left(b\log\left((ex+d)^{n}c\right)+a\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="maxima")
[Out] integrate((b*log((e*x + d)^n*c) + a)^(5/2), x)
```

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

$$\int {\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^(5/2),x)
[Out] int((a + b*log(c*(d + e*x)^n))^(5/2), x)
```

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

$$\int \left(a+b\log\left(c\,(d+ex)^{n}\right)\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**(5/2),x)
[Out] Integral((a + b*log(c*(d + e*x)**n))**(5/2), x)
```

3.25 $\int \left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}\,dx$

Optimal. Leaf size=143

$$\frac{3\sqrt{\pi}\,b^{3/2}n^{3/2}e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{4e}+\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}{e}-\frac{3bn(d+ex)}{}$$

```
[Out] (e*x+d)*(a+b*ln(c*(e*x+d)^n))^(3/2)/e+3/4*b^(3/2)*n^(3/2)*(e*x+d)*erfi((a+b
*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*Pi^(1/2)/e/exp(a/b/n)/((c*(e*x+d)^
n)^(1/n))-3/2*b*n*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^(1/2)/e
```

Rubi [A] time = 0.11, antiderivative size = 143, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {2389, 2296, 2300, 2180, 2204}

$$\frac{3\sqrt{\pi}\,b^{3/2}n^{3/2}e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{4e}+\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}{e}-\frac{3bn(d+ex)}{}$$

Antiderivative was successfully verified.

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

```
[Out] (3*b^(3/2)*n^(3/2)*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(
Sqrt[b]*Sqrt[n])])/(4*e*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)) - (3*b*n*(d + e
*x)*Sqrt[a + b*Log[c*(d + e*x)^n]])/(2*e) + ((d + e*x)*(a + b*Log[c*(d + e*
x)^n])^(3/2))/e
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rubi steps

$$\int \left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}\,dx = \frac{\text{Subst}\left(\int \left(a+b\log\left(cx^n\right)\right)^{3/2}\,dx,x,d+ex\right)}{e}$$
$$= \frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}{e} - \frac{(3bn)\,\text{Subst}\left(\int \sqrt{a+b\log\left(cx^n\right)}\,dx,x,\right.}{2e}$$
$$= -\frac{3bn(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{2e} + \frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}{e}$$
$$= -\frac{3bn(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{2e} + \frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}{e}$$
$$= -\frac{3bn(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{2e} + \frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}{e}$$
$$= \frac{3b^{3/2}e^{-\frac{a}{bn}}n^{3/2}\sqrt{\pi}\,(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{4e} - \frac{3bn(d+}{}$$

Mathematica [A] time = 0.07, size = 127, normalized size = 0.89

$$\frac{(d+ex)\left(3\sqrt{\pi}\,b^{3/2}n^{3/2}e^{-\frac{a}{bn}}\left(c(d+ex)^n\right)^{-1/n}\text{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)+2\sqrt{a+b\log\left(c(d+ex)^n\right)}\left(2a+2b\log\left(c(d\right.\right.}{4e}$$

Antiderivative was successfully verified.

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

```
[Out] ((d + e*x)*((3*b^(3/2)*n^(3/2)*Sqrt[Pi]*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]
/(Sqrt[b]*Sqrt[n]])])/(E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)) + 2*Sqrt[a + b*Lo
g[c*(d + e*x)^n]]*(2*a - 3*b*n + 2*b*Log[c*(d + e*x)^n])))/(4*e)
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

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

$$\int \left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^(3/2), x)
```

maple [F] time = 0.36, size = 0, normalized size = 0.00

$$\int \left(b\ln\left(c\,(ex+d)^n\right)+a\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

$$\int \left(b \log \left((ex+d)^n c\right)+a\right)^{\frac{3}{2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="maxima")
[Out] integrate((b*log((e*x + d)^n*c) + a)^(3/2), x)
```

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

$$\int \left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)^{3/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

$$\int \left(a+b \log \left(c \left(d+ex\right)^{n}\right)\right)^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**(3/2),x)
[Out] Integral((a + b*log(c*(d + e*x)**n))**(3/2), x)
```

3.26 $\int \sqrt{a+b\log\left(c(d+ex)^n\right)}\,dx$

Optimal. Leaf size=111

$$\frac{(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{e}-\frac{\sqrt{\pi}\,\sqrt{b}\,\sqrt{n}\,e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\,\sqrt{n}}\right)}{2e}$$

```
[Out] -1/2*(e*x+d)*erfi((a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*b^(1/2)*n^(1
/2)*Pi^(1/2)/e/exp(a/b/n)/((c*(e*x+d)^n)^(1/n))+(e*x+d)*(a+b*ln(c*(e*x+d)^n
))^(1/2)/e
```

Rubi [A] time = 0.09, antiderivative size = 111, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {2389, 2296, 2300, 2180, 2204}

$$\frac{(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{e}-\frac{\sqrt{\pi}\,\sqrt{b}\,\sqrt{n}\,e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\,\sqrt{n}}\right)}{2e}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + b*Log[c*(d + e*x)^n]],x]
```

```
[Out] -(Sqrt[b]*Sqrt[n]*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(S
qrt[b]*Sqrt[n])])/(2*e*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)) + ((d + e*x)*Sqr
t[a + b*Log[c*(d + e*x)^n]])/e
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] && !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rubi steps

$$\int \sqrt{a+b\log\left(c(d+ex)^n\right)}\,dx = \frac{\text{Subst}\left(\int \sqrt{a+b\log\left(cx^n\right)}\,dx,x,d+ex\right)}{e}$$
$$= \frac{(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{e} - \frac{(bn)\,\text{Subst}\left(\int \frac{1}{\sqrt{a+b\log(cx^n)}}\,dx,x,d+ex\right)}{2e}$$
$$= \frac{(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{e} - \frac{\left(b(d+ex)\left(c(d+ex)^n\right)^{-1/n}\right)\text{Subst}\left(\int \frac{e^{\frac{x}{n}}}{\sqrt{a+bx}}\,dx\right.}{2e}$$
$$= \frac{(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{e} - \frac{\left((d+ex)\left(c(d+ex)^n\right)^{-1/n}\right)\text{Subst}\left(\int e^{-\frac{a}{bn}+\frac{x^2}{bn}}\,dx\right.}{e}$$
$$= -\frac{\sqrt{b}\,e^{-\frac{a}{bn}}\sqrt{n}\sqrt{\pi}\,(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{2e} + \frac{(d+ex)\sqrt{a+}}{}$$

Mathematica [A] time = 0.05, size = 106, normalized size = 0.95

$$\frac{(d+ex)\left(2\sqrt{a+b\log\left(c(d+ex)^n\right)} - \sqrt{\pi}\sqrt{b}\sqrt{n}\,e^{-\frac{a}{bn}}\left(c(d+ex)^n\right)^{-1/n}\text{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)\right)}{2e}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[a + b*Log[c*(d + e*x)^n]],x]
```

```
[Out] ((d + e*x)*(-((Sqrt[b]*Sqrt[n]*Sqrt[Pi]*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]
/(Sqrt[b]*Sqrt[n])]])/(E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1))) + 2*Sqrt[a + b*L
og[c*(d + e*x)^n]]))/(2*e)
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

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

$$\int \sqrt{b\log\left((ex+d)^n c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(b*log((e*x + d)^n*c) + a), x)
```

maple [F] time = 0.36, size = 0, normalized size = 0.00

$$\int \sqrt{b\ln\left(c\,(ex+d)^n\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int((b*ln(c*(e*x+d)^n)+a)^(1/2),x)
```

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

$$\int \sqrt{b\log\left((ex+d)^n c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="maxima")
[Out] integrate(sqrt(b*log((e*x + d)^n*c) + a), x)
```

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

$$\int \sqrt{a+b\,\ln\left(c\,(d+e\,x)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

$$\int \sqrt{a+b\log\left(c\,(d+ex)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**(1/2),x)
[Out] Integral(sqrt(a + b*log(c*(d + e*x)**n)), x)
```

3.27 $\int \frac{1}{\sqrt{a+b\log(c(d+ex)^n)}}\,dx$

Optimal. Leaf size=80

$$\frac{\sqrt{\pi}\,e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\,\sqrt{n}}\right)}{\sqrt{b}\,e\sqrt{n}}$$

```
[Out] (e*x+d)*erfi((a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*Pi^(1/2)/e/exp(a/
b/n)/((c*(e*x+d)^n)^(1/n))/b^(1/2)/n^(1/2)
```

Rubi [A] time = 0.07, antiderivative size = 80, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {2389, 2300, 2180, 2204}

$$\frac{\sqrt{\pi}\,e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\,\sqrt{n}}\right)}{\sqrt{b}\,e\sqrt{n}}$$

Antiderivative was successfully verified.

```
[In] Int[1/Sqrt[a + b*Log[c*(d + e*x)^n]],x]
```

```
[Out] (Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])])
/(Sqrt[b]*e*E^(a/(b*n))*Sqrt[n]*(c*(d + e*x)^n)^n^(-1))
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] && !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rubi steps

$$\int \frac{1}{\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx = \frac{\text{Subst}\left(\int \frac{1}{\sqrt{a+b\log(cx^n)}}\,dx, x, d+ex\right)}{e}$$
$$= \frac{\left((d+ex)\left(c(d+ex)^n\right)^{-1/n}\right)\text{Subst}\left(\int \frac{e^{\frac{x}{n}}}{\sqrt{a+bx}}\,dx, x, \log\left(c(d+ex)^n\right)\right)}{en}$$
$$= \frac{\left(2(d+ex)\left(c(d+ex)^n\right)^{-1/n}\right)\text{Subst}\left(\int e^{-\frac{a}{bn}+\frac{x^2}{bn}}\,dx, x, \sqrt{a+b\log\left(c(d+ex)^n\right)}\right)}{ben}$$
$$= \frac{e^{-\frac{a}{bn}}\sqrt{\pi}\,(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{\sqrt{b}\,e\sqrt{n}}$$

Mathematica [**A**] time = 0.02, size = 80, normalized size = 1.00

$$\frac{\sqrt{\pi}\,e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{\sqrt{b}\,e\sqrt{n}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/Sqrt[a + b*Log[c*(d + e*x)^n]],x]
```

```
[Out] (Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])])
/(Sqrt[b]*e*E^(a/(b*n))*Sqrt[n]*(c*(d + e*x)^n)^n^(-1))
```

fricas [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

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

$$\int \frac{1}{\sqrt{b\log\left((ex+d)^n c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(1/sqrt(b*log((e*x + d)^n*c) + a), x)
```

maple [**F**] time = 0.39, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{b\ln\left(c\,(ex+d)^n\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int(1/(b*ln(c*(e*x+d)^n)+a)^(1/2),x)
```

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

$$\int \frac{1}{\sqrt{b \log \left((ex + d)^{n} c\right) + a}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="maxima")
[Out] integrate(1/sqrt(b*log((e*x + d)^n*c) + a), x)
```

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

$$\int \frac{1}{\sqrt{a + b \ln \left(c \left(d + e x\right)^{n}\right)}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

$$\int \frac{1}{\sqrt{a + b \log \left(c \left(d + ex\right)^{n}\right)}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(e*x+d)**n))**(1/2),x)
[Out] Integral(1/sqrt(a + b*log(c*(d + e*x)**n)), x)
```

3.28 $\int \frac{1}{\left(a+b\log(c(d+ex)^n)\right)^{3/2}}\,dx$

Optimal. Leaf size=116

$$\frac{2\sqrt{\pi}\,e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{b^{3/2}en^{3/2}}-\frac{2(d+ex)}{ben\sqrt{a+b\log\left(c(d+ex)^n\right)}}$$

```
[Out] 2*(e*x+d)*erfi((a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*Pi^(1/2)/b^(3/2
)/e/exp(a/b/n)/n^(3/2)/((c*(e*x+d)^n)^(1/n))-2*(e*x+d)/b/e/n/(a+b*ln(c*(e*x
+d)^n))^(1/2)
```

Rubi [A] time = 0.10, antiderivative size = 116, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {2389, 2297, 2300, 2180, 2204}

$$\frac{2\sqrt{\pi}\,e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{b^{3/2}en^{3/2}}-\frac{2(d+ex)}{ben\sqrt{a+b\log\left(c(d+ex)^n\right)}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^(-3/2),x]
```

```
[Out] (2*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])
])/(b^(3/2)*e*E^(a/(b*n))*n^(3/2)*(c*(d + e*x)^n)^n^(-1)) - (2*(d + e*x))/(
b*e*n*Sqrt[a + b*Log[c*(d + e*x)^n]])
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2297

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[(x*(a + b
*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
gerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rubi steps

$$\int \frac{1}{\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}\,dx = \frac{\text{Subst}\left(\int \frac{1}{\left(a+b\log(cx^n)\right)^{3/2}}\,dx,x,d+ex\right)}{e}$$

$$= -\frac{2(d+ex)}{ben\sqrt{a+b\log\left(c(d+ex)^n\right)}} + \frac{2\,\text{Subst}\left(\int \frac{1}{\sqrt{a+b\log(cx^n)}}\,dx,x,d+ex\right)}{ben}$$

$$= -\frac{2(d+ex)}{ben\sqrt{a+b\log\left(c(d+ex)^n\right)}} + \frac{\left(2(d+ex)\left(c(d+ex)^n\right)^{-1/n}\right)\text{Subst}\left(\int \frac{e^{\frac{x}{n}}}{\sqrt{a+bx}}\,dx\right.}{ben^2}$$

$$= -\frac{2(d+ex)}{ben\sqrt{a+b\log\left(c(d+ex)^n\right)}} + \frac{\left(4(d+ex)\left(c(d+ex)^n\right)^{-1/n}\right)\text{Subst}\left(\int e^{-\frac{a}{bn}+\frac{x^2}{bn}}\,d\right.}{b^2en^2}$$

$$= \frac{2e^{-\frac{a}{bn}}\sqrt{\pi}\,(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{b^{3/2}en^{3/2}} - \frac{2(d+ex)}{ben\sqrt{a+b\log\left(c(d\right.}}$$

Mathematica [A] time = 0.12, size = 139, normalized size = 1.20

$$-\frac{2e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\left(e^{\frac{a}{bn}}\left(c(d+ex)^n\right)^{\frac{1}{n}} - \sqrt{-\frac{a+b\log(c(d+ex)^n)}{bn}}\,\Gamma\left(\frac{1}{2},-\frac{a+b\log(c(d+ex)^n)}{bn}\right)\right)}{ben\sqrt{a+b\log\left(c(d+ex)^n\right)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^(-3/2),x]
```

```
[Out] (-2*(d + e*x)*(E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1) - Gamma[1/2, -((a + b*Log
[c*(d + e*x)^n])/(b*n))]*Sqrt[-((a + b*Log[c*(d + e*x)^n])/(b*n))]))/(b*e*E
^(a/(b*n))*n*(c*(d + e*x)^n)^n^(-1)*Sqrt[a + b*Log[c*(d + e*x)^n]])
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

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

$$\int \frac{1}{\left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^(-3/2), x)
```

maple [F] time = 0.35, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(b\ln\left(c\left(ex+d\right)^{n}\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

$$\int \frac{1}{\left(b\log\left(\left(ex+d\right)^{n}c\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="maxima")
[Out] integrate((b*log((e*x + d)^n*c) + a)^(-3/2), x)
```

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

$$\int \frac{1}{{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

$$\int \frac{1}{\left(a+b\log\left(c\left(d+ex\right)^{n}\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(e*x+d)**n))**(3/2),x)
[Out] Integral((a + b*log(c*(d + e*x)**n))**(-3/2), x)
```

3.29 $\int \frac{1}{\left(a+b\log(c(d+ex)^n)\right)^{5/2}}\,dx$

Optimal. Leaf size=156

$$\frac{4\sqrt{\pi}\,e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{3b^{5/2}en^{5/2}}-\frac{4(d+ex)}{3b^2en^2\sqrt{a+b\log\left(c(d+ex)^n\right)}}-\frac{2(d+ex)}{3ben\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}$$

```
[Out] -2/3*(e*x+d)/b/e/n/(a+b*ln(c*(e*x+d)^n))^(3/2)+4/3*(e*x+d)*erfi((a+b*ln(c*(
e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*Pi^(1/2)/b^(5/2)/e/exp(a/b/n)/n^(5/2)/((c
*(e*x+d)^n)^(1/n))-4/3*(e*x+d)/b^2/e/n^2/(a+b*ln(c*(e*x+d)^n))^(1/2)
```

Rubi [A] time = 0.12, antiderivative size = 156, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {2389, 2297, 2300, 2180, 2204}

$$\frac{4\sqrt{\pi}\,e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{3b^{5/2}en^{5/2}}-\frac{4(d+ex)}{3b^2en^2\sqrt{a+b\log\left(c(d+ex)^n\right)}}-\frac{2(d+ex)}{3ben\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^(-5/2),x]
```

```
[Out] (4*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])
])/(3*b^(5/2)*e*E^(a/(b*n))*n^(5/2)*(c*(d + e*x)^n)^n^(-1)) - (2*(d + e*x))
/(3*b*e*n*(a + b*Log[c*(d + e*x)^n])^(3/2)) - (4*(d + e*x))/(3*b^2*e*n^2*Sq
rt[a + b*Log[c*(d + e*x)^n]])
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2297

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[(x*(a + b
*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
gerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
```

```
, b, c, d, e, n, p}, x]
```

Rubi steps

$$\int \frac{1}{\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}}dx = \frac{\text{Subst}\left(\int \frac{1}{\left(a+b\log(cx^n)\right)^{5/2}}dx, x, d+ex\right)}{e}$$

$$= -\frac{2(d+ex)}{3ben\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}} + \frac{2\,\text{Subst}\left(\int \frac{1}{\left(a+b\log(cx^n)\right)^{3/2}}dx, x, d+ex\right)}{3ben}$$

$$= -\frac{2(d+ex)}{3ben\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}} - \frac{4(d+ex)}{3b^2en^2\sqrt{a+b\log\left(c(d+ex)^n\right)}} + \frac{4\,\text{Sub}}{}$$

$$= -\frac{2(d+ex)}{3ben\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}} - \frac{4(d+ex)}{3b^2en^2\sqrt{a+b\log\left(c(d+ex)^n\right)}} + \frac{\left(4(d+\right.}{}$$

$$= -\frac{2(d+ex)}{3ben\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}} - \frac{4(d+ex)}{3b^2en^2\sqrt{a+b\log\left(c(d+ex)^n\right)}} + \frac{\left(8(d+\right.}{}$$

$$= \frac{4e^{-\frac{a}{bn}}\sqrt{\pi}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{3b^{5/2}en^{5/2}} - \frac{2(d+}{3ben\left(a+b\log\right.}$$

Mathematica [A] time = 0.19, size = 163, normalized size = 1.04

$$-\frac{2e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\left(e^{\frac{a}{bn}}\left(c(d+ex)^n\right)^{\frac{1}{n}}\left(2a+2b\log\left(c(d+ex)^n\right)+bn\right)+2bn\left(-\frac{a+b\log(c(d+ex)^n)}{bn}\right)^{3/2}\Gamma\right.}{3b^2en^2\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^(-5/2),x]
```

```
[Out] (-2*(d + e*x)*(2*b*n*Gamma[1/2, -((a + b*Log[c*(d + e*x)^n])/(b*n))]*(-((a
+ b*Log[c*(d + e*x)^n])/(b*n)))^(3/2) + E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)*
(2*a + b*n + 2*b*Log[c*(d + e*x)^n])))/(3*b^2*e*E^(a/(b*n))*n^2*(c*(d + e*x
)^n)^n^(-1)*(a + b*Log[c*(d + e*x)^n])^(3/2))
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

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

$$\int \frac{1}{\left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{5}{2}}}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="giac")
[Out] integrate((b*log((e*x + d)^n*c) + a)^(-5/2), x)
```

maple [F] time = 0.40, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(b \ln \left(c \left(e x+d\right)^{n}\right)+a\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*ln(c*(e*x+d)^n)+a)^(5/2),x)
[Out] int(1/(b*ln(c*(e*x+d)^n)+a)^(5/2),x)
```

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

$$\int \frac{1}{\left(b \log \left(\left(e x+d\right)^{n} c\right)+a\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="maxima")
[Out] integrate((b*log((e*x + d)^n*c) + a)^(-5/2), x)
```

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

$$\int \frac{1}{{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*log(c*(d + e*x)^n))^(5/2),x)
[Out] int(1/(a + b*log(c*(d + e*x)^n))^(5/2), x)
```

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

$$\int \frac{1}{\left(a + b \log{\left(c \left(d + e x\right)^{n} \right)}\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(e*x+d)**n))**(5/2),x)
[Out] Integral((a + b*log(c*(d + e*x)**n))**(-5/2), x)
```

3.30 $\int \frac{1}{\left(a+b\log\left(c(d+ex)^n\right)\right)^{7/2}}\,dx$

Optimal. Leaf size=192

$$\frac{8\sqrt{\pi}\,e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\,\sqrt{n}}\right)}{15b^{7/2}en^{7/2}}-\frac{8(d+ex)}{15b^3en^3\sqrt{a+b\log\left(c(d+ex)^n\right)}}-\frac{4(d+}{15b^2en^2\left(a+b\log\right.}$$

```
[Out] -2/5*(e*x+d)/b/e/n/(a+b*ln(c*(e*x+d)^n))^(5/2)-4/15*(e*x+d)/b^2/e/n^2/(a+b*
ln(c*(e*x+d)^n))^(3/2)+8/15*(e*x+d)*erfi((a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2
)/n^(1/2))*Pi^(1/2)/b^(7/2)/e/exp(a/b/n)/n^(7/2)/((c*(e*x+d)^n)^(1/n))-8/15
*(e*x+d)/b^3/e/n^3/(a+b*ln(c*(e*x+d)^n))^(1/2)
```

Rubi [A] time = 0.15, antiderivative size = 192, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {2389, 2297, 2300, 2180, 2204}

$$\frac{8\sqrt{\pi}\,e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\,\sqrt{n}}\right)}{15b^{7/2}en^{7/2}}-\frac{8(d+ex)}{15b^3en^3\sqrt{a+b\log\left(c(d+ex)^n\right)}}-\frac{4(d+}{15b^2en^2\left(a+b\log\right.}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^(-7/2),x]
```

```
[Out] (8*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])
])/(15*b^(7/2)*e*E^(a/(b*n))*n^(7/2)*(c*(d + e*x)^n)^n^(-1)) - (2*(d + e*x)
)/(5*b*e*n*(a + b*Log[c*(d + e*x)^n])^(5/2)) - (4*(d + e*x))/(15*b^2*e*n^2*
(a + b*Log[c*(d + e*x)^n])^(3/2)) - (8*(d + e*x))/(15*b^3*e*n^3*Sqrt[a + b*
Log[c*(d + e*x)^n]])
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2297

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[(x*(a + b
*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
gerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rubi steps

$$\int \frac{1}{\left(a+b\log\left(c(d+ex)^n\right)\right)^{7/2}}\,dx = \frac{\text{Subst}\left(\int \frac{1}{\left(a+b\log(cx^n)\right)^{7/2}}\,dx, x, d+ex\right)}{e}$$

$$= -\frac{2(d+ex)}{5ben\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}} + \frac{2\,\text{Subst}\left(\int \frac{1}{\left(a+b\log(cx^n)\right)^{5/2}}\,dx, x, d+ex\right)}{5ben}$$

$$= -\frac{2(d+ex)}{5ben\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}} - \frac{4(d+ex)}{15b^2en^2\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}} + \frac{4\,\text{Sub}}{}$$

$$= -\frac{2(d+ex)}{5ben\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}} - \frac{4(d+ex)}{15b^2en^2\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}} - \frac{}{15b^3e}$$

$$= -\frac{2(d+ex)}{5ben\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}} - \frac{4(d+ex)}{15b^2en^2\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}} - \frac{}{15b^3e}$$

$$= -\frac{2(d+ex)}{5ben\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}} - \frac{4(d+ex)}{15b^2en^2\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}} - \frac{}{15b^3e}$$

$$= \frac{8e^{-\frac{a}{bn}}\sqrt{\pi}\,(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{15b^{7/2}en^{7/2}} - \frac{2(d+ex}{5ben\left(a+b\log(c(c\right.}$$

Mathematica [A] time = 0.22, size = 203, normalized size = 1.06

$$-\frac{2e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\left(e^{\frac{a}{bn}}\left(c(d+ex)^n\right)^{\frac{1}{n}}\left(4a^2+2b(4a+bn)\log\left(c(d+ex)^n\right)+2abn+4b^2\log^2\left(c(d+ex\right.\right.\right.}{15b^3en^3\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^(-7/2),x]
```

```
[Out] (-2*(d + e*x)*(-4*b^2*n^2*Gamma[1/2, -((a + b*Log[c*(d + e*x)^n])/(b*n))]*(
-((a + b*Log[c*(d + e*x)^n])/(b*n)))^(5/2) + E^(a/(b*n))*(c*(d + e*x)^n)^n^
(-1)*(4*a^2 + 2*a*b*n + 3*b^2*n^2 + 2*b*(4*a + b*n)*Log[c*(d + e*x)^n] + 4*
b^2*Log[c*(d + e*x)^n]^2)))/(15*b^3*e*E^(a/(b*n))*n^3*(c*(d + e*x)^n)^n^(-1
)*(a + b*Log[c*(d + e*x)^n])^(5/2))
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(7/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

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

$$\int \frac{1}{\left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(7/2),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^(-7/2), x)
```

maple [F] time = 0.36, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(b\ln\left(c\,(ex+d)^n\right)+a\right)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*ln(c*(e*x+d)^n)+a)^(7/2),x)
```

```
[Out] int(1/(b*ln(c*(e*x+d)^n)+a)^(7/2),x)
```

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

$$\int \frac{1}{\left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(7/2),x, algorithm="maxima")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^(-7/2), x)
```

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

$$\int \frac{1}{\left(a+b\,\ln\left(c\,(d+e\,x)^n\right)\right)^{7/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*log(c*(d + e*x)^n))^(7/2),x)
```

```
[Out] int(1/(a + b*log(c*(d + e*x)^n))^(7/2), x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(e*x+d)**n))**(7/2),x)
```

```
[Out] Exception raised: HeuristicGCDFailed
```

3.31 $\int \left(a+b\log\left(c(d+ex)^n\right)\right)^p\,dx$

Optimal. Leaf size=103

$$\frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\left(a+b\log\left(c(d+ex)^n\right)\right)^p\left(-\frac{a+b\log(c(d+ex)^n)}{bn}\right)^{-p}\Gamma\left(p+1,-\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{e}$$

```
[Out] (e*x+d)*GAMMA(1+p,(-a-b*ln(c*(e*x+d)^n))/b/n)*(a+b*ln(c*(e*x+d)^n))^p/e/exp
(a/b/n)/((c*(e*x+d)^n)^(1/n))/(((-a-b*ln(c*(e*x+d)^n))/b/n)^p)
```

Rubi [A] time = 0.06, antiderivative size = 103, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188, Rules used = {2389, 2300, 2181}

$$\frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\left(a+b\log\left(c(d+ex)^n\right)\right)^p\left(-\frac{a+b\log(c(d+ex)^n)}{bn}\right)^{-p}\text{Gamma}\left(p+1,-\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{e}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^p,x]
```

```
[Out] ((d + e*x)*Gamma[1 + p, -((a + b*Log[c*(d + e*x)^n])/(b*n))]*(a + b*Log[c*(
d + e*x)^n])^p)/(e*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)*(-((a + b*Log[c*(d +
e*x)^n])/(b*n)))^p)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
ntegerQ[m]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rubi steps

$$\begin{aligned}
\int \left(a+b\log\left(c(d+ex)^n\right)\right)^p\,dx &= \frac{\text{Subst}\left(\int \left(a+b\log\left(cx^n\right)\right)^p\,dx,x,d+ex\right)}{e}\\
&= \frac{\left((d+ex)\left(c(d+ex)^n\right)^{-1/n}\right)\text{Subst}\left(\int e^{\frac{x}{n}}(a+bx)^p\,dx,x,\log\left(c(d+ex)^n\right)\right)}{en}\\
&= \frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\Gamma\left(1+p,-\frac{a+b\log(c(d+ex)^n)}{bn}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^p}{e}
\end{aligned}$$

Mathematica [A] time = 0.10, size = 103, normalized size = 1.00

$$\frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\left(a+b\log\left(c(d+ex)^n\right)\right)^p\left(-\frac{a+b\log(c(d+ex)^n)}{bn}\right)^{-p}\Gamma\left(p+1,-\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{e}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^p,x]
```

```
[Out] ((d + e*x)*Gamma[1 + p, -((a + b*Log[c*(d + e*x)^n])/(b*n))]*(a + b*Log[c*(
d + e*x)^n])^p)/(e*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)*(-((a + b*Log[c*(d +
e*x)^n])/(b*n)))^p)
```

fricas [A] time = 0.46, size = 59, normalized size = 0.57

$$\frac{e^{\left(-\frac{bnp\log\left(-\frac{1}{bn}\right)+b\log(c)+a}{bn}\right)}\Gamma\left(p+1,-\frac{bn\log(ex+d)+b\log(c)+a}{bn}\right)}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^p,x, algorithm="fricas")
```

```
[Out] e^(-(b*n*p*log(-1/(b*n)) + b*log(c) + a)/(b*n))*gamma(p + 1, -(b*n*log(e*x
+ d) + b*log(c) + a)/(b*n))/e
```

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

$$\int\left(b\log\left((ex+d)^nc\right)+a\right)^p\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^p,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^p, x)
```

maple [F] time = 1.14, size = 0, normalized size = 0.00

$$\int\left(b\ln\left(c\,(ex+d)^n\right)+a\right)^p\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)^p,x)
```

```
[Out] int((b*ln(c*(e*x+d)^n)+a)^p,x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^p,x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: In function CAR, the value of t
he first argument is  0which is not of the expected type LIST
```

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

$$\int\left(a+b\,\ln\left(c\,(d+e\,x)^n\right)\right)^p\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^p,x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))^p, x)
```

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

$$\int \left(a + b \log \left(c \left(d + ex\right)^{n}\right)\right)^{p} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**p,x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**p, x)
```

3.32 $\int \left(a+b\log\left(c\sqrt{d+ex}\right)\right)^p\,dx$

Optimal. Leaf size=88

$$\frac{2^{-p}e^{-\frac{2a}{b}}\left(a+b\log\left(c\sqrt{d+ex}\right)\right)^p\left(-\frac{a+b\log\left(c\sqrt{d+ex}\right)}{b}\right)^{-p}\Gamma\left(p+1,-\frac{2\left(a+b\log\left(c\sqrt{d+ex}\right)\right)}{b}\right)}{c^2e}$$

```
[Out] GAMMA(1+p,-2*(a+b*ln(c*(e*x+d)^(1/2)))/b)*(a+b*ln(c*(e*x+d)^(1/2)))^p/(2^p)
/c^2/e/exp(2*a/b)/(((-a-b*ln(c*(e*x+d)^(1/2)))/b)^p)
```

Rubi [A] time = 0.07, antiderivative size = 88, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {2389, 2299, 2181}

$$\frac{2^{-p}e^{-\frac{2a}{b}}\left(a+b\log\left(c\sqrt{d+ex}\right)\right)^p\left(-\frac{a+b\log\left(c\sqrt{d+ex}\right)}{b}\right)^{-p}\text{Gamma}\left(p+1,-\frac{2\left(a+b\log\left(c\sqrt{d+ex}\right)\right)}{b}\right)}{c^2e}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*Sqrt[d + e*x]])^p,x]
```

```
[Out] (Gamma[1 + p, (-2*(a + b*Log[c*Sqrt[d + e*x]]))/b]*(a + b*Log[c*Sqrt[d + e*
x]])^p)/(2^p*c^2*e*E^((2*a)/b)*(-((a + b*Log[c*Sqrt[d + e*x]])/b))^p)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] && !I
ntegerQ[m]
```

Rule 2299

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[1/(n*c^(1
/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b,
 c, p}, x] && IntegerQ[1/n]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rubi steps

$$\begin{aligned}\int \left(a+b\log\left(c\sqrt{d+ex}\right)\right)^p\,dx &= \frac{\text{Subst}\left(\int \left(a+b\log\left(c\sqrt{x}\right)\right)^p\,dx,x,d+ex\right)}{e}\\ &= \frac{2\,\text{Subst}\left(\int e^{2x}(a+bx)^p\,dx,x,\log\left(c\sqrt{d+ex}\right)\right)}{c^2e}\\ &= \frac{2^{-p}e^{-\frac{2a}{b}}\Gamma\left(1+p,-\frac{2\left(a+b\log\left(c\sqrt{d+ex}\right)\right)}{b}\right)\left(a+b\log\left(c\sqrt{d+ex}\right)\right)^p\left(-\frac{a+b\log\left(c\sqrt{d+ex}\right.}{b}\right.}{c^2e}\end{aligned}$$

Mathematica [A] time = 0.05, size = 88, normalized size = 1.00

$$\frac{2^{-p}e^{-\frac{2a}{b}}\left(a+b\log\left(c\sqrt{d+ex}\right)\right)^{p}\left(-\frac{a+b\log\left(c\sqrt{d+ex}\right)}{b}\right)^{-p}\Gamma\left(p+1,-\frac{2\left(a+b\log\left(c\sqrt{d+ex}\right)\right)}{b}\right)}{c^{2}e}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*Sqrt[d + e*x]])^p,x]
```

```
[Out] (Gamma[1 + p, (-2*(a + b*Log[c*Sqrt[d + e*x]]))/b]*(a + b*Log[c*Sqrt[d + e*
x]])^p)/(2^p*c^2*e*E^((2*a)/b)*(-((a + b*Log[c*Sqrt[d + e*x]])/b))^p)
```

fricas [F] time = 0.49, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\left(b\log\left(\sqrt{ex+d}\,c\right)+a\right)^{p},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^(1/2)))^p,x, algorithm="fricas")
```

```
[Out] integral((b*log(sqrt(e*x + d)*c) + a)^p, x)
```

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

$$\int\left(b\log\left(\sqrt{ex+d}\,c\right)+a\right)^{p}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^(1/2)))^p,x, algorithm="giac")
```

```
[Out] integrate((b*log(sqrt(e*x + d)*c) + a)^p, x)
```

maple [F] time = 0.09, size = 0, normalized size = 0.00

$$\int\left(b\ln\left(\sqrt{ex+d}\;c\right)+a\right)^{p}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int((a+b*ln(c*(e*x+d)^(1/2)))^p,x)
```

maxima [A] time = 1.23, size = 59, normalized size = 0.67

$$-\frac{2\left(b\log\left(\sqrt{ex+d}\,c\right)+a\right)^{p+1}e^{\left(-\frac{2a}{b}\right)}E_{-p}\left(-\frac{2\left(b\log\left(\sqrt{ex+d}\,c\right)+a\right)}{b}\right)}{bc^{2}e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^(1/2)))^p,x, algorithm="maxima")
```

```
[Out] -2*(b*log(sqrt(e*x + d)*c) + a)^(p + 1)*e^(-2*a/b)*exp_integral_e(-p, -2*(b
*log(sqrt(e*x + d)*c) + a)/b)/(b*c^2*e)
```

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

$$\int{\left(a+b\,\ln\left(c\,\sqrt{d+e\,x}\right)\right)}^p\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int((a + b*log(c*(d + e*x)^(1/2)))^p, x)
```

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

$$\int \left(a + b\log\left(c\sqrt{d + ex}\right)\right)^{p} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Integral((a + b*log(c*sqrt(d + e*x)))**p, x)
```

3.33 $\int \frac{(e+fx)^{-1+p}}{\log\left(d(e+fx)^p\right)}\,dx$

Optimal. Leaf size=20

$$\frac{\operatorname{li}\left(d(e+fx)^p\right)}{dfp}$$

```
[Out] Li(d*(f*x+e)^p)/d/f/p
```

Rubi [A] time = 0.05, antiderivative size = 20, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {2390, 2307, 2298}

$$\frac{\operatorname{li}\left(d(e+fx)^p\right)}{dfp}$$

Antiderivative was successfully verified.

```
[In] Int[(e + f*x)^(-1 + p)/Log[d*(e + f*x)^p],x]
```

```
[Out] LogIntegral[d*(e + f*x)^p]/(d*f*p)
```

Rule 2298

```
Int[Log[(c_.)*(x_)]^(-1), x_Symbol] :> Simp[LogIntegral[c*x]/c, x] /; FreeQ
[c, x]
```

Rule 2307

```
Int[(x_)^(m_.)/Log[(c_.)*(x_)^(n_)], x_Symbol] :> Dist[1/n, Subst[Int[1/Log
[c*x], x], x, x^n], x] /; FreeQ[{c, m, n}, x] && EqQ[m, n - 1]
```

Rule 2390

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

Rubi steps

$$\begin{aligned}
\int \frac{(e+fx)^{-1+p}}{\log\left(d(e+fx)^p\right)}\,dx &= \frac{\operatorname{Subst}\left(\int \frac{x^{-1+p}}{\log(dx^p)}\,dx, x, e+fx\right)}{f}\\
&= \frac{\operatorname{Subst}\left(\int \frac{1}{\log(dx)}\,dx, x, (e+fx)^p\right)}{fp}\\
&= \frac{\operatorname{li}\left(d(e+fx)^p\right)}{dfp}
\end{aligned}$$

Mathematica [A] time = 0.03, size = 20, normalized size = 1.00

$$\frac{\operatorname{li}\left(d(e+fx)^p\right)}{dfp}$$

Antiderivative was successfully verified.

```
[In] Integrate[(e + f*x)^(-1 + p)/Log[d*(e + f*x)^p],x]
[Out] LogIntegral[d*(e + f*x)^p]/(d*f*p)
```

fricas [A] time = 0.43, size = 22, normalized size = 1.10

$$\frac{\mathrm{Ei}\left(p\log\left(fx+e\right)+\log(d)\right)}{dfp}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^(-1+p)/log(d*(f*x+e)^p),x, algorithm="fricas")
[Out] Ei(p*log(f*x + e) + log(d))/(d*f*p)
```

giac [A] time = 0.28, size = 23, normalized size = 1.15

$$\frac{\mathrm{Ei}\left(p\log\left(fx+e\right)+\log(d)\right)}{dfp}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^(-1+p)/log(d*(f*x+e)^p),x, algorithm="giac")
[Out] Ei(p*log(f*x + e) + log(d))/(d*f*p)
```

maple [A] time = 0.07, size = 26, normalized size = 1.30

$$-\frac{\mathrm{Ei}\left(1,-\ln\left(d\left(fx+e\right)^{p}\right)\right)}{dfp}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^(-1+p)/ln(d*(f*x+e)^p),x)
[Out] -1/p/f/d*Ei(1,-ln(d*(f*x+e)^p))
```

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

$$\int \frac{\left(fx+e\right)^{p-1}}{\log\left(\left(fx+e\right)^{p}d\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^(-1+p)/log(d*(f*x+e)^p),x, algorithm="maxima")
[Out] integrate((f*x + e)^(p - 1)/log((f*x + e)^p*d), x)
```

mupad [B] time = 0.20, size = 20, normalized size = 1.00

$$\frac{\mathrm{logint}\left(d\left(e+f\,x\right)^{p}\right)}{d\,f\,p}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^(p - 1)/log(d*(e + f*x)^p),x)
[Out] logint(d*(e + f*x)^p)/(d*f*p)
```

sympy [A] time = 6.18, size = 42, normalized size = 2.10

$$\begin{cases} -\frac{\begin{cases} -\frac{\log(e+fx)}{\log(d)} & \text{for } p = 0 \\ -\frac{\operatorname{li}\left(d(e+fx)^p\right)}{dp} & \text{otherwise} \end{cases}}{f} & \text{for } f \neq 0 \\ \frac{e^{p-1}x}{\log(de^p)} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**(-1+p)/ln(d*(f*x+e)**p),x)
```

```
[Out] Piecewise((-Piecewise((-log(e + f*x)/log(d), Eq(p, 0)), (-li(d*(e + f*x)**p
)/(d*p), True))/f, Ne(f, 0)), (e**(p - 1)*x/log(d*e**p), True))
```

3.34 $\int \frac{(eg+fgx)^{-1+p}}{\log\left(d(e+fx)^p\right)} dx$

Optimal. Leaf size=42

$$\frac{(e+fx)^{1-p}(g(e+fx))^{p-1}\mathrm{li}\left(d(e+fx)^p\right)}{dfp}$$

```
[Out] (f*x+e)^(1-p)*(g*(f*x+e))^(-1+p)*Li(d*(f*x+e)^p)/d/f/p
```

Rubi [A] time = 0.08, antiderivative size = 42, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.160, Rules used = {2390, 2308, 2307, 2298}

$$\frac{(e+fx)^{1-p}(g(e+fx))^{p-1}\mathrm{li}\left(d(e+fx)^p\right)}{dfp}$$

Antiderivative was successfully verified.

```
[In] Int[(e*g + f*g*x)^(-1 + p)/Log[d*(e + f*x)^p],x]
```

```
[Out] ((e + f*x)^(1 - p)*(g*(e + f*x))^(-1 + p)*LogIntegral[d*(e + f*x)^p])/(d*f*
p)
```

Rule 2298

```
Int[Log[(c_.)*(x_)]^(-1), x_Symbol] :> Simp[LogIntegral[c*x]/c, x] /; FreeQ
[c, x]
```

Rule 2307

```
Int[(x_)^(m_.)/Log[(c_.)*(x_)^(n_)], x_Symbol] :> Dist[1/n, Subst[Int[1/Log
[c*x], x], x, x^n], x] /; FreeQ[{c, m, n}, x] && EqQ[m, n - 1]
```

Rule 2308

```
Int[((d_)*(x_))^(m_.)/Log[(c_.)*(x_)^(n_)], x_Symbol] :> Dist[(d*x)^m/x^m,
Int[x^m/Log[c*x^n], x], x] /; FreeQ[{c, d, m, n}, x] && EqQ[m, n - 1]
```

Rule 2390

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

Rubi steps

$$\int \frac{(eg+fgx)^{-1+p}}{\log\left(d(e+fx)^p\right)}\,dx = \frac{\text{Subst}\left(\int \frac{(gx)^{-1+p}}{\log(dx^p)}\,dx, x, e+fx\right)}{f}$$
$$= \frac{\left((e+fx)^{1-p}(g(e+fx))^{-1+p}\right)\text{Subst}\left(\int \frac{x^{-1+p}}{\log(dx^p)}\,dx, x, e+fx\right)}{f}$$
$$= \frac{\left((e+fx)^{1-p}(g(e+fx))^{-1+p}\right)\text{Subst}\left(\int \frac{1}{\log(dx)}\,dx, x, (e+fx)^p\right)}{fp}$$
$$= \frac{(e+fx)^{1-p}(g(e+fx))^{-1+p}\text{li}\left(d(e+fx)^p\right)}{dfp}$$

Mathematica [A] time = 0.03, size = 42, normalized size = 1.00

$$\frac{(e+fx)^{1-p}(g(e+fx))^{p-1}\text{li}\left(d(e+fx)^p\right)}{dfp}$$

Antiderivative was successfully verified.

```
[In] Integrate[(e*g + f*g*x)^(-1 + p)/Log[d*(e + f*x)^p],x]
[Out] ((e + f*x)^(1 - p)*(g*(e + f*x))^(-1 + p)*LogIntegral[d*(e + f*x)^p])/(d*f*
p)
```

fricas [A] time = 0.45, size = 27, normalized size = 0.64

$$\frac{g^{p-1}\text{Ei}\left(p\log\left(fx+e\right)+\log(d)\right)}{dfp}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*g*x+e*g)^(-1+p)/log(d*(f*x+e)^p),x, algorithm="fricas")
[Out] g^(p - 1)*Ei(p*log(f*x + e) + log(d))/(d*f*p)
```

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

$$\int \frac{\left(fgx+eg\right)^{p-1}}{\log\left(\left(fx+e\right)^p d\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*g*x+e*g)^(-1+p)/log(d*(f*x+e)^p),x, algorithm="giac")
[Out] integrate((f*g*x + e*g)^(p - 1)/log((f*x + e)^p*d), x)
```

maple [F] time = 1.38, size = 0, normalized size = 0.00

$$\int \frac{\left(fgx+eg\right)^{p-1}}{\ln\left(d\left(fx+e\right)^p\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*g*x+e*g)^(-1+p)/ln(d*(f*x+e)^p),x)
```

```
[Out] int((f*g*x+e*g)^(-1+p)/ln(d*(f*x+e)^p),x)
```

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

$$\int \frac{(fgx + eg)^{p-1}}{\log\left((fx + e)^p d\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*g*x+e*g)^(-1+p)/log(d*(f*x+e)^p),x, algorithm="maxima")
[Out] integrate((f*g*x + e*g)^(p - 1)/log((f*x + e)^p*d), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{(e\,g + f\,g\,x)^{p-1}}{\ln\left(d\,(e + f\,x)^p\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*g + f*g*x)^(p - 1)/log(d*(e + f*x)^p),x)
[Out] int((e*g + f*g*x)^(p - 1)/log(d*(e + f*x)^p), x)
```

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

$$\int \frac{(g(e + fx))^{p-1}}{\log\left(d(e + fx)^p\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*g*x+e*g)**(-1+p)/ln(d*(f*x+e)**p),x)
[Out] Integral((g*(e + f*x))**(p - 1)/log(d*(e + f*x)**p), x)
```

3.35 $\int (f+gx)^4 \left(a+b\log\left(c(d+ex)^n\right)\right) dx$

Optimal. Leaf size=178

$$\frac{(f+gx)^5\left(a+b\log\left(c(d+ex)^n\right)\right)}{5g}-\frac{bn(ef-dg)^5\log(d+ex)}{5e^5g}-\frac{bnx(ef-dg)^4}{5e^4}-\frac{bn(f+gx)^2(ef-dg)^3}{10e^3g}-\frac{bn(f+gx)^3}{15e^2g}$$

```
[Out] -1/5*b*(-d*g+e*f)^4*n*x/e^4-1/10*b*(-d*g+e*f)^3*n*(g*x+f)^2/e^3/g-1/15*b*(-
d*g+e*f)^2*n*(g*x+f)^3/e^2/g-1/20*b*(-d*g+e*f)*n*(g*x+f)^4/e/g-1/25*b*n*(g*
x+f)^5/g-1/5*b*(-d*g+e*f)^5*n*ln(e*x+d)/e^5/g+1/5*(g*x+f)^5*(a+b*ln(c*(e*x+
d)^n))/g
```

Rubi [A] time = 0.10, antiderivative size = 178, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = {2395, 43}

$$\frac{(f+gx)^5\left(a+b\log\left(c(d+ex)^n\right)\right)}{5g}-\frac{bnx(ef-dg)^4}{5e^4}-\frac{bn(f+gx)^2(ef-dg)^3}{10e^3g}-\frac{bn(f+gx)^3(ef-dg)^2}{15e^2g}-\frac{bn(ef-dg)^5}{5e^5}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^4*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] -(b*(e*f - d*g)^4*n*x)/(5*e^4) - (b*(e*f - d*g)^3*n*(f + g*x)^2)/(10*e^3*g)
 - (b*(e*f - d*g)^2*n*(f + g*x)^3)/(15*e^2*g) - (b*(e*f - d*g)*n*(f + g*x)^
4)/(20*e*g) - (b*n*(f + g*x)^5)/(25*g) - (b*(e*f - d*g)^5*n*Log[d + e*x])/(
5*e^5*g) + ((f + g*x)^5*(a + b*Log[c*(d + e*x)^n]))/(5*g)
```

Rule 43

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

Rule 2395

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

Rubi steps

$$\begin{aligned}\int (f+gx)^4\left(a+b\log\left(c(d+ex)^n\right)\right)dx &= \frac{(f+gx)^5\left(a+b\log\left(c(d+ex)^n\right)\right)}{5g}-\frac{(ben)\int\frac{(f+gx)^5}{d+ex}dx}{5g}\\ &= \frac{(f+gx)^5\left(a+b\log\left(c(d+ex)^n\right)\right)}{5g}-\frac{(ben)\int\left(\frac{g(ef-dg)^4}{e^5}+\frac{(ef-dg)^5}{e^5(d+ex)}+\frac{g(ef-}{}\right.}{}\\ &= -\frac{b(ef-dg)^4nx}{5e^4}-\frac{b(ef-dg)^3n(f+gx)^2}{10e^3g}-\frac{b(ef-dg)^2n(f+gx)^3}{15e^2g}-\frac{b(}{}\end{aligned}$$

Mathematica [A] time = 0.31, size = 315, normalized size = 1.77

$$ex\left(60ae^4\left(5f^4+10f^3gx+10f^2g^2x^2+5fg^3x^3+g^4x^4\right)-bn\left(60d^4g^4-30d^3eg^3(10f+gx)+10d^2e^2g^2\left(60f^2+15\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^4*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] (e*x*(60*a*e^4*(5*f^4 + 10*f^3*g*x + 10*f^2*g^2*x^2 + 5*f*g^3*x^3 + g^4*x^4
) - b*n*(60*d^4*g^4 - 30*d^3*e*g^3*(10*f + g*x) + 10*d^2*e^2*g^2*(60*f^2 +
15*f*g*x + 2*g^2*x^2) - 5*d*e^3*g*(120*f^3 + 60*f^2*g*x + 20*f*g^2*x^2 + 3*
g^3*x^3) + e^4*(300*f^4 + 300*f^3*g*x + 200*f^2*g^2*x^2 + 75*f*g^3*x^3 + 12
*g^4*x^4))) + 60*b*d^2*g*(-10*e^3*f^3 + 10*d*e^2*f^2*g - 5*d^2*e*f*g^2 + d^
3*g^3)*n*Log[d + e*x] + 60*b*e^4*(5*d*f^4 + e*x*(5*f^4 + 10*f^3*g*x + 10*f^
2*g^2*x^2 + 5*f*g^3*x^3 + g^4*x^4))*Log[c*(d + e*x)^n])/(300*e^5)
```

fricas [B] time = 0.47, size = 471, normalized size = 2.65

$$-\frac{12\left(be^5g^4n-5\,ae^5g^4\right)x^5-15\left(20\,ae^5fg^3-\left(5\,be^5fg^3-bde^4g^4\right)n\right)x^4-20\left(30\,ae^5f^2g^2-\left(10\,be^5f^2g^2-5\,bde^4f\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^4*(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
```

```
[Out] -1/300*(12*(b*e^5*g^4*n - 5*a*e^5*g^4)*x^5 - 15*(20*a*e^5*f*g^3 - (5*b*e^5*
f*g^3 - b*d*e^4*g^4)*n)*x^4 - 20*(30*a*e^5*f^2*g^2 - (10*b*e^5*f^2*g^2 - 5*
b*d*e^4*f*g^3 + b*d^2*e^3*g^4)*n)*x^3 - 30*(20*a*e^5*f^3*g - (10*b*e^5*f^3*
g - 10*b*d*e^4*f^2*g^2 + 5*b*d^2*e^3*f*g^3 - b*d^3*e^2*g^4)*n)*x^2 - 60*(5*
a*e^5*f^4 - (5*b*e^5*f^4 - 10*b*d*e^4*f^3*g + 10*b*d^2*e^3*f^2*g^2 - 5*b*d^
3*e^2*f*g^3 + b*d^4*e*g^4)*n)*x - 60*(b*e^5*g^4*n*x^5 + 5*b*e^5*f*g^3*n*x^4
 + 10*b*e^5*f^2*g^2*n*x^3 + 10*b*e^5*f^3*g*n*x^2 + 5*b*e^5*f^4*n*x + (5*b*d
*e^4*f^4 - 10*b*d^2*e^3*f^3*g + 10*b*d^3*e^2*f^2*g^2 - 5*b*d^4*e*f*g^3 + b*
d^5*g^4)*n)*log(e*x + d) - 60*(b*e^5*g^4*x^5 + 5*b*e^5*f*g^3*x^4 + 10*b*e^5
*f^2*g^2*x^3 + 10*b*e^5*f^3*g*x^2 + 5*b*e^5*f^4*x)*log(c))/e^5
```

giac [B] time = 0.29, size = 1224, normalized size = 6.88

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^4*(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
```

```
[Out] 1/5*(x*e + d)^5*b*g^4*n*e^(-5)*log(x*e + d) - (x*e + d)^4*b*d*g^4*n*e^(-5)*
log(x*e + d) + 2*(x*e + d)^3*b*d^2*g^4*n*e^(-5)*log(x*e + d) - 2*(x*e + d)^
2*b*d^3*g^4*n*e^(-5)*log(x*e + d) + (x*e + d)*b*d^4*g^4*n*e^(-5)*log(x*e +
d) - 1/25*(x*e + d)^5*b*g^4*n*e^(-5) + 1/4*(x*e + d)^4*b*d*g^4*n*e^(-5) - 2
/3*(x*e + d)^3*b*d^2*g^4*n*e^(-5) + (x*e + d)^2*b*d^3*g^4*n*e^(-5) - (x*e +
 d)*b*d^4*g^4*n*e^(-5) + (x*e + d)^4*b*f*g^3*n*e^(-4)*log(x*e + d) - 4*(x*e
 + d)^3*b*d*f*g^3*n*e^(-4)*log(x*e + d) + 6*(x*e + d)^2*b*d^2*f*g^3*n*e^(-4
)*log(x*e + d) - 4*(x*e + d)*b*d^3*f*g^3*n*e^(-4)*log(x*e + d) + 1/5*(x*e +
 d)^5*b*g^4*e^(-5)*log(c) - (x*e + d)^4*b*d*g^4*e^(-5)*log(c) + 2*(x*e + d)
^3*b*d^2*g^4*e^(-5)*log(c) - 2*(x*e + d)^2*b*d^3*g^4*e^(-5)*log(c) + (x*e +
 d)*b*d^4*g^4*e^(-5)*log(c) - 1/4*(x*e + d)^4*b*f*g^3*n*e^(-4) + 4/3*(x*e +
 d)^3*b*d*f*g^3*n*e^(-4) - 3*(x*e + d)^2*b*d^2*f*g^3*n*e^(-4) + 4*(x*e + d)
*b*d^3*f*g^3*n*e^(-4) + 1/5*(x*e + d)^5*a*g^4*e^(-5) - (x*e + d)^4*a*d*g^4*
e^(-5) + 2*(x*e + d)^3*a*d^2*g^4*e^(-5) - 2*(x*e + d)^2*a*d^3*g^4*e^(-5) +
(x*e + d)*a*d^4*g^4*e^(-5) + 2*(x*e + d)^3*b*f^2*g^2*n*e^(-3)*log(x*e + d)
- 6*(x*e + d)^2*b*d*f^2*g^2*n*e^(-3)*log(x*e + d) + 6*(x*e + d)*b*d^2*f^2*g
^2*n*e^(-3)*log(x*e + d) + (x*e + d)^4*b*f*g^3*e^(-4)*log(c) - 4*(x*e + d)^
3*b*d*f*g^3*e^(-4)*log(c) + 6*(x*e + d)^2*b*d^2*f*g^3*e^(-4)*log(c) - 4*(x*
e + d)*b*d^3*f*g^3*e^(-4)*log(c) - 2/3*(x*e + d)^3*b*f^2*g^2*n*e^(-3) + 3*(
x*e + d)^2*b*d*f^2*g^2*n*e^(-3) - 6*(x*e + d)*b*d^2*f^2*g^2*n*e^(-3) + (x*e
 + d)^4*a*f*g^3*e^(-4) - 4*(x*e + d)^3*a*d*f*g^3*e^(-4) + 6*(x*e + d)^2*a*d
^2*f*g^3*e^(-4) - 4*(x*e + d)*a*d^3*f*g^3*e^(-4) + 2*(x*e + d)^2*b*f^3*g*n*
```

```
e^(-2)*log(x*e + d) - 4*(x*e + d)*b*d*f^3*g*n*e^(-2)*log(x*e + d) + 2*(x*e
+ d)^3*b*f^2*g^2*e^(-3)*log(c) - 6*(x*e + d)^2*b*d*f^2*g^2*e^(-3)*log(c) +
6*(x*e + d)*b*d^2*f^2*g^2*e^(-3)*log(c) - (x*e + d)^2*b*f^3*g*n*e^(-2) + 4*
(x*e + d)*b*d*f^3*g*n*e^(-2) + 2*(x*e + d)^3*a*f^2*g^2*e^(-3) - 6*(x*e + d)
^2*a*d*f^2*g^2*e^(-3) + 6*(x*e + d)*a*d^2*f^2*g^2*e^(-3) + (x*e + d)*b*f^4*
n*e^(-1)*log(x*e + d) + 2*(x*e + d)^2*b*f^3*g*e^(-2)*log(c) - 4*(x*e + d)*b
*d*f^3*g*e^(-2)*log(c) - (x*e + d)*b*f^4*n*e^(-1) + 2*(x*e + d)^2*a*f^3*g*e
^(-2) - 4*(x*e + d)*a*d*f^3*g*e^(-2) + (x*e + d)*b*f^4*e^(-1)*log(c) + (x*e
 + d)*a*f^4*e^(-1)
```

maple [C] time = 0.35, size = 1105, normalized size = 6.21

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^4*(b*ln(c*(e*x+d)^n)+a),x)
```

```
[Out] 1/5*g^4*a*x^5+1/5*g^4*ln(c)*b*x^5+ln(c)*b*f^4*x+1/5*(g*x+f)^5*b/g*ln((e*x+d
)^n)+I*g^2*Pi*b*f^2*x^3*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+a*f^4*x-1/25*g^4*b*
n*x^5+g^3*a*f*x^4+2*g^2*a*f^2*x^3+2*g*a*f^3*x^2-1/5/g*ln(e*x+d)*b*f^5*n+g^3
*ln(c)*b*f*x^4+2*g*ln(c)*b*f^3*x^2+2*g^2*ln(c)*b*f^2*x^3+1/e*ln(e*x+d)*b*d*
f^4*n-1/2*I*Pi*b*f^4*x*csgn(I*c*(e*x+d)^n)^3-1/10*I*g^4*Pi*b*x^5*csgn(I*c*(
e*x+d)^n)^3-I*g*Pi*b*f^3*x^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n
)-b*f^4*n*x+1/10/e^3*g^4*b*d^3*n*x^2-g*b*f^3*n*x^2+1/20/e*g^4*b*d*n*x^4-1/4
*g^3*b*f*n*x^4-1/15/e^2*g^4*b*d^2*n*x^3-2/3*g^2*b*f^2*n*x^3+1/5/e^5*g^4*ln(
e*x+d)*b*d^5*n+1/e^3*g^3*b*d^3*f*n*x-2/e^2*g^2*b*d^2*f^2*n*x+2/e*g*b*d*f^3*
n*x+1/3/e*g^3*b*d*f*n*x^3-1/2/e^2*g^3*b*d^2*f*n*x^2+1/e*g^2*b*d*f^2*n*x^2-1
/e^4*g^3*ln(e*x+d)*b*d^4*f*n+2/e^3*g^2*ln(e*x+d)*b*d^3*f^2*n-2/e^2*g*ln(e*x
+d)*b*d^2*f^3*n-1/2*I*g^3*Pi*b*f*x^4*csgn(I*c*(e*x+d)^n)^3+1/2*I*Pi*b*f^4*x
*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/2*I*Pi*b*f^4*x*csgn(I*(e*x+d)^n)*csgn(I*
c*(e*x+d)^n)^2-I*g*Pi*b*f^3*x^2*csgn(I*c*(e*x+d)^n)^3+1/10*I*g^4*Pi*b*x^5*c
sgn(I*c)*csgn(I*c*(e*x+d)^n)^2-I*g^2*Pi*b*f^2*x^3*csgn(I*c*(e*x+d)^n)^3+1/1
0*I*g^4*Pi*b*x^5*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/5/e^4*g^4*b*d^4*
n*x-I*g^2*Pi*b*f^2*x^3*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/2*
I*g^3*Pi*b*f*x^4*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*g^2*Pi*b
*f^2*x^3*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+I*g*Pi*b*f^3*x^2*csgn(I*c)
*csgn(I*c*(e*x+d)^n)^2+I*g*Pi*b*f^3*x^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^
n)^2+1/2*I*g^3*Pi*b*f*x^4*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/10*I*g^
4*Pi*b*x^5*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/2*I*g^3*Pi*b*f
*x^4*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/2*I*Pi*b*f^4*x*csgn(I*c)*csgn(I*(e*x
+d)^n)*csgn(I*c*(e*x+d)^n)
```

maxima [B] time = 1.07, size = 393, normalized size = 2.21

$$\frac{1}{5}bg^4x^5\log\left((ex+d)^nc\right)+\frac{1}{5}ag^4x^5+bfg^3x^4\log\left((ex+d)^nc\right)+afg^3x^4+2\,bf^2g^2x^3\log\left((ex+d)^nc\right)+2\,af^2g^2x^3-bef^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^4*(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
```

```
[Out] 1/5*b*g^4*x^5*log((e*x + d)^n*c) + 1/5*a*g^4*x^5 + b*f*g^3*x^4*log((e*x + d
)^n*c) + a*f*g^3*x^4 + 2*b*f^2*g^2*x^3*log((e*x + d)^n*c) + 2*a*f^2*g^2*x^3
 - b*e*f^4*n*(x/e - d*log(e*x + d)/e^2) + 1/300*b*e*g^4*n*(60*d^5*log(e*x +
 d)/e^6 - (12*e^4*x^5 - 15*d*e^3*x^4 + 20*d^2*e^2*x^3 - 30*d^3*e*x^2 + 60*d
^4*x)/e^5) - 1/12*b*e*f*g^3*n*(12*d^4*log(e*x + d)/e^5 + (3*e^3*x^4 - 4*d*e
^2*x^3 + 6*d^2*e*x^2 - 12*d^3*x)/e^4) + 1/3*b*e*f^2*g^2*n*(6*d^3*log(e*x +
d)/e^4 - (2*e^2*x^3 - 3*d*e*x^2 + 6*d^2*x)/e^3) - b*e*f^3*g*n*(2*d^2*log(e*
x + d)/e^3 + (e*x^2 - 2*d*x)/e^2) + 2*b*f^3*g*x^2*log((e*x + d)^n*c) + 2*a*
f^3*g*x^2 + b*f^4*x*log((e*x + d)^n*c) + a*f^4*x
```

mupad [B] time = 0.42, size = 526, normalized size = 2.96

$$x\left(\frac{5\,a\,e\,f^4+20\,a\,d\,f^3\,g-5\,b\,e\,f^4\,n}{5\,e}-\frac{d\left(\frac{d\left(\frac{d\left(\frac{g^3\,(a\,d\,g+4\,a\,e\,f-b\,e\,f\,n)}{e}-\frac{d\,g^4\,(5\,a-b\,n)}{5\,e}\right)}{e}-\frac{2\,f\,g^2\,(2\,a\,d\,g+3\,a\,e\,f-b\,e\,f\,n)}{e}\right)}{e}+\frac{2\,f^2\,g\,(3\,a\,d\,g+2\,a\,e}{e}\right.}{e}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^4*(a + b*log(c*(d + e*x)^n)),x)
```

```
[Out] x*((5*a*e*f^4 + 20*a*d*f^3*g - 5*b*e*f^4*n)/(5*e) - (d*((d*((d*((g^3*(a*d*g
 + 4*a*e*f - b*e*f*n))/e - (d*g^4*(5*a - b*n))/(5*e)))/e - (2*f*g^2*(2*a*d*
g + 3*a*e*f - b*e*f*n))/e))/e + (2*f^2*g*(3*a*d*g + 2*a*e*f - b*e*f*n))/e))
/e) - x^3*((d*((g^3*(a*d*g + 4*a*e*f - b*e*f*n))/e - (d*g^4*(5*a - b*n))/(5
*e)))/(3*e) - (2*f*g^2*(2*a*d*g + 3*a*e*f - b*e*f*n))/(3*e)) + x^4*((g^3*(a
*d*g + 4*a*e*f - b*e*f*n))/(4*e) - (d*g^4*(5*a - b*n))/(20*e)) + log(c*(d +
 e*x)^n)*((b*g^4*x^5)/5 + b*f^4*x + 2*b*f^2*g^2*x^3 + 2*b*f^3*g*x^2 + b*f*g
^3*x^4) + x^2*((d*((d*((g^3*(a*d*g + 4*a*e*f - b*e*f*n))/e - (d*g^4*(5*a -
b*n))/(5*e)))/e - (2*f*g^2*(2*a*d*g + 3*a*e*f - b*e*f*n))/e))/(2*e) + (f^2*
g*(3*a*d*g + 2*a*e*f - b*e*f*n))/e) + (g^4*x^5*(5*a - b*n))/25 + (log(d + e
*x)*(b*d^5*g^4*n + 5*b*d*e^4*f^4*n + 10*b*d^3*e^2*f^2*g^2*n - 5*b*d^4*e*f*g
^3*n - 10*b*d^2*e^3*f^3*g*n))/(5*e^5)
```

sympy [A] time = 14.96, size = 620, normalized size = 3.48

$$\begin{cases} af^4x+2af^3gx^2+2af^2g^2x^3+afg^3x^4+\frac{ag^4x^5}{5}+\frac{bd^5g^4n\log{(d+ex)}}{5e^5}-\frac{bd^4fg^3n\log{(d+ex)}}{e^4}-\frac{bd^4g^4nx}{5e^4}+\frac{2bd^3f^2g^2n\log{(d+ex)}}{e^3} \\ \left(a+b\log{(cd^n)}\right)\left(f^4x+2f^3gx^2+2f^2g^2x^3+fg^3x^4+\frac{g^4x^5}{5}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**4*(a+b*ln(c*(e*x+d)**n)),x)
```

```
[Out] Piecewise((a*f**4*x + 2*a*f**3*g*x**2 + 2*a*f**2*g**2*x**3 + a*f*g**3*x**4
+ a*g**4*x**5/5 + b*d**5*g**4*n*log(d + e*x)/(5*e**5) - b*d**4*f*g**3*n*log
(d + e*x)/e**4 - b*d**4*g**4*n*x/(5*e**4) + 2*b*d**3*f**2*g**2*n*log(d + e*
x)/e**3 + b*d**3*f*g**3*n*x/e**3 + b*d**3*g**4*n*x**2/(10*e**3) - 2*b*d**2*
f**3*g*n*log(d + e*x)/e**2 - 2*b*d**2*f**2*g**2*n*x/e**2 - b*d**2*f*g**3*n*
x**2/(2*e**2) - b*d**2*g**4*n*x**3/(15*e**2) + b*d*f**4*n*log(d + e*x)/e +
2*b*d*f**3*g*n*x/e + b*d*f**2*g**2*n*x**2/e + b*d*f*g**3*n*x**3/(3*e) + b*d
*g**4*n*x**4/(20*e) + b*f**4*n*x*log(d + e*x) - b*f**4*n*x + b*f**4*x*log(c
) + 2*b*f**3*g*n*x**2*log(d + e*x) - b*f**3*g*n*x**2 + 2*b*f**3*g*x**2*log(
c) + 2*b*f**2*g**2*n*x**3*log(d + e*x) - 2*b*f**2*g**2*n*x**3/3 + 2*b*f**2*
g**2*x**3*log(c) + b*f*g**3*n*x**4*log(d + e*x) - b*f*g**3*n*x**4/4 + b*f*g
**3*x**4*log(c) + b*g**4*n*x**5*log(d + e*x)/5 - b*g**4*n*x**5/25 + b*g**4*
x**5*log(c)/5, Ne(e, 0)), ((a + b*log(c*d**n))*(f**4*x + 2*f**3*g*x**2 + 2*
f**2*g**2*x**3 + f*g**3*x**4 + g**4*x**5/5), True))
```

3.36 $\int (f+gx)^3 \left(a+b\log\left(c(d+ex)^n\right)\right) dx$

Optimal. Leaf size=149

$$\frac{(f+gx)^4\left(a+b\log\left(c(d+ex)^n\right)\right)}{4g}-\frac{bn(ef-dg)^4\log(d+ex)}{4e^4g}-\frac{bnx(ef-dg)^3}{4e^3}-\frac{bn(f+gx)^2(ef-dg)^2}{8e^2g}-\frac{bn(f+gx)^3}{12e}$$

```
[Out] -1/4*b*(-d*g+e*f)^3*n*x/e^3-1/8*b*(-d*g+e*f)^2*n*(g*x+f)^2/e^2/g-1/12*b*(-d
*g+e*f)*n*(g*x+f)^3/e/g-1/16*b*n*(g*x+f)^4/g-1/4*b*(-d*g+e*f)^4*n*ln(e*x+d)
/e^4/g+1/4*(g*x+f)^4*(a+b*ln(c*(e*x+d)^n))/g
```

Rubi [A] time = 0.07, antiderivative size = 149, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {2395, 43}

$$\frac{(f+gx)^4\left(a+b\log\left(c(d+ex)^n\right)\right)}{4g}-\frac{bnx(ef-dg)^3}{4e^3}-\frac{bn(f+gx)^2(ef-dg)^2}{8e^2g}-\frac{bn(ef-dg)^4\log(d+ex)}{4e^4g}-\frac{bn(f+gx)^3}{12e}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^3*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] -(b*(e*f - d*g)^3*n*x)/(4*e^3) - (b*(e*f - d*g)^2*n*(f + g*x)^2)/(8*e^2*g)
- (b*(e*f - d*g)*n*(f + g*x)^3)/(12*e*g) - (b*n*(f + g*x)^4)/(16*g) - (b*(e
*f - d*g)^4*n*Log[d + e*x])/(4*e^4*g) + ((f + g*x)^4*(a + b*Log[c*(d + e*x)
^n]))/(4*g)
```

Rule 43

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

Rule 2395

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

Rubi steps

$$\begin{aligned}\int (f+gx)^3\left(a+b\log\left(c(d+ex)^n\right)\right)dx &= \frac{(f+gx)^4\left(a+b\log\left(c(d+ex)^n\right)\right)}{4g}-\frac{(ben)\int\frac{(f+gx)^4}{d+ex}\,dx}{4g}\\ &= \frac{(f+gx)^4\left(a+b\log\left(c(d+ex)^n\right)\right)}{4g}-\frac{(ben)\int\left(\frac{g(ef-dg)^3}{e^4}+\frac{(ef-dg)^4}{e^4(d+ex)}+\frac{g(ef-\cdots}{\cdots}\right.}{\cdots}\\ &= -\frac{b(ef-dg)^3nx}{4e^3}-\frac{b(ef-dg)^2n(f+gx)^2}{8e^2g}-\frac{b(ef-dg)n(f+gx)^3}{12eg}-\frac{bn\cdots}{\cdots}\end{aligned}$$

Mathematica [A] time = 0.23, size = 226, normalized size = 1.52

$$\frac{ex\left(12ae^3\left(4f^3+6f^2gx+4fg^2x^2+g^3x^3\right)-bn\left(-12d^3g^3+6d^2eg^2(8f+gx)-4de^2g\left(18f^2+6fgx+g^2x^2\right)+e^3\left(\cdots\right.\right.}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^3*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] (e*x*(12*a*e^3*(4*f^3 + 6*f^2*g*x + 4*f*g^2*x^2 + g^3*x^3) - b*n*(-12*d^3*g
^3 + 6*d^2*e*g^2*(8*f + g*x) - 4*d*e^2*g*(18*f^2 + 6*f*g*x + g^2*x^2) + e^3
*(48*f^3 + 36*f^2*g*x + 16*f*g^2*x^2 + 3*g^3*x^3))) - 12*b*d^2*g*(6*e^2*f^2
 - 4*d*e*f*g + d^2*g^2)*n*Log[d + e*x] + 12*b*e^3*(4*d*f^3 + e*x*(4*f^3 + 6
*f^2*g*x + 4*f*g^2*x^2 + g^3*x^3))*Log[c*(d + e*x)^n])/(48*e^4)
```

fricas [B] time = 0.45, size = 340, normalized size = 2.28

$$-\frac{3\left(be^4g^3n-4\,ae^4g^3\right)x^4-4\left(12\,ae^4fg^2-\left(4\,be^4fg^2-bde^3g^3\right)n\right)x^3-6\left(12\,ae^4f^2g-\left(6\,be^4f^2g-4\,bde^3fg^2+b\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/48*(3*(b*e^4*g^3*n - 4*a*e^4*g^3)*x^4 - 4*(12*a*e^4*f*g^2 - (4*b*e^4*f*g
^2 - b*d*e^3*g^3)*n)*x^3 - 6*(12*a*e^4*f^2*g - (6*b*e^4*f^2*g - 4*b*d*e^3*f
*g^2 + b*d^2*e^2*g^3)*n)*x^2 - 12*(4*a*e^4*f^3 - (4*b*e^4*f^3 - 6*b*d*e^3*f
^2*g + 4*b*d^2*e^2*f*g^2 - b*d^3*e*g^3)*n)*x - 12*(b*e^4*g^3*n*x^4 + 4*b*e^
4*f*g^2*n*x^3 + 6*b*e^4*f^2*g*n*x^2 + 4*b*e^4*f^3*n*x + (4*b*d*e^3*f^3 - 6*
b*d^2*e^2*f^2*g + 4*b*d^3*e*f*g^2 - b*d^4*g^3)*n)*log(e*x + d) - 12*(b*e^4*
g^3*x^4 + 4*b*e^4*f*g^2*x^3 + 6*b*e^4*f^2*g*x^2 + 4*b*e^4*f^3*x)*log(c))/e^
4
```

giac [B] time = 0.22, size = 780, normalized size = 5.23

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/4*(x*e + d)^4*b*g^3*n*e^(-4)*log(x*e + d) - (x*e + d)^3*b*d*g^3*n*e^(-4)*
log(x*e + d) + 3/2*(x*e + d)^2*b*d^2*g^3*n*e^(-4)*log(x*e + d) - (x*e + d)*
b*d^3*g^3*n*e^(-4)*log(x*e + d) - 1/16*(x*e + d)^4*b*g^3*n*e^(-4) + 1/3*(x*
e + d)^3*b*d*g^3*n*e^(-4) - 3/4*(x*e + d)^2*b*d^2*g^3*n*e^(-4) + (x*e + d)*
b*d^3*g^3*n*e^(-4) + (x*e + d)^3*b*f*g^2*n*e^(-3)*log(x*e + d) - 3*(x*e + d
)^2*b*d*f*g^2*n*e^(-3)*log(x*e + d) + 3*(x*e + d)*b*d^2*f*g^2*n*e^(-3)*log(
x*e + d) + 1/4*(x*e + d)^4*b*g^3*e^(-4)*log(c) - (x*e + d)^3*b*d*g^3*e^(-4)
*log(c) + 3/2*(x*e + d)^2*b*d^2*g^3*e^(-4)*log(c) - (x*e + d)*b*d^3*g^3*e^(
-4)*log(c) - 1/3*(x*e + d)^3*b*f*g^2*n*e^(-3) + 3/2*(x*e + d)^2*b*d*f*g^2*n
*e^(-3) - 3*(x*e + d)*b*d^2*f*g^2*n*e^(-3) + 1/4*(x*e + d)^4*a*g^3*e^(-4) -
 (x*e + d)^3*a*d*g^3*e^(-4) + 3/2*(x*e + d)^2*a*d^2*g^3*e^(-4) - (x*e + d)*
a*d^3*g^3*e^(-4) + 3/2*(x*e + d)^2*b*f^2*g*n*e^(-2)*log(x*e + d) - 3*(x*e +
 d)*b*d*f^2*g*n*e^(-2)*log(x*e + d) + (x*e + d)^3*b*f*g^2*e^(-3)*log(c) - 3
*(x*e + d)^2*b*d*f*g^2*e^(-3)*log(c) + 3*(x*e + d)*b*d^2*f*g^2*e^(-3)*log(c
) - 3/4*(x*e + d)^2*b*f^2*g*n*e^(-2) + 3*(x*e + d)*b*d*f^2*g*n*e^(-2) + (x*
e + d)^3*a*f*g^2*e^(-3) - 3*(x*e + d)^2*a*d*f*g^2*e^(-3) + 3*(x*e + d)*a*d^
2*f*g^2*e^(-3) + (x*e + d)*b*f^3*n*e^(-1)*log(x*e + d) + 3/2*(x*e + d)^2*b*
f^2*g*e^(-2)*log(c) - 3*(x*e + d)*b*d*f^2*g*e^(-2)*log(c) - (x*e + d)*b*f^3
*n*e^(-1) + 3/2*(x*e + d)^2*a*f^2*g*e^(-2) - 3*(x*e + d)*a*d*f^2*g*e^(-2) +
 (x*e + d)*b*f^3*e^(-1)*log(c) + (x*e + d)*a*f^3*e^(-1)
```

maple [C] time = 0.33, size = 836, normalized size = 5.61

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^3*(b*ln(c*(e*x+d)^n)+a),x)
```

```
[Out] 1/4*g^3*a*x^4+1/4*g^3*ln(c)*b*x^4+ln(c)*b*f^3*x+1/4*(g*x+f)^4*b/g*ln((e*x+d
)^n)+1/2/e*g^2*b*d*f*n*x^2-1/e^2*g^2*b*d^2*f*n*x-3/2/e^2*g*ln(e*x+d)*b*d^2*
f^2*n+1/e^3*g^2*ln(e*x+d)*b*d^3*f*n-3/4*I*g*Pi*b*f^2*x^2*csgn(I*c)*csgn(I*(
e*x+d)^n)*csgn(I*c*(e*x+d)^n)+g^2*a*f*x^3+3/2*g*a*f^2*x^2+a*f^3*x-1/16*g^3*
b*n*x^4-1/4/g*ln(e*x+d)*b*f^4*n+g^2*ln(c)*b*f*x^3+3/2*g*ln(c)*b*f^2*x^2+3/2
/e*g*b*d*f^2*n*x+1/2*I*Pi*b*f^3*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/2*I*Pi*
b*f^3*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-3/4*I*g*Pi*b*f^2*x^2*csgn(I
*c*(e*x+d)^n)^3+1/8*I*g^3*Pi*b*x^4*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/2*I*g^
2*Pi*b*f*x^3*csgn(I*c*(e*x+d)^n)^3+1/8*I*g^3*Pi*b*x^4*csgn(I*(e*x+d)^n)*csg
n(I*c*(e*x+d)^n)^2-1/8*I*g^3*Pi*b*x^4*csgn(I*c*(e*x+d)^n)^3-1/2*I*Pi*b*f^3*
x*csgn(I*c*(e*x+d)^n)^3+1/4/e^3*g^3*b*d^3*n*x-b*f^3*n*x+1/12/e*g^3*b*d*n*x^
3-1/3*g^2*b*f*n*x^3-1/8/e^2*g^3*b*d^2*n*x^2-3/4*g*b*f^2*n*x^2+1/e*ln(e*x+d)
*b*d*f^3*n-1/4/e^4*g^3*ln(e*x+d)*b*d^4*n-1/2*I*Pi*b*f^3*x*csgn(I*c)*csgn(I*
(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/8*I*g^3*Pi*b*x^4*csgn(I*c)*csgn(I*(e*x+d)^
n)*csgn(I*c*(e*x+d)^n)+1/2*I*g^2*Pi*b*f*x^3*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2
+1/2*I*g^2*Pi*b*f*x^3*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+3/4*I*g*Pi*b*
f^2*x^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+3/4*I*g*Pi*b*f^2*x^2*csgn(I*(e*x+d)
^n)*csgn(I*c*(e*x+d)^n)^2-1/2*I*g^2*Pi*b*f*x^3*csgn(I*c)*csgn(I*(e*x+d)^n)*
csgn(I*c*(e*x+d)^n)
```

maxima [B] time = 1.12, size = 284, normalized size = 1.91

$$\frac{1}{4}bg^3x^4\log\left((ex+d)^nc\right)+\frac{1}{4}ag^3x^4+bfg^2x^3\log\left((ex+d)^nc\right)+afg^2x^3-bef^3n\left(\frac{x}{e}-\frac{d\log(ex+d)}{e^2}\right)-\frac{1}{48}beg^3n\left(\frac{12d^4}{\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/4*b*g^3*x^4*log((e*x + d)^n*c) + 1/4*a*g^3*x^4 + b*f*g^2*x^3*log((e*x + d
)^n*c) + a*f*g^2*x^3 - b*e*f^3*n*(x/e - d*log(e*x + d)/e^2) - 1/48*b*e*g^3*
n*(12*d^4*log(e*x + d)/e^5 + (3*e^3*x^4 - 4*d*e^2*x^3 + 6*d^2*e*x^2 - 12*d^
3*x)/e^4) + 1/6*b*e*f*g^2*n*(6*d^3*log(e*x + d)/e^4 - (2*e^2*x^3 - 3*d*e*x^
2 + 6*d^2*x)/e^3) - 3/4*b*e*f^2*g*n*(2*d^2*log(e*x + d)/e^3 + (e*x^2 - 2*d*
x)/e^2) + 3/2*b*f^2*g*x^2*log((e*x + d)^n*c) + 3/2*a*f^2*g*x^2 + b*f^3*x*lo
g((e*x + d)^n*c) + a*f^3*x
```

mupad [B] time = 0.35, size = 352, normalized size = 2.36

$$x\left(\frac{4aef^3+12adf^2g-4bef^3n}{4e}+\frac{d\left(\frac{d\left(\frac{g^2(adg+3aef-befn)}{e}-\frac{dg^3(4a-bn)}{4e}\right)}{e}-\frac{3fg(2adg+2aef-befn)}{2e}\right)}{e}\right)+x^3\left(\frac{g^2\,(adg+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^3*(a + b*log(c*(d + e*x)^n)),x)
```

```
[Out] x*((4*a*e*f^3 + 12*a*d*f^2*g - 4*b*e*f^3*n)/(4*e) + (d*((d*((g^2*(a*d*g + 3
*a*e*f - b*e*f*n))/e - (d*g^3*(4*a - b*n))/(4*e)))/e - (3*f*g*(2*a*d*g + 2*
a*e*f - b*e*f*n))/(2*e)))/e) + x^3*((g^2*(a*d*g + 3*a*e*f - b*e*f*n))/(3*e)
 - (d*g^3*(4*a - b*n))/(12*e)) + log(c*(d + e*x)^n)*((b*g^3*x^4)/4 + b*f^3*
x + (3*b*f^2*g*x^2)/2 + b*f*g^2*x^3) - x^2*((d*((g^2*(a*d*g + 3*a*e*f - b*e
*f*n))/e - (d*g^3*(4*a - b*n))/(4*e)))/(2*e) - (3*f*g*(2*a*d*g + 2*a*e*f -
b*e*f*n))/(4*e)) - (log(d + e*x)*(b*d^4*g^3*n - 4*b*d*e^3*f^3*n - 4*b*d^3*e
*f*g^2*n + 6*b*d^2*e^2*f^2*g*n))/(4*e^4) + (g^3*x^4*(4*a - b*n))/16
```

sympy [**A**] time = 8.83, size = 450, normalized size = 3.02

$$\begin{cases} af^3x + \frac{3af^2gx^2}{2} + afg^2x^3 + \frac{ag^3x^4}{4} - \frac{bd^4g^3n\log(d+ex)}{4e^4} + \frac{bd^3fg^2n\log(d+ex)}{e^3} + \frac{bd^3g^3nx}{4e^3} - \frac{3bd^2f^2gn\log(d+ex)}{2e^2} - \frac{bd^2fg^2nx}{e^2} - b \\ \left(a + b\log(cd^n)\right)\left(f^3x + \frac{3f^2gx^2}{2} + fg^2x^3 + \frac{g^3x^4}{4}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**3*(a+b*ln(c*(e*x+d)**n)),x)
```

```
[Out] Piecewise((a*f**3*x + 3*a*f**2*g*x**2/2 + a*f*g**2*x**3 + a*g**3*x**4/4 - b
*d**4*g**3*n*log(d + e*x)/(4*e**4) + b*d**3*f*g**2*n*log(d + e*x)/e**3 + b*
d**3*g**3*n*x/(4*e**3) - 3*b*d**2*f**2*g*n*log(d + e*x)/(2*e**2) - b*d**2*f
*g**2*n*x/e**2 - b*d**2*g**3*n*x**2/(8*e**2) + b*d*f**3*n*log(d + e*x)/e +
3*b*d*f**2*g*n*x/(2*e) + b*d*f*g**2*n*x**2/(2*e) + b*d*g**3*n*x**3/(12*e) +
 b*f**3*n*x*log(d + e*x) - b*f**3*n*x + b*f**3*x*log(c) + 3*b*f**2*g*n*x**2
*log(d + e*x)/2 - 3*b*f**2*g*n*x**2/4 + 3*b*f**2*g*x**2*log(c)/2 + b*f*g**2
*n*x**3*log(d + e*x) - b*f*g**2*n*x**3/3 + b*f*g**2*x**3*log(c) + b*g**3*n*
x**4*log(d + e*x)/4 - b*g**3*n*x**4/16 + b*g**3*x**4*log(c)/4, Ne(e, 0)), (
(a + b*log(c*d**n))*(f**3*x + 3*f**2*g*x**2/2 + f*g**2*x**3 + g**3*x**4/4),
 True))
```

3.37 $\int (f+gx)^2 \left(a+b\log\left(c(d+ex)^n\right)\right)\,dx$

Optimal. Leaf size=120

$$\frac{(f+gx)^3\left(a+b\log\left(c(d+ex)^n\right)\right)}{3g}-\frac{bn(ef-dg)^3\log(d+ex)}{3e^3g}-\frac{bnx(ef-dg)^2}{3e^2}-\frac{bn(f+gx)^2(ef-dg)}{6eg}-\frac{bn(f+gx)^3}{9g}$$

```
[Out] -1/3*b*(-d*g+e*f)^2*n*x/e^2-1/6*b*(-d*g+e*f)*n*(g*x+f)^2/e/g-1/9*b*n*(g*x+f
)^3/g-1/3*b*(-d*g+e*f)^3*n*ln(e*x+d)/e^3/g+1/3*(g*x+f)^3*(a+b*ln(c*(e*x+d)^
n))/g
```

Rubi [A] time = 0.05, antiderivative size = 120, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {2395, 43}

$$\frac{(f+gx)^3\left(a+b\log\left(c(d+ex)^n\right)\right)}{3g}-\frac{bnx(ef-dg)^2}{3e^2}-\frac{bn(ef-dg)^3\log(d+ex)}{3e^3g}-\frac{bn(f+gx)^2(ef-dg)}{6eg}-\frac{bn(f+gx)^3}{9g}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^2*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] -(b*(e*f - d*g)^2*n*x)/(3*e^2) - (b*(e*f - d*g)*n*(f + g*x)^2)/(6*e*g) - (b
*n*(f + g*x)^3)/(9*g) - (b*(e*f - d*g)^3*n*Log[d + e*x])/(3*e^3*g) + ((f +
g*x)^3*(a + b*Log[c*(d + e*x)^n]))/(3*g)
```

Rule 43

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

Rule 2395

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

Rubi steps

$$\begin{aligned}\int (f+gx)^2\left(a+b\log\left(c(d+ex)^n\right)\right)dx &= \frac{(f+gx)^3\left(a+b\log\left(c(d+ex)^n\right)\right)}{3g}-\frac{(ben)\int\frac{(f+gx)^3}{d+ex}\,dx}{3g}\\ &= \frac{(f+gx)^3\left(a+b\log\left(c(d+ex)^n\right)\right)}{3g}-\frac{(ben)\int\left(\frac{g(ef-dg)^2}{e^3}+\frac{(ef-dg)^3}{e^3(d+ex)}+\frac{g(ef-
\end{aligned}$$

$$= -\frac{b(ef-dg)^2nx}{3e^2}-\frac{b(ef-dg)n(f+gx)^2}{6eg}-\frac{bn(f+gx)^3}{9g}-\frac{b(ef-dg)^3n}{3e^3}$$

Mathematica [A] time = 0.15, size = 150, normalized size = 1.25

$$\frac{e\left(x\left(6ae^2\left(3f^2+3fgx+g^2x^2\right)-bn\left(6d^2g^2-3deg(6f+gx)+e^2\left(18f^2+9fgx+2g^2x^2\right)\right)\right)+6be\left(3df^2+ex\left(3f^2\right.\right.\right.}{18e^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^2*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] (6*b*d^2*g*(-3*e*f + d*g)*n*Log[d + e*x] + e*(x*(6*a*e^2*(3*f^2 + 3*f*g*x +
 g^2*x^2) - b*n*(6*d^2*g^2 - 3*d*e*g*(6*f + g*x) + e^2*(18*f^2 + 9*f*g*x +
2*g^2*x^2))) + 6*b*e*(3*d*f^2 + e*x*(3*f^2 + 3*f*g*x + g^2*x^2))*Log[c*(d +
 e*x)^n]))/(18*e^3)
```

fricas [B] time = 0.45, size = 221, normalized size = 1.84

$$-\frac{2\left(be^3g^2n - 3\,ae^3g^2\right)x^3 - 3\left(6\,ae^3fg - \left(3\,be^3fg - bde^2g^2\right)n\right)x^2 - 6\left(3\,ae^3f^2 - \left(3\,be^3f^2 - 3\,bde^2fg + bd^2eg^2\right)n\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/18*(2*(b*e^3*g^2*n - 3*a*e^3*g^2)*x^3 - 3*(6*a*e^3*f*g - (3*b*e^3*f*g -
b*d*e^2*g^2)*n)*x^2 - 6*(3*a*e^3*f^2 - (3*b*e^3*f^2 - 3*b*d*e^2*f*g + b*d^2
*e*g^2)*n)*x - 6*(b*e^3*g^2*n*x^3 + 3*b*e^3*f*g*n*x^2 + 3*b*e^3*f^2*n*x + (
3*b*d*e^2*f^2 - 3*b*d^2*e*f*g + b*d^3*g^2)*n)*log(e*x + d) - 6*(b*e^3*g^2*x
^3 + 3*b*e^3*f*g*x^2 + 3*b*e^3*f^2*x)*log(c))/e^3
```

giac [B] time = 0.19, size = 430, normalized size = 3.58

$$\frac{1}{3}\,(xe+d)^3bg^2ne^{(-3)}\log\left(xe+d\right)-(xe+d)^2bdg^2ne^{(-3)}\log\left(xe+d\right)+(xe+d)bd^2g^2ne^{(-3)}\log\left(xe+d\right)-\frac{1}{9}\,(xe+d)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/3*(x*e + d)^3*b*g^2*n*e^(-3)*log(x*e + d) - (x*e + d)^2*b*d*g^2*n*e^(-3)*
log(x*e + d) + (x*e + d)*b*d^2*g^2*n*e^(-3)*log(x*e + d) - 1/9*(x*e + d)^3*
b*g^2*n*e^(-3) + 1/2*(x*e + d)^2*b*d*g^2*n*e^(-3) - (x*e + d)*b*d^2*g^2*n*e
^(-3) + (x*e + d)^2*b*f*g*n*e^(-2)*log(x*e + d) - 2*(x*e + d)*b*d*f*g*n*e^(
-2)*log(x*e + d) + 1/3*(x*e + d)^3*b*g^2*e^(-3)*log(c) - (x*e + d)^2*b*d*g^
2*e^(-3)*log(c) + (x*e + d)*b*d^2*g^2*e^(-3)*log(c) - 1/2*(x*e + d)^2*b*f*g
*n*e^(-2) + 2*(x*e + d)*b*d*f*g*n*e^(-2) + 1/3*(x*e + d)^3*a*g^2*e^(-3) - (
x*e + d)^2*a*d*g^2*e^(-3) + (x*e + d)*a*d^2*g^2*e^(-3) + (x*e + d)*b*f^2*n*
e^(-1)*log(x*e + d) + (x*e + d)^2*b*f*g*e^(-2)*log(c) - 2*(x*e + d)*b*d*f*g
*e^(-2)*log(c) - (x*e + d)*b*f^2*n*e^(-1) + (x*e + d)^2*a*f*g*e^(-2) - 2*(x
*e + d)*a*d*f*g*e^(-2) + (x*e + d)*b*f^2*e^(-1)*log(c) + (x*e + d)*a*f^2*e^
(-1)
```

maple [C] time = 0.32, size = 585, normalized size = 4.88

$$b\,f^2x\ln(c)+\frac{a\,g^2x^3}{3}+\frac{b\,g^2x^3\ln(c)}{3}+\frac{\left(gx+f\right)^3b\ln\left(\left(ex+d\right)^n\right)}{3g}+\frac{bdfgnx}{e}-\frac{b\,d^2fgn\ln\left(ex+d\right)}{e^2}+bfg\,x^2\ln(c)-\frac{b\,f^3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^2*(b*ln(c*(e*x+d)^n)+a),x)
```

```
[Out] ln(c)*b*f^2*x+1/3*g^2*a*x^3+1/3*g^2*ln(c)*b*x^3+1/3*(g*x+f)^3*b/g*ln((e*x+d
)^n)+1/e*g*b*d*f*n*x-1/e^2*g*ln(e*x+d)*b*d^2*f*n+1/2*I*Pi*b*f^2*x*csgn(I*c)
*csgn(I*c*(e*x+d)^n)^2+1/2*I*Pi*b*f^2*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^
n)^2+1/6*I*g^2*Pi*b*x^3*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/2*I*g*Pi*b*f*x^2*
csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+g*ln(c)*b*f*x^2-1/3/g*ln(e*
x+d)*b*f^3*n-1/9*g^2*b*n*x^3+g*a*f*x^2+a*f^2*x+1/6/e*g^2*b*d*n*x^2-1/2*g*b*
f*n*x^2-1/3/e^2*g^2*b*d^2*n*x-b*f^2*n*x+1/e*ln(e*x+d)*b*d*f^2*n+1/3/e^3*g^2
```

```
*ln(e*x+d)*b*d^3*n+1/6*I*g^2*Pi*b*x^3*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)
^2-1/2*I*g*Pi*b*f*x^2*csgn(I*c*(e*x+d)^n)^3-1/6*I*g^2*Pi*b*x^3*csgn(I*c*(e*
x+d)^n)^3-1/2*I*Pi*b*f^2*x*csgn(I*c*(e*x+d)^n)^3-1/6*I*g^2*Pi*b*x^3*csgn(I*
c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/2*I*g*Pi*b*f*x^2*csgn(I*c)*csgn(
I*c*(e*x+d)^n)^2+1/2*I*g*Pi*b*f*x^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2
-1/2*I*Pi*b*f^2*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)
```

maxima [A] time = 1.08, size = 187, normalized size = 1.56

$$\frac{1}{3}bg^2x^3\log\left((ex+d)^nc\right)+\frac{1}{3}ag^2x^3-bef^2n\left(\frac{x}{e}-\frac{d\log(ex+d)}{e^2}\right)+\frac{1}{18}beg^2n\left(\frac{6d^3\log(ex+d)}{e^4}-\frac{2e^2x^3-3dex^2+6d}{e^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/3*b*g^2*x^3*log((e*x + d)^n*c) + 1/3*a*g^2*x^3 - b*e*f^2*n*(x/e - d*log(e
*x + d)/e^2) + 1/18*b*e*g^2*n*(6*d^3*log(e*x + d)/e^4 - (2*e^2*x^3 - 3*d*e*
x^2 + 6*d^2*x)/e^3) - 1/2*b*e*f*g*n*(2*d^2*log(e*x + d)/e^3 + (e*x^2 - 2*d*
x)/e^2) + b*f*g*x^2*log((e*x + d)^n*c) + a*f*g*x^2 + b*f^2*x*log((e*x + d)^
n*c) + a*f^2*x
```

mupad [B] time = 0.27, size = 212, normalized size = 1.77

$$x^2\left(\frac{g\left(a\,d\,g+2\,a\,e\,f-b\,e\,f\,n\right)}{2\,e}-\frac{d\,g^2\,\left(3\,a-b\,n\right)}{6\,e}\right)+x\left(\frac{3\,a\,e\,f^2-3\,b\,e\,f^2\,n+6\,a\,d\,f\,g}{3\,e}-\frac{d\left(\frac{g\left(a\,d\,g+2\,a\,e\,f-b\,e\,f\,n\right)}{e}-\frac{d\,g}{}\right.}{e}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^2*(a + b*log(c*(d + e*x)^n)),x)
```

```
[Out] x^2*((g*(a*d*g + 2*a*e*f - b*e*f*n))/(2*e) - (d*g^2*(3*a - b*n))/(6*e)) + x
*((3*a*e*f^2 - 3*b*e*f^2*n + 6*a*d*f*g)/(3*e) - (d*((g*(a*d*g + 2*a*e*f - b
*e*f*n))/e - (d*g^2*(3*a - b*n))/(3*e)))/e) + log(c*(d + e*x)^n)*((b*g^2*x^
3)/3 + b*f^2*x + b*f*g*x^2) + (g^2*x^3*(3*a - b*n))/9 + (log(d + e*x)*(b*d^
3*g^2*n + 3*b*d*e^2*f^2*n - 3*b*d^2*e*f*g*n))/(3*e^3)
```

sympy [A] time = 3.91, size = 277, normalized size = 2.31

$$\begin{cases} af^2x+afgx^2+\frac{ag^2x^3}{3}+\frac{bd^3g^2n\log(d+ex)}{3e^3}-\frac{bd^2fgn\log(d+ex)}{e^2}-\frac{bd^2g^2nx}{3e^2}+\frac{bdf^2n\log(d+ex)}{e}+\frac{bdfgnx}{e}+\frac{bdg^2nx^2}{6e}+bf^2nx\log \\ \left(a+b\log(cd^n)\right)\left(f^2x+fgx^2+\frac{g^2x^3}{3}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**2*(a+b*ln(c*(e*x+d)**n)),x)
```

```
[Out] Piecewise((a*f**2*x + a*f*g*x**2 + a*g**2*x**3/3 + b*d**3*g**2*n*log(d + e*
x)/(3*e**3) - b*d**2*f*g*n*log(d + e*x)/e**2 - b*d**2*g**2*n*x/(3*e**2) + b
*d*f**2*n*log(d + e*x)/e + b*d*f*g*n*x/e + b*d*g**2*n*x**2/(6*e) + b*f**2*n
*x*log(d + e*x) - b*f**2*n*x + b*f**2*x*log(c) + b*f*g*n*x**2*log(d + e*x)
- b*f*g*n*x**2/2 + b*f*g*x**2*log(c) + b*g**2*n*x**3*log(d + e*x)/3 - b*g**
2*n*x**3/9 + b*g**2*x**3*log(c)/3, Ne(e, 0)), ((a + b*log(c*d**n))*(f**2*x
+ f*g*x**2 + g**2*x**3/3), True))
```

3.38 $\int (f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)\,dx$

Optimal. Leaf size=91

$$\frac{(f+gx)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g}-\frac{bn(ef-dg)^2\log(d+ex)}{2e^2g}-\frac{bnx(ef-dg)}{2e}-\frac{bn(f+gx)^2}{4g}$$

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

Rubi [A] time = 0.04, antiderivative size = 91, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.100, Rules used = {2395, 43}

$$\frac{(f+gx)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g}-\frac{bn(ef-dg)^2\log(d+ex)}{2e^2g}-\frac{bnx(ef-dg)}{2e}-\frac{bn(f+gx)^2}{4g}$$

Antiderivative was successfully verified.

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

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

Rule 43

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

Rule 2395

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

Rubi steps

$$\begin{aligned}\int (f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)\,dx &= \frac{(f+gx)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g}-\frac{(ben)\int \frac{(f+gx)^2}{d+ex}\,dx}{2g}\\ &= \frac{(f+gx)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g}-\frac{(ben)\int \left(\frac{g(ef-dg)}{e^2}+\frac{(ef-dg)^2}{e^2(d+ex)}+\frac{g(f+}{e}\right.}{2g}\\ &= -\frac{b(ef-dg)nx}{2e}-\frac{bn(f+gx)^2}{4g}-\frac{b(ef-dg)^2n\log(d+ex)}{2e^2g}+\frac{(f+gx)}{}\end{aligned}$$

Mathematica [A] time = 0.05, size = 101, normalized size = 1.11

$$afx+\frac{1}{2}agx^2+\frac{bf(d+ex)\log\left(c(d+ex)^n\right)}{e}+\frac{1}{2}bgx^2\log\left(c(d+ex)^n\right)-\frac{bd^2gn\log(d+ex)}{2e^2}+\frac{bdgnx}{2e}-bfnx-\frac{1}{4}bgnx^2$$

Antiderivative was successfully verified.

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

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

fricas [A] time = 0.44, size = 119, normalized size = 1.31

$$-\frac{\left(be^2gn - 2\,ae^2g\right)x^2 - 2\left(2\,ae^2f - \left(2\,be^2f - bdeg\right)n\right)x - 2\left(be^2gnx^2 + 2\,be^2fnx + \left(2\,bdef - bd^2g\right)n\right)\log\left(ex + d\right) -}{4\,e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

giac [B] time = 0.17, size = 186, normalized size = 2.04

$$\frac{1}{2}\left(xe + d\right)^2 bgne^{(-2)}\log\left(xe + d\right) - \left(xe + d\right)bdgne^{(-2)}\log\left(xe + d\right) - \frac{1}{4}\left(xe + d\right)^2 bgne^{(-2)} + \left(xe + d\right)bdgne^{(-2)} + \left(xe + d\right)b$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

maple [A] time = 0.07, size = 101, normalized size = 1.11

$$-\frac{bgn\,x^2}{4} + \frac{bg\,x^2\ln\left(c\,\mathrm{e}^{n\ln(ex+d)}\right)}{2} + \frac{ag\,x^2}{2} - \frac{b\,d^2gn\ln\left(ex + d\right)}{2e^2} + \frac{bdfn\ln\left(ex + d\right)}{e} + \frac{bdgnx}{2e} - bfnx + bfx\ln\left(c\left(ex + d\right)^n\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

maxima [A] time = 0.99, size = 102, normalized size = 1.12

$$-befn\left(\frac{x}{e} - \frac{d\log\left(ex + d\right)}{e^2}\right) - \frac{1}{4}begn\left(\frac{2\,d^2\log\left(ex + d\right)}{e^3} + \frac{ex^2 - 2\,dx}{e^2}\right) + \frac{1}{2}bgx^2\log\left(\left(ex + d\right)^n c\right) + \frac{1}{2}agx^2 + bfx\log\left(\left(\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

mupad [B] time = 0.25, size = 104, normalized size = 1.14

$$x\left(\frac{2\,a\,d\,g + 2\,a\,e\,f - 2\,b\,e\,f\,n}{2\,e} - \frac{d\,g\,\left(2\,a - b\,n\right)}{2\,e}\right) + \ln\left(c\left(d + e\,x\right)^n\right)\left(\frac{b\,g\,x^2}{2} + b\,f\,x\right) - \frac{\ln\left(d + e\,x\right)\,\left(b\,d^2\,g\,n - 2\,b\,d\,e\,f\right.}{2\,e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

sympy [A] time = 1.71, size = 148, normalized size = 1.63

$$\begin{cases} afx + \frac{agx^2}{2} - \frac{bd^2gn\log(d+ex)}{2e^2} + \frac{bdfn\log(d+ex)}{e} + \frac{bdgnx}{2e} + bfnx\log(d+ex) - bfnx + bfx\log(c) + \frac{bgnx^2\log(d+ex)}{2} - \\ \left(a + b\log(cd^n)\right)\left(fx + \frac{gx^2}{2}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Piecewise((a*f*x + a*g*x**2/2 - b*d**2*g*n*log(d + e*x)/(2*e**2) + b*d*f*n*
log(d + e*x)/e + b*d*g*n*x/(2*e) + b*f*n*x*log(d + e*x) - b*f*n*x + b*f*x*l
og(c) + b*g*n*x**2*log(d + e*x)/2 - b*g*n*x**2/4 + b*g*x**2*log(c)/2, Ne(e,
 0)), ((a + b*log(c*d**n))*(f*x + g*x**2/2), True))
```

3.39 $\int (a+b\log (c(d+ex)^n))\,dx$

Optimal. Leaf size=29

$$ax+\frac{b(d+ex)\log (c(d+ex)^n)}{e}-bnx$$

```
[Out] a*x-b*n*x+b*(e*x+d)*ln(c*(e*x+d)^n)/e
```

Rubi [A] time = 0.02, antiderivative size = 29, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {2389, 2295}

$$ax+\frac{b(d+ex)\log (c(d+ex)^n)}{e}-bnx$$

Antiderivative was successfully verified.

```
[In] Int[a + b*Log[c*(d + e*x)^n],x]
[Out] a*x - b*n*x + (b*(d + e*x)*Log[c*(d + e*x)^n])/e
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rubi steps

$$\begin{aligned} \int (a+b\log (c(d+ex)^n))\,dx &= ax+b\int \log (c(d+ex)^n)\,dx\\ &= ax+\frac{b\,\text{Subst}\left(\int \log (cx^n)\,dx,x,d+ex\right)}{e}\\ &= ax-bnx+\frac{b(d+ex)\log (c(d+ex)^n)}{e} \end{aligned}$$

Mathematica [A] time = 0.01, size = 29, normalized size = 1.00

$$ax+\frac{b(d+ex)\log (c(d+ex)^n)}{e}-bnx$$

Antiderivative was successfully verified.

```
[In] Integrate[a + b*Log[c*(d + e*x)^n],x]
[Out] a*x - b*n*x + (b*(d + e*x)*Log[c*(d + e*x)^n])/e
```

fricas [A] time = 0.44, size = 40, normalized size = 1.38

$$\frac{bex\log(c)-(ben-ae)x+(benx+bdn)\log(ex+d)}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*log(c*(e*x+d)^n),x, algorithm="fricas")
```

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

giac [A] time = 0.16, size = 46, normalized size = 1.59

$$\left((xe+d)ne^{(-1)}\log\left(xe+d\right)-(xe+d)ne^{(-1)}+(xe+d)e^{(-1)}\log(c)\right)b+ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*log(c*(e*x+d)^n),x, algorithm="giac")
```

```
[Out] ((x*e + d)*n*e^(-1)*log(x*e + d) - (x*e + d)*n*e^(-1) + (x*e + d)*e^(-1)*lo
g(c))*b + a*x
```

maple [A] time = 0.04, size = 36, normalized size = 1.24

$$\frac{bdn\ln\left(ex+d\right)}{e}-bnx+bx\ln\left(c\left(ex+d\right)^{n}\right)+ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(b*ln(c*(e*x+d)^n)+a,x)
```

```
[Out] b*d/e*n*ln(e*x+d)-b*n*x+b*x*ln(c*(e*x+d)^n)+a*x
```

maxima [A] time = 0.95, size = 40, normalized size = 1.38

$$-ben\left(\frac{x}{e}-\frac{d\log\left(ex+d\right)}{e^{2}}\right)+bx\log\left((ex+d)^{n}c\right)+ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*log(c*(e*x+d)^n),x, algorithm="maxima")
```

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

mupad [B] time = 0.00, size = 35, normalized size = 1.21

$$x\,\left(a-b\,n\right)+b\,x\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)+\frac{b\,d\,n\,\ln\left(d+e\,x\right)}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(a + b*log(c*(d + e*x)^n),x)
```

```
[Out] x*(a - b*n) + b*x*log(c*(d + e*x)^n) + (b*d*n*log(d + e*x))/e
```

sympy [A] time = 0.50, size = 42, normalized size = 1.45

$$ax+b\left(\begin{cases}\frac{dn\log\left(d+ex\right)}{e}+nx\log\left(d+ex\right)-nx+x\log\left(c\right) & \text{for}\: e\neq 0\\x\log\left(cd^{n}\right) & \text{otherwise}\end{cases}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*ln(c*(e*x+d)**n),x)
```

```
[Out] a*x + b*Piecewise((d*n*log(d + e*x)/e + n*x*log(d + e*x) - n*x + x*log(c),
Ne(e, 0)), (x*log(c*d**n), True))
```

3.40 $\int \frac{a+b\log(c(d+ex)^n)}{f+gx}\,dx$

Optimal. Leaf size=63

$$\frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g}+\frac{bn\text{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)}{g}$$

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

Rubi [A] time = 0.05, antiderivative size = 63, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {2394, 2393, 2391}

$$\frac{bn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g}+\frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g}$$

Antiderivative was successfully verified.

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

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

Rule 2391

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

Rule 2393

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

Rule 2394

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

Rubi steps

$$\begin{aligned}
\int \frac{a+b\log\left(c(d+ex)^n\right)}{f+gx}\,dx &= \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g}-\frac{(ben)\int \frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)}{d+ex}\,dx}{g}\\
&= \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g}-\frac{(bn)\,\text{Subst}\left(\int \frac{\log\left(1+\frac{gx}{ef-dg}\right)}{x}\,dx,x,d+ex\right)}{g}\\
&= \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g}+\frac{bn\text{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)}{g}
\end{aligned}$$

Mathematica [A] time = 0.01, size = 62, normalized size = 0.98

$$\frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g}+\frac{bn\text{Li}_2\left(\frac{g(d+ex)}{dg-ef}\right)}{g}$$

Antiderivative was successfully verified.

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

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

fricas [F] time = 0.42, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b\log\left((ex+d)^n c\right)+a}{gx+f},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integral((b*log((e*x + d)^n*c) + a)/(g*x + f), x)
```

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

$$\int\frac{b\log\left((ex+d)^n c\right)+a}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

maple [C] time = 0.30, size = 261, normalized size = 4.14

$$-\frac{i\pi b\,\text{csgn}(ic)\,\text{csgn}\left(i(ex+d)^n\right)\text{csgn}\left(ic(ex+d)^n\right)\ln\left(gx+f\right)}{2g}+\frac{i\pi b\,\text{csgn}(ic)\,\text{csgn}\left(ic(ex+d)^n\right)^2\ln\left(gx+f\right)}{2g}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] b*ln(g*x+f)/g*ln((e*x+d)^n)-b/g*n*dilog(((g*x+f)*e+d*g-e*f)/(d*g-e*f))-b/g*
n*ln(g*x+f)*ln(((g*x+f)*e+d*g-e*f)/(d*g-e*f))-1/2*I*ln(g*x+f)/g*b*Pi*csgn(I
*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/2*I*ln(g*x+f)/g*b*Pi*csgn(I*c)*
csgn(I*c*(e*x+d)^n)^2+1/2*I*ln(g*x+f)/g*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*
x+d)^n)^2-1/2*I*ln(g*x+f)/g*b*Pi*csgn(I*c*(e*x+d)^n)^3+ln(g*x+f)/g*b*ln(c)+
a*ln(g*x+f)/g
```

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

$$b\int\frac{\log\left((ex+d)^n\right)+\log(c)}{gx+f}\,dx+\frac{a\log\left(gx+f\right)}{g}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}{f+g\,x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/(f + g*x),x)
[Out] int((a + b*log(c*(d + e*x)^n))/(f + g*x), x)
```

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

$$\int \frac{a + b \log{\left(c \left(d + ex\right)^{n} \right)}}{f + gx}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(g*x+f),x)
[Out] Integral((a + b*log(c*(d + e*x)**n))/(f + g*x), x)
```

3.41 $\int \frac{a+b\log(c(d+ex)^n)}{(f+gx)^2}\,dx$

Optimal. Leaf size=74

$$-\frac{a+b\log\left(c(d+ex)^n\right)}{g(f+gx)}+\frac{ben\log(d+ex)}{g(ef-dg)}-\frac{ben\log(f+gx)}{g(ef-dg)}$$

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

Rubi [A] time = 0.03, antiderivative size = 74, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {2395, 36, 31}

$$-\frac{a+b\log\left(c(d+ex)^n\right)}{g(f+gx)}+\frac{ben\log(d+ex)}{g(ef-dg)}-\frac{ben\log(f+gx)}{g(ef-dg)}$$

Antiderivative was successfully verified.

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

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

Rule 31

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

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 2395

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

Rubi steps

$$\begin{aligned}
\int \frac{a+b\log\left(c(d+ex)^n\right)}{(f+gx)^2}\,dx &= -\frac{a+b\log\left(c(d+ex)^n\right)}{g(f+gx)}+\frac{(ben)\int \frac{1}{(d+ex)(f+gx)}\,dx}{g}\\
&= -\frac{a+b\log\left(c(d+ex)^n\right)}{g(f+gx)}-\frac{(ben)\int \frac{1}{f+gx}\,dx}{ef-dg}+\frac{\left(be^2n\right)\int \frac{1}{d+ex}\,dx}{g(ef-dg)}\\
&= \frac{ben\log(d+ex)}{g(ef-dg)}-\frac{a+b\log\left(c(d+ex)^n\right)}{g(f+gx)}-\frac{ben\log(f+gx)}{g(ef-dg)}
\end{aligned}$$

Mathematica [A] time = 0.06, size = 57, normalized size = 0.77

$$\frac{\frac{ben(\log(d+ex)-\log(f+gx))}{ef-dg}-\frac{a+b\log(c(d+ex)^n)}{f+gx}}{g}$$

Antiderivative was successfully verified.

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

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

fricas [A] time = 0.46, size = 95, normalized size = 1.28

$$-\frac{aef - adg - \left(begnx + bdgn\right)\log\left(ex + d\right) + \left(begnx + befn\right)\log\left(gx + f\right) + \left(bef - bdg\right)\log(c)}{ef^2g - dfg^2 + \left(efg^2 - dg^3\right)x}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

giac [A] time = 0.17, size = 111, normalized size = 1.50

$$\frac{bgnxe\log\left(gx + f\right) - bgnxe\log\left(xe + d\right) + bfne\log\left(gx + f\right) - bdgn\log\left(xe + d\right) - bdg\log(c) + bfe\log(c) - adg}{dg^3x - fg^2xe + dfg^2 - f^2ge}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

maple [C] time = 0.34, size = 354, normalized size = 4.78

$$-\frac{b\ln\left(\left(ex + d\right)^n\right)}{\left(gx + f\right)g} - \frac{-i\pi bdg\,\mathrm{csgn}\left(ic\right)\mathrm{csgn}\left(i\left(ex + d\right)^n\right)\mathrm{csgn}\left(ic\left(ex + d\right)^n\right) + i\pi bdg\,\mathrm{csgn}\left(ic\right)\mathrm{csgn}\left(ic\left(ex + d\right)^n\right)^2 +}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -b/g/(g*x+f)*ln((e*x+d)^n)-1/2*(I*Pi*b*e*f*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn
(I*c*(e*x+d)^n)+I*Pi*b*e*f*csgn(I*c*(e*x+d)^n)^3-I*Pi*b*e*f*csgn(I*(e*x+d)^
n)*csgn(I*c*(e*x+d)^n)^2+I*Pi*b*d*g*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2
-I*Pi*b*d*g*csgn(I*c*(e*x+d)^n)^3-I*Pi*b*e*f*csgn(I*c)*csgn(I*c*(e*x+d)^n)^
2+I*Pi*b*d*g*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-I*Pi*b*d*g*csgn(I*c)*csgn(I*(e
*x+d)^n)*csgn(I*c*(e*x+d)^n)-2*ln(-g*x-f)*b*e*g*n*x+2*ln(e*x+d)*b*e*g*n*x-2
*ln(-g*x-f)*b*e*f*n+2*ln(e*x+d)*b*e*f*n+2*ln(c)*b*d*g-2*ln(c)*b*e*f+2*a*d*g
-2*a*e*f)/(g*x+f)/g/(d*g-e*f)
```

maxima [A] time = 1.01, size = 85, normalized size = 1.15

$$ben\left(\frac{\log\left(ex + d\right)}{efg - dg^2} - \frac{\log\left(gx + f\right)}{efg - dg^2}\right) - \frac{b\log\left(\left(ex + d\right)^n c\right)}{g^2x + fg} - \frac{a}{g^2x + fg}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

mupad [B] time = 1.14, size = 84, normalized size = 1.14

$$-\frac{a}{x\,g^2+f\,g}-\frac{b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}{g\,\left(f+g\,x\right)}+\frac{b\,e\,n\,\mathrm{atan}\left(\frac{e\,f\,2{}\mathrm{i}+e\,g\,x\,2{}\mathrm{i}}{d\,g-e\,f}+1{}\mathrm{i}\right)\,2{}\mathrm{i}}{g\,\left(d\,g-e\,f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] (b*e*n*atan((e*f*2i + e*g*x*2i)/(d*g - e*f) + 1i)*2i)/(g*(d*g - e*f)) - (b*
log(c*(d + e*x)^n))/(g*(f + g*x)) - a/(f*g + g^2*x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.42 $\int \frac{a+b\log(c(d+ex)^n)}{(f+gx)^3}\,dx$

Optimal. Leaf size=112

$$-\frac{a+b\log\left(c(d+ex)^n\right)}{2g(f+gx)^2}+\frac{be^2n\log(d+ex)}{2g(ef-dg)^2}-\frac{be^2n\log(f+gx)}{2g(ef-dg)^2}+\frac{ben}{2g(f+gx)(ef-dg)}$$

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

Rubi [A] time = 0.06, antiderivative size = 112, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {2395, 44}

$$-\frac{a+b\log\left(c(d+ex)^n\right)}{2g(f+gx)^2}+\frac{be^2n\log(d+ex)}{2g(ef-dg)^2}-\frac{be^2n\log(f+gx)}{2g(ef-dg)^2}+\frac{ben}{2g(f+gx)(ef-dg)}$$

Antiderivative was successfully verified.

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

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

Rule 44

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

Rule 2395

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

Rubi steps

$$\begin{aligned}
\int \frac{a+b\log\left(c(d+ex)^n\right)}{(f+gx)^3}\,dx &= -\frac{a+b\log\left(c(d+ex)^n\right)}{2g(f+gx)^2}+\frac{(ben)\int \frac{1}{(d+ex)(f+gx)^2}\,dx}{2g}\\
&= -\frac{a+b\log\left(c(d+ex)^n\right)}{2g(f+gx)^2}+\frac{(ben)\int \left(\frac{e^2}{(ef-dg)^2(d+ex)}-\frac{g}{(ef-dg)(f+gx)^2}-\frac{eg}{(ef-dg)^2(f+gx)}\right)dx}{2g}\\
&= \frac{ben}{2g(ef-dg)(f+gx)}+\frac{be^2n\log(d+ex)}{2g(ef-dg)^2}-\frac{a+b\log\left(c(d+ex)^n\right)}{2g(f+gx)^2}-\frac{be^2n\log(f+gx)}{2g(ef-dg)^2}
\end{aligned}$$

Mathematica [A] time = 0.11, size = 83, normalized size = 0.74

$$-\frac{a+b\log\left(c(d+ex)^n\right)-\frac{ben(f+gx)(e(f+gx)\log(d+ex)-dg-e(f+gx)\log(f+gx)+ef)}{(ef-dg)^2}}{2g(f+gx)^2}$$

Antiderivative was successfully verified.

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

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

fricas [B] time = 0.48, size = 274, normalized size = 2.45

$$-\frac{ae^2f^2 - 2\,adefg + ad^2g^2 - \left(be^2fg - bdeg^2\right)nx - \left(be^2f^2 - bdefg\right)n - \left(be^2g^2nx^2 + 2\,be^2fgnx + \left(2\,bdefg - bd\right.\right.}{2\left(e^2f^4g - 2\,def^3g^2 + d^2f^2g^3 + \left(e^2f^2g^3 - 2\,defg^4\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

giac [B] time = 0.25, size = 302, normalized size = 2.70

$$-\frac{bg^2nx^2e^2\log\left(gx + f\right) - bg^2nx^2e^2\log\left(xe + d\right) + bdg^2nxe + 2\,bfgnxe^2\log\left(gx + f\right) + bd^2g^2n\log\left(xe + d\right) - 2}{2\left(d^2g^5x^2 - 2\,dfg\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

maple [C] time = 0.40, size = 633, normalized size = 5.65

$$-\frac{b\ln\left(\left(ex + d\right)^n\right)}{2\left(gx + f\right)^2 g} - \frac{2a\,d^2g^2 + 2b\,d^2g^2\ln(c) + 2b\,e^2f^2\ln(c) + 2bdefgn + 2bde\,g^2nx - 2b\,e^2fgnx + 2a\,e^2f^2 - 2b\,e}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/2*b/g/(g*x+f)^2*ln((e*x+d)^n)-1/4*(2*I*Pi*b*d*e*f*g*csgn(I*c)*csgn(I*(e*
x+d)^n)*csgn(I*c*(e*x+d)^n)+2*a*d^2*g^2+2*ln(c)*b*d^2*g^2+2*ln(c)*b*e^2*f^2
+2*b*d*e*f*n*g+2*b*d*e*g^2*n*x-2*b*e^2*f*g*n*x+2*a*e^2*f^2-2*b*e^2*f^2*n-2*
I*Pi*b*d*e*f*g*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-4*a*d*e*f*g+2*I*Pi*b
*d*e*f*g*csgn(I*c*(e*x+d)^n)^3-I*Pi*b*e^2*f^2*csgn(I*c)*csgn(I*(e*x+d)^n)*c
sgn(I*c*(e*x+d)^n)+4*ln(g*x+f)*b*e^2*f*g*n*x-4*ln(-e*x-d)*b*e^2*f*g*n*x+I*P
i*b*e^2*f^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+I*Pi*b*d^2*g^2*csgn(I*c
)*csgn(I*c*(e*x+d)^n)^2-I*Pi*b*d^2*g^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c
*(e*x+d)^n)+I*Pi*b*d^2*g^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+I*Pi*b*e
^2*f^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+2*ln(g*x+f)*b*e^2*f^2*n-2*ln(-e*x-d)
*b*e^2*f^2*n-2*I*Pi*b*d*e*f*g*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-I*Pi*b*d^2*g^
```

```
2*csgn(I*c*(e*x+d)^n)^3-I*Pi*b*e^2*f^2*csgn(I*c*(e*x+d)^n)^3+2*ln(g*x+f)*b*
e^2*g^2*n*x^2-2*ln(-e*x-d)*b*e^2*g^2*n*x^2-4*ln(c)*b*d*e*f*g)/(g*x+f)^2/(d*
g-e*f)^2/g
```

maxima [A] time = 1.03, size = 167, normalized size = 1.49

$$\frac{1}{2}\,ben\left(\frac{e\log\left(ex+d\right)}{e^2f^2g-2\,defg^2+d^2g^3}-\frac{e\log\left(gx+f\right)}{e^2f^2g-2\,defg^2+d^2g^3}+\frac{1}{ef^2g-dfg^2+\left(efg^2-dg^3\right)x}\right)-\frac{b\log\left(\left(ex+d\right)^nc\right)}{2\left(g^3x^2+2\,fg^2x+f^2\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

mupad [B] time = 0.67, size = 173, normalized size = 1.54

$$\frac{b\,e^2\,n\,\mathrm{atanh}\left(\frac{2\,d^2\,g^3-2\,e^2\,f^2\,g}{2\,g\,\left(d\,g-e\,f\right)^2}+\frac{2\,e\,g\,x}{d\,g-e\,f}\right)}{g\,\left(d\,g-e\,f\right)^2}-\frac{b\,\ln\left(c\,\left(d+e\,x\right)^n\right)}{2\,g\,\left(f^2+2\,f\,g\,x+g^2\,x^2\right)}-\frac{\frac{a\,d\,g-a\,e\,f+b\,e\,f\,n}{d\,g-e\,f}+\frac{b\,e\,g\,n\,x}{d\,g-e\,f}}{2\,f^2\,g+4\,f\,g^2\,x+2\,g^3\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.43 $\int \frac{a+b\log(c(d+ex)^n)}{(f+gx)^4}\,dx$

Optimal. Leaf size=141

$$-\frac{a+b\log\left(c(d+ex)^n\right)}{3g(f+gx)^3}+\frac{be^3n\log(d+ex)}{3g(ef-dg)^3}-\frac{be^3n\log(f+gx)}{3g(ef-dg)^3}+\frac{be^2n}{3g(f+gx)(ef-dg)^2}+\frac{ben}{6g(f+gx)^2(ef-dg)}$$

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

Rubi [A] time = 0.08, antiderivative size = 141, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {2395, 44}

$$-\frac{a+b\log\left(c(d+ex)^n\right)}{3g(f+gx)^3}+\frac{be^2n}{3g(f+gx)(ef-dg)^2}+\frac{be^3n\log(d+ex)}{3g(ef-dg)^3}-\frac{be^3n\log(f+gx)}{3g(ef-dg)^3}+\frac{ben}{6g(f+gx)^2(ef-dg)}$$

Antiderivative was successfully verified.

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

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

Rule 44

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

Rule 2395

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

Rubi steps

$$\int \frac{a+b\log\left(c(d+ex)^n\right)}{(f+gx)^4}\,dx=-\frac{a+b\log\left(c(d+ex)^n\right)}{3g(f+gx)^3}+\frac{(ben)\int \frac{1}{(d+ex)(f+gx)^3}\,dx}{3g}$$

$$=-\frac{a+b\log\left(c(d+ex)^n\right)}{3g(f+gx)^3}+\frac{(ben)\int \left(\frac{e^3}{(ef-dg)^3(d+ex)}-\frac{g}{(ef-dg)(f+gx)^3}-\frac{eg}{(ef-dg)^2(f+gx)^2}-\right.}{3g}$$

$$=\frac{ben}{6g(ef-dg)(f+gx)^2}+\frac{be^2n}{3g(ef-dg)^2(f+gx)}+\frac{be^3n\log(d+ex)}{3g(ef-dg)^3}-\frac{a+b\log(c}{3g(f+}$$

Mathematica [A] time = 0.18, size = 110, normalized size = 0.78

$$\frac{\frac{ben(f+gx)\left(2e^2(f+gx)^2\log(d+ex)+(ef-dg)(-dg+3ef+2egx)-2e^2(f+gx)^2\log(f+gx)\right)}{(ef-dg)^3}-2\left(a+b\log\left(c(d+ex)^n\right)\right)}{6g(f+gx)^3}$$

Antiderivative was successfully verified.

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

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

fricas [B] time = 0.49, size = 507, normalized size = 3.60

$$-\frac{2\,ae^3f^3 - 6\,ade^2f^2g + 6\,ad^2efg^2 - 2\,ad^3g^3 - 2\left(be^3fg^2 - bde^2g^3\right)nx^2 - \left(5\,be^3f^2g - 6\,bde^2fg^2 + bd^2eg^3\right)nx - (3}{6\left(e^3f^6g - 3\,de^2f^5g^2 + 3\,d^2\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^4,x, algorithm="fricas")
```

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

giac [B] time = 0.19, size = 565, normalized size = 4.01

$$\frac{2\,bg^3nx^3e^3\log\left(gx+f\right) - 2\,bg^3nx^3e^3\log\left(xe+d\right) + 2\,bdg^3nx^2e^2 - bd^2g^3nxe + 6\,bfg^2nx^2e^3\log\left(gx+f\right) - 2\,bd^3g}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^4,x, algorithm="giac")
```

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

maple [C] time = 0.48, size = 950, normalized size = 6.74

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/3*b/g/(g*x+f)^3*ln((e*x+d)^n)+1/6*(-3*I*Pi*b*d^2*e*f*g^2*csgn(I*c)*csgn(
I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-2*ln(e*x+d)*b*e^3*f^3*n-2*a*d^3*g^3+6*a*d^
```

```
2*e*f*g^2-6*a*d*e^2*f^2*g-2*ln(c)*b*d^3*g^3+2*ln(c)*b*e^3*f^3-b*d^2*e*f*n*g
^2+4*b*d*e^2*f^2*n*g+2*b*d*e^2*g^3*n*x^2-2*b*e^3*f*g^2*n*x^2-b*d^2*e*g^3*n*
x-5*b*e^3*f^2*g*n*x+2*a*e^3*f^3-3*b*e^3*f^3*n+2*ln(-g*x-f)*b*e^3*f^3*n+I*Pi
*b*d^3*g^3*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-I*Pi*b*e^3*f^3*c
sgn(I*c*(e*x+d)^n)^3+3*I*Pi*b*d*e^2*f^2*g*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(
I*c*(e*x+d)^n)+2*ln(-g*x-f)*b*e^3*g^3*n*x^3-2*ln(e*x+d)*b*e^3*g^3*n*x^3+6*l
n(c)*b*d^2*e*f*g^2-6*ln(c)*b*d*e^2*f^2*g+6*b*d*e^2*f*g^2*n*x+3*I*Pi*b*d^2*e
*f*g^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-I*Pi*b*d^3*g^3*csgn(I*c)*csgn(I*c*(e
*x+d)^n)^2-3*I*Pi*b*d^2*e*f*g^2*csgn(I*c*(e*x+d)^n)^3+3*I*Pi*b*d*e^2*f^2*g*
csgn(I*c*(e*x+d)^n)^3-I*Pi*b*e^3*f^3*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(
e*x+d)^n)+I*Pi*b*d^3*g^3*csgn(I*c*(e*x+d)^n)^3-I*Pi*b*d^3*g^3*csgn(I*(e*x+d
)^n)*csgn(I*c*(e*x+d)^n)^2+I*Pi*b*e^3*f^3*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I
*Pi*b*e^3*f^3*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-3*I*Pi*b*d*e^2*f^2*g*
csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+6*ln(-g*x-f)*b*e^3*f*g^2*n*x^2-6*ln(e*x+d)*
b*e^3*f*g^2*n*x^2+6*ln(-g*x-f)*b*e^3*f^2*g*n*x-6*ln(e*x+d)*b*e^3*f^2*g*n*x+
3*I*Pi*b*d^2*e*f*g^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-3*I*Pi*b*d*e^2
*f^2*g*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2)/(g*x+f)^3/(d^2*g^2-2*d*e*f*
g+e^2*f^2)/(d*g-e*f)/g
```

maxima [B] time = 1.12, size = 301, normalized size = 2.13

$$\frac{1}{6}\left(\frac{2\,e^2\log\left(ex+d\right)}{e^3f^3g-3\,de^2f^2g^2+3\,d^2efg^3-d^3g^4}-\frac{2\,e^2\log\left(gx+f\right)}{e^3f^3g-3\,de^2f^2g^2+3\,d^2efg^3-d^3g^4}+\frac{}{e^2f^4g-2\,def^3g^2+d^2f^2g^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^4,x, algorithm="maxima")
```

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

mupad [B] time = 0.94, size = 283, normalized size = 2.01

$$\frac{2\,a\,d\,e\,f}{3\left(f+g\,x\right)^3\left(d\,g-e\,f\right)^2}-\frac{a\,d^2\,g}{3\left(f+g\,x\right)^3\left(d\,g-e\,f\right)^2}-\frac{b\,\ln\left(c\,(d+e\,x)^n\right)}{3\,g\left(f+g\,x\right)^3}-\frac{a\,e^2\,f^2}{3\,g\left(f+g\,x\right)^3\left(d\,g-e\,f\right)^2}+\frac{5\,b\,e^2}{6\left(f+g\,x\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Exception raised: HeuristicGCDFailed
```

3.44 $\int (f+gx)^3 \left(a+b\log\left(c(d+ex)^n\right)\right)^2\,dx$

Optimal. Leaf size=365

$$-\frac{2bg^2n(d+ex)^3(ef-dg)\left(a+b\log\left(c(d+ex)^n\right)\right)}{3e^4}-\frac{bn(ef-dg)^4\log(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)}{2e^4g}-\frac{2bn(d+ex)}{}$$

```
[Out] 2*b^2*(-d*g+e*f)^3*n^2*x/e^3+3/4*b^2*g*(-d*g+e*f)^2*n^2*(e*x+d)^2/e^4+2/9*b
^2*g^2*(-d*g+e*f)*n^2*(e*x+d)^3/e^4+1/32*b^2*g^3*n^2*(e*x+d)^4/e^4+1/4*b^2*
(-d*g+e*f)^4*n^2*ln(e*x+d)^2/e^4/g-2*b*(-d*g+e*f)^3*n*(e*x+d)*(a+b*ln(c*(e*
x+d)^n))/e^4-3/2*b*g*(-d*g+e*f)^2*n*(e*x+d)^2*(a+b*ln(c*(e*x+d)^n))/e^4-2/3
*b*g^2*(-d*g+e*f)*n*(e*x+d)^3*(a+b*ln(c*(e*x+d)^n))/e^4-1/8*b*g^3*n*(e*x+d)
^4*(a+b*ln(c*(e*x+d)^n))/e^4-1/2*b*(-d*g+e*f)^4*n*ln(e*x+d)*(a+b*ln(c*(e*x+
d)^n))/e^4/g+1/4*(g*x+f)^4*(a+b*ln(c*(e*x+d)^n))^2/g
```

Rubi [A] time = 0.54, antiderivative size = 301, normalized size of antiderivative = 0.82, number of steps used = 6, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.250$, Rules used = {2398, 2411, 43, 2334, 12, 2301}

$$-\frac{bn\left(\frac{36g^2(d+ex)^2(ef-dg)^2}{e^4}+\frac{16g^3(d+ex)^3(ef-dg)}{e^4}+\frac{48g(d+ex)(ef-dg)^3}{e^4}+\frac{12(ef-dg)^4\log(d+ex)}{e^4}+\frac{3g^4(d+ex)^4}{e^4}\right)\left(a+b\log\left(c(d+ex)^n\right)\right.}{24g}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^3*(a + b*Log[c*(d + e*x)^n])^2,x]
```

```
[Out] (2*b^2*(e*f - d*g)^3*n^2*x)/e^3 + (3*b^2*g*(e*f - d*g)^2*n^2*(d + e*x)^2)/(
4*e^4) + (2*b^2*g^2*(e*f - d*g)*n^2*(d + e*x)^3)/(9*e^4) + (b^2*g^3*n^2*(d
+ e*x)^4)/(32*e^4) + (b^2*(e*f - d*g)^4*n^2*Log[d + e*x]^2)/(4*e^4*g) - (b*
n*((48*g*(e*f - d*g)^3*(d + e*x))/e^4 + (36*g^2*(e*f - d*g)^2*(d + e*x)^2)/
e^4 + (16*g^3*(e*f - d*g)*(d + e*x)^3)/e^4 + (3*g^4*(d + e*x)^4)/e^4 + (12*
(e*f - d*g)^4*Log[d + e*x])/e^4)*(a + b*Log[c*(d + e*x)^n]))/(24*g) + ((f +
 g*x)^4*(a + b*Log[c*(d + e*x)^n])^2)/(4*g)
```

Rule 12

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

Rule 43

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

Rule 2301

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

Rule 2334

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*(x_)^(m_.)*((d_) + (e_.)*(x_)^(r_
.))^(q_.), x_Symbol] :> With[{u = IntHide[x^m*(d + e*x^r)^q, x]}, Simp[u*(a
 + b*Log[c*x^n]), x] - Dist[b*n, Int[SimplifyIntegrand[u/x, x], x], x]] /;
FreeQ[{a, b, c, d, e, n, r}, x] && IGtQ[q, 0] && IntegerQ[m] &&  !(EqQ[q, 1
] && EqQ[m, -1])
```

Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rubi steps

$$\int (f+gx)^3\left(a+b\log\left(c(d+ex)^n\right)\right)^2\,dx=\frac{(f+gx)^4\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{4g}-\frac{(ben)\int\frac{(f+gx)^4\left(a+b\log(c(d+ex)^n)\right)}{d+ex}}{2g}$$

$$=\frac{(f+gx)^4\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{4g}-\frac{(bn)\,\text{Subst}\left(\int\frac{\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^4\left(a+b\log\right.}{x}\right.}{2g}$$

$$=-\frac{bn\left(\frac{48g(ef-dg)^3(d+ex)}{e^4}+\frac{36g^2(ef-dg)^2(d+ex)^2}{e^4}+\frac{16g^3(ef-dg)(d+ex)^3}{e^4}+\frac{3g^4(d+}{e^4}\right.}{24g}$$

$$=-\frac{bn\left(\frac{48g(ef-dg)^3(d+ex)}{e^4}+\frac{36g^2(ef-dg)^2(d+ex)^2}{e^4}+\frac{16g^3(ef-dg)(d+ex)^3}{e^4}+\frac{3g^4(d+}{e^4}\right.}{24g}$$

$$=\frac{2b^2(ef-dg)^3n^2x}{e^3}+\frac{3b^2g(ef-dg)^2n^2(d+ex)^2}{4e^4}+\frac{2b^2g^2(ef-dg)n^2}{9e^4}$$

$$=\frac{2b^2(ef-dg)^3n^2x}{e^3}+\frac{3b^2g(ef-dg)^2n^2(d+ex)^2}{4e^4}+\frac{2b^2g^2(ef-dg)n^2}{9e^4}$$

Mathematica [A] time = 0.30, size = 360, normalized size = 0.99

$$64bg^2n(ef-dg)\left(benx\left(3d^2+3dex+e^2x^2\right)-3(d+ex)^3\left(a+b\log\left(c(d+ex)^n\right)\right)\right)+9bg^3n\left(benx\left(4d^3+6d^2ex\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^3*(a + b*Log[c*(d + e*x)^n])^2,x]
```

```
[Out] (288*(e*f - d*g)^3*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2 + 432*g*(e*f - d*
g)^2*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n])^2 + 288*g^2*(e*f - d*g)*(d + e*
x)^3*(a + b*Log[c*(d + e*x)^n])^2 + 72*g^3*(d + e*x)^4*(a + b*Log[c*(d + e*
x)^n])^2 - 576*b*(e*f - d*g)^3*n*(e*(a - b*n)*x + b*(d + e*x)*Log[c*(d + e*
x)^n]) + 216*b*g*(e*f - d*g)^2*n*(b*e*n*x*(2*d + e*x) - 2*(d + e*x)^2*(a +
b*Log[c*(d + e*x)^n])) + 64*b*g^2*(e*f - d*g)*n*(b*e*n*x*(3*d^2 + 3*d*e*x +
 e^2*x^2) - 3*(d + e*x)^3*(a + b*Log[c*(d + e*x)^n])) + 9*b*g^3*n*(b*e*n*x*
```

```
(4*d^3 + 6*d^2*e*x + 4*d*e^2*x^2 + e^3*x^3) - 4*(d + e*x)^4*(a + b*Log[c*(d
 + e*x)^n])))/(288*e^4)
```

fricas [B] time = 0.49, size = 1190, normalized size = 3.26

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*log(c*(e*x+d)^n))^2,x, algorithm="fricas")
```

```
[Out] 1/288*(9*(b^2*e^4*g^3*n^2 - 4*a*b*e^4*g^3*n + 8*a^2*e^4*g^3)*x^4 + 4*(72*a^
2*e^4*f*g^2 + (16*b^2*e^4*f*g^2 - 7*b^2*d*e^3*g^3)*n^2 - 12*(4*a*b*e^4*f*g^
2 - a*b*d*e^3*g^3)*n)*x^3 + 6*(72*a^2*e^4*f^2*g + (36*b^2*e^4*f^2*g - 40*b^
2*d*e^3*f*g^2 + 13*b^2*d^2*e^2*g^3)*n^2 - 12*(6*a*b*e^4*f^2*g - 4*a*b*d*e^3
*f*g^2 + a*b*d^2*e^2*g^3)*n)*x^2 + 72*(b^2*e^4*g^3*n^2*x^4 + 4*b^2*e^4*f*g^
2*n^2*x^3 + 6*b^2*e^4*f^2*g*n^2*x^2 + 4*b^2*e^4*f^3*n^2*x + (4*b^2*d*e^3*f^
3 - 6*b^2*d^2*e^2*f^2*g + 4*b^2*d^3*e*f*g^2 - b^2*d^4*g^3)*n^2)*log(e*x + d
)^2 + 72*(b^2*e^4*g^3*x^4 + 4*b^2*e^4*f*g^2*x^3 + 6*b^2*e^4*f^2*g*x^2 + 4*b
^2*e^4*f^3*x)*log(c)^2 + 12*(24*a^2*e^4*f^3 + (48*b^2*e^4*f^3 - 108*b^2*d*e
^3*f^2*g + 88*b^2*d^2*e^2*f*g^2 - 25*b^2*d^3*e*g^3)*n^2 - 12*(4*a*b*e^4*f^3
 - 6*a*b*d*e^3*f^2*g + 4*a*b*d^2*e^2*f*g^2 - a*b*d^3*e*g^3)*n)*x - 12*(3*(b
^2*e^4*g^3*n^2 - 4*a*b*e^4*g^3*n)*x^4 - 4*(12*a*b*e^4*f*g^2*n - (4*b^2*e^4*
f*g^2 - b^2*d*e^3*g^3)*n^2)*x^3 + (48*b^2*d*e^3*f^3 - 108*b^2*d^2*e^2*f^2*g
 + 88*b^2*d^3*e*f*g^2 - 25*b^2*d^4*g^3)*n^2 - 6*(12*a*b*e^4*f^2*g*n - (6*b^
2*e^4*f^2*g - 4*b^2*d*e^3*f*g^2 + b^2*d^2*e^2*g^3)*n^2)*x^2 - 12*(4*a*b*d*e
^3*f^3 - 6*a*b*d^2*e^2*f^2*g + 4*a*b*d^3*e*f*g^2 - a*b*d^4*g^3)*n - 12*(4*a
*b*e^4*f^3*n - (4*b^2*e^4*f^3 - 6*b^2*d*e^3*f^2*g + 4*b^2*d^2*e^2*f*g^2 - b
^2*d^3*e*g^3)*n^2)*x - 12*(b^2*e^4*g^3*n*x^4 + 4*b^2*e^4*f*g^2*n*x^3 + 6*b^
2*e^4*f^2*g*n*x^2 + 4*b^2*e^4*f^3*n*x + (4*b^2*d*e^3*f^3 - 6*b^2*d^2*e^2*f^
2*g + 4*b^2*d^3*e*f*g^2 - b^2*d^4*g^3)*n)*log(c))*log(e*x + d) - 12*(3*(b^2
*e^4*g^3*n - 4*a*b*e^4*g^3)*x^4 - 4*(12*a*b*e^4*f*g^2 - (4*b^2*e^4*f*g^2 -
b^2*d*e^3*g^3)*n)*x^3 - 6*(12*a*b*e^4*f^2*g - (6*b^2*e^4*f^2*g - 4*b^2*d*e^
3*f*g^2 + b^2*d^2*e^2*g^3)*n)*x^2 - 12*(4*a*b*e^4*f^3 - (4*b^2*e^4*f^3 - 6*
b^2*d*e^3*f^2*g + 4*b^2*d^2*e^2*f*g^2 - b^2*d^3*e*g^3)*n)*x)*log(c))/e^4
```

giac [B] time = 0.36, size = 2385, normalized size = 6.53

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*log(c*(e*x+d)^n))^2,x, algorithm="giac")
```

```
[Out] 1/4*(x*e + d)^4*b^2*g^3*n^2*e^(-4)*log(x*e + d)^2 - (x*e + d)^3*b^2*d*g^3*n
^2*e^(-4)*log(x*e + d)^2 + 3/2*(x*e + d)^2*b^2*d^2*g^3*n^2*e^(-4)*log(x*e +
 d)^2 - (x*e + d)*b^2*d^3*g^3*n^2*e^(-4)*log(x*e + d)^2 - 1/8*(x*e + d)^4*b
^2*g^3*n^2*e^(-4)*log(x*e + d) + 2/3*(x*e + d)^3*b^2*d*g^3*n^2*e^(-4)*log(x
*e + d) - 3/2*(x*e + d)^2*b^2*d^2*g^3*n^2*e^(-4)*log(x*e + d) + 2*(x*e + d)
*b^2*d^3*g^3*n^2*e^(-4)*log(x*e + d) + (x*e + d)^3*b^2*f*g^2*n^2*e^(-3)*log
(x*e + d)^2 - 3*(x*e + d)^2*b^2*d*f*g^2*n^2*e^(-3)*log(x*e + d)^2 + 3*(x*e
+ d)*b^2*d^2*f*g^2*n^2*e^(-3)*log(x*e + d)^2 + 1/2*(x*e + d)^4*b^2*g^3*n*e^
(-4)*log(x*e + d)*log(c) - 2*(x*e + d)^3*b^2*d*g^3*n*e^(-4)*log(x*e + d)*lo
g(c) + 3*(x*e + d)^2*b^2*d^2*g^3*n*e^(-4)*log(x*e + d)*log(c) - 2*(x*e + d)
*b^2*d^3*g^3*n*e^(-4)*log(x*e + d)*log(c) + 1/32*(x*e + d)^4*b^2*g^3*n^2*e^
(-4) - 2/9*(x*e + d)^3*b^2*d*g^3*n^2*e^(-4) + 3/4*(x*e + d)^2*b^2*d^2*g^3*n
^2*e^(-4) - 2*(x*e + d)*b^2*d^3*g^3*n^2*e^(-4) - 2/3*(x*e + d)^3*b^2*f*g^2*
n^2*e^(-3)*log(x*e + d) + 3*(x*e + d)^2*b^2*d*f*g^2*n^2*e^(-3)*log(x*e + d)
 - 6*(x*e + d)*b^2*d^2*f*g^2*n^2*e^(-3)*log(x*e + d) + 1/2*(x*e + d)^4*a*b*
g^3*n*e^(-4)*log(x*e + d) - 2*(x*e + d)^3*a*b*d*g^3*n*e^(-4)*log(x*e + d) +
 3*(x*e + d)^2*a*b*d^2*g^3*n*e^(-4)*log(x*e + d) - 2*(x*e + d)*a*b*d^3*g^3*
n*e^(-4)*log(x*e + d) + 3/2*(x*e + d)^2*b^2*f^2*g*n^2*e^(-2)*log(x*e + d)^2
```

```
 - 3*(x*e + d)*b^2*d*f^2*g*n^2*e^(-2)*log(x*e + d)^2 - 1/8*(x*e + d)^4*b^2*
g^3*n*e^(-4)*log(c) + 2/3*(x*e + d)^3*b^2*d*g^3*n*e^(-4)*log(c) - 3/2*(x*e
+ d)^2*b^2*d^2*g^3*n*e^(-4)*log(c) + 2*(x*e + d)*b^2*d^3*g^3*n*e^(-4)*log(c
) + 2*(x*e + d)^3*b^2*f*g^2*n*e^(-3)*log(x*e + d)*log(c) - 6*(x*e + d)^2*b^
2*d*f*g^2*n*e^(-3)*log(x*e + d)*log(c) + 6*(x*e + d)*b^2*d^2*f*g^2*n*e^(-3)
*log(x*e + d)*log(c) + 1/4*(x*e + d)^4*b^2*g^3*e^(-4)*log(c)^2 - (x*e + d)^
3*b^2*d*g^3*e^(-4)*log(c)^2 + 3/2*(x*e + d)^2*b^2*d^2*g^3*e^(-4)*log(c)^2 -
 (x*e + d)*b^2*d^3*g^3*e^(-4)*log(c)^2 + 2/9*(x*e + d)^3*b^2*f*g^2*n^2*e^(-
3) - 3/2*(x*e + d)^2*b^2*d*f*g^2*n^2*e^(-3) + 6*(x*e + d)*b^2*d^2*f*g^2*n^2
*e^(-3) - 1/8*(x*e + d)^4*a*b*g^3*n*e^(-4) + 2/3*(x*e + d)^3*a*b*d*g^3*n*e^
(-4) - 3/2*(x*e + d)^2*a*b*d^2*g^3*n*e^(-4) + 2*(x*e + d)*a*b*d^3*g^3*n*e^(
-4) - 3/2*(x*e + d)^2*b^2*f^2*g*n^2*e^(-2)*log(x*e + d) + 6*(x*e + d)*b^2*d
*f^2*g*n^2*e^(-2)*log(x*e + d) + 2*(x*e + d)^3*a*b*f*g^2*n*e^(-3)*log(x*e +
 d) - 6*(x*e + d)^2*a*b*d*f*g^2*n*e^(-3)*log(x*e + d) + 6*(x*e + d)*a*b*d^2
*f*g^2*n*e^(-3)*log(x*e + d) + (x*e + d)*b^2*f^3*n^2*e^(-1)*log(x*e + d)^2
- 2/3*(x*e + d)^3*b^2*f*g^2*n*e^(-3)*log(c) + 3*(x*e + d)^2*b^2*d*f*g^2*n*e
^(-3)*log(c) - 6*(x*e + d)*b^2*d^2*f*g^2*n*e^(-3)*log(c) + 1/2*(x*e + d)^4*
a*b*g^3*e^(-4)*log(c) - 2*(x*e + d)^3*a*b*d*g^3*e^(-4)*log(c) + 3*(x*e + d)
^2*a*b*d^2*g^3*e^(-4)*log(c) - 2*(x*e + d)*a*b*d^3*g^3*e^(-4)*log(c) + 3*(x
*e + d)^2*b^2*f^2*g*n*e^(-2)*log(x*e + d)*log(c) - 6*(x*e + d)*b^2*d*f^2*g*
n*e^(-2)*log(x*e + d)*log(c) + (x*e + d)^3*b^2*f*g^2*e^(-3)*log(c)^2 - 3*(x
*e + d)^2*b^2*d*f*g^2*e^(-3)*log(c)^2 + 3*(x*e + d)*b^2*d^2*f*g^2*e^(-3)*lo
g(c)^2 + 3/4*(x*e + d)^2*b^2*f^2*g*n^2*e^(-2) - 6*(x*e + d)*b^2*d*f^2*g*n^2
*e^(-2) - 2/3*(x*e + d)^3*a*b*f*g^2*n*e^(-3) + 3*(x*e + d)^2*a*b*d*f*g^2*n*
e^(-3) - 6*(x*e + d)*a*b*d^2*f*g^2*n*e^(-3) + 1/4*(x*e + d)^4*a^2*g^3*e^(-4
) - (x*e + d)^3*a^2*d*g^3*e^(-4) + 3/2*(x*e + d)^2*a^2*d^2*g^3*e^(-4) - (x*
e + d)*a^2*d^3*g^3*e^(-4) - 2*(x*e + d)*b^2*f^3*n^2*e^(-1)*log(x*e + d) + 3
*(x*e + d)^2*a*b*f^2*g*n*e^(-2)*log(x*e + d) - 6*(x*e + d)*a*b*d*f^2*g*n*e^
(-2)*log(x*e + d) - 3/2*(x*e + d)^2*b^2*f^2*g*n*e^(-2)*log(c) + 6*(x*e + d)
*b^2*d*f^2*g*n*e^(-2)*log(c) + 2*(x*e + d)^3*a*b*f*g^2*e^(-3)*log(c) - 6*(x
*e + d)^2*a*b*d*f*g^2*e^(-3)*log(c) + 6*(x*e + d)*a*b*d^2*f*g^2*e^(-3)*log(
c) + 2*(x*e + d)*b^2*f^3*n*e^(-1)*log(x*e + d)*log(c) + 3/2*(x*e + d)^2*b^2
*f^2*g*e^(-2)*log(c)^2 - 3*(x*e + d)*b^2*d*f^2*g*e^(-2)*log(c)^2 + 2*(x*e +
 d)*b^2*f^3*n^2*e^(-1) - 3/2*(x*e + d)^2*a*b*f^2*g*n*e^(-2) + 6*(x*e + d)*a
*b*d*f^2*g*n*e^(-2) + (x*e + d)^3*a^2*f*g^2*e^(-3) - 3*(x*e + d)^2*a^2*d*f*
g^2*e^(-3) + 3*(x*e + d)*a^2*d^2*f*g^2*e^(-3) + 2*(x*e + d)*a*b*f^3*n*e^(-1
)*log(x*e + d) - 2*(x*e + d)*b^2*f^3*n*e^(-1)*log(c) + 3*(x*e + d)^2*a*b*f^
2*g*e^(-2)*log(c) - 6*(x*e + d)*a*b*d*f^2*g*e^(-2)*log(c) + (x*e + d)*b^2*f
^3*e^(-1)*log(c)^2 - 2*(x*e + d)*a*b*f^3*n*e^(-1) + 3/2*(x*e + d)^2*a^2*f^2
*g*e^(-2) - 3*(x*e + d)*a^2*d*f^2*g*e^(-2) + 2*(x*e + d)*a*b*f^3*e^(-1)*log
(c) + (x*e + d)*a^2*f^3*e^(-1)
```

maple [C] time = 0.94, size = 6770, normalized size = 18.55

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

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

maxima [B] time = 1.22, size = 827, normalized size = 2.27

$$\frac{1}{4}\,b^2g^3x^4\log\left((ex+d)^nc\right)^2+\frac{1}{2}\,abg^3x^4\log\left((ex+d)^nc\right)+b^2fg^2x^3\log\left((ex+d)^nc\right)^2+\frac{1}{4}\,a^2g^3x^4+2\,abfg^2x^3\log\left((e$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*log(c*(e*x+d)^n))^2,x, algorithm="maxima")
```

```
[Out] 1/4*b^2*g^3*x^4*log((e*x + d)^n*c)^2 + 1/2*a*b*g^3*x^4*log((e*x + d)^n*c) +
 b^2*f*g^2*x^3*log((e*x + d)^n*c)^2 + 1/4*a^2*g^3*x^4 + 2*a*b*f*g^2*x^3*log
((e*x + d)^n*c) + 3/2*b^2*f^2*g*x^2*log((e*x + d)^n*c)^2 + a^2*f*g^2*x^3 -
2*a*b*e*f^3*n*(x/e - d*log(e*x + d)/e^2) - 1/24*a*b*e*g^3*n*(12*d^4*log(e*x
 + d)/e^5 + (3*e^3*x^4 - 4*d*e^2*x^3 + 6*d^2*e*x^2 - 12*d^3*x)/e^4) + 1/3*a
*b*e*f*g^2*n*(6*d^3*log(e*x + d)/e^4 - (2*e^2*x^3 - 3*d*e*x^2 + 6*d^2*x)/e^
3) - 3/2*a*b*e*f^2*g*n*(2*d^2*log(e*x + d)/e^3 + (e*x^2 - 2*d*x)/e^2) + 3*a
*b*f^2*g*x^2*log((e*x + d)^n*c) + b^2*f^3*x*log((e*x + d)^n*c)^2 + 3/2*a^2*
f^2*g*x^2 + 2*a*b*f^3*x*log((e*x + d)^n*c) - (2*e*n*(x/e - d*log(e*x + d)/e
^2)*log((e*x + d)^n*c) + (d*log(e*x + d)^2 - 2*e*x + 2*d*log(e*x + d))*n^2/
e)*b^2*f^3 - 3/4*(2*e*n*(2*d^2*log(e*x + d)/e^3 + (e*x^2 - 2*d*x)/e^2)*log(
(e*x + d)^n*c) - (e^2*x^2 + 2*d^2*log(e*x + d)^2 - 6*d*e*x + 6*d^2*log(e*x
+ d))*n^2/e^2)*b^2*f^2*g + 1/18*(6*e*n*(6*d^3*log(e*x + d)/e^4 - (2*e^2*x^3
 - 3*d*e*x^2 + 6*d^2*x)/e^3)*log((e*x + d)^n*c) + (4*e^3*x^3 - 15*d*e^2*x^2
 - 18*d^3*log(e*x + d)^2 + 66*d^2*e*x - 66*d^3*log(e*x + d))*n^2/e^3)*b^2*f
*g^2 - 1/288*(12*e*n*(12*d^4*log(e*x + d)/e^5 + (3*e^3*x^4 - 4*d*e^2*x^3 +
6*d^2*e*x^2 - 12*d^3*x)/e^4)*log((e*x + d)^n*c) - (9*e^4*x^4 - 28*d*e^3*x^3
 + 78*d^2*e^2*x^2 + 72*d^4*log(e*x + d)^2 - 300*d^3*e*x + 300*d^4*log(e*x +
 d))*n^2/e^4)*b^2*g^3 + a^2*f^3*x
```

mupad [B] time = 0.74, size = 1051, normalized size = 2.88

$$x\left(\frac{72\,a^2\,d\,e^2\,f^2\,g+24\,a^2\,e^3\,f^3-48\,a\,b\,e^3\,f^3\,n-12\,b^2\,d^3\,g^3\,n^2+48\,b^2\,d^2\,e\,f\,g^2\,n^2-72\,b^2\,d\,e^2\,f^2\,g\,n^2+48\,b^2\,e^3\,f^3}{24\,e^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] x*((24*a^2*e^3*f^3 - 12*b^2*d^3*g^3*n^2 + 48*b^2*e^3*f^3*n^2 - 48*a*b*e^3*f
^3*n + 72*a^2*d*e^2*f^2*g - 72*b^2*d*e^2*f^2*g*n^2 + 48*b^2*d^2*e*f*g^2*n^2
)/(24*e^3) + (d*((d*((g^2*(6*a^2*d*g + 18*a^2*e*f - b^2*d*g*n^2 + 4*b^2*e*f
*n^2 - 12*a*b*e*f*n))/(6*e) - (d*g^3*(8*a^2 + b^2*n^2 - 4*a*b*n))/(8*e)))/e
 - (g*(12*a^2*e^2*f^2 + b^2*d^2*g^2*n^2 + 6*b^2*e^2*f^2*n^2 - 12*a*b*e^2*f^
2*n + 12*a^2*d*e*f*g - 4*b^2*d*e*f*g*n^2))/(4*e^2)))/e) - x^2*((d*((g^2*(6*
a^2*d*g + 18*a^2*e*f - b^2*d*g*n^2 + 4*b^2*e*f*n^2 - 12*a*b*e*f*n))/(6*e) -
 (d*g^3*(8*a^2 + b^2*n^2 - 4*a*b*n))/(8*e)))/(2*e) - (g*(12*a^2*e^2*f^2 + b
^2*d^2*g^2*n^2 + 6*b^2*e^2*f^2*n^2 - 12*a*b*e^2*f^2*n + 12*a^2*d*e*f*g - 4*
b^2*d*e*f*g*n^2))/(8*e^2)) + log(c*(d + e*x)^n)^2*(b^2*f^3*x - (d*(b^2*d^3*
g^3 - 4*b^2*e^3*f^3 + 6*b^2*d*e^2*f^2*g - 4*b^2*d^2*e*f*g^2))/(4*e^4) + (b^
2*g^3*x^4)/4 + (3*b^2*f^2*g*x^2)/2 + b^2*f*g^2*x^3) + x^3*((g^2*(6*a^2*d*g
+ 18*a^2*e*f - b^2*d*g*n^2 + 4*b^2*e*f*n^2 - 12*a*b*e*f*n))/(18*e) - (d*g^3
*(8*a^2 + b^2*n^2 - 4*a*b*n))/(24*e)) + log(c*(d + e*x)^n)*((x*((d*((d*((8*
b*g^2*(a*d*g + 3*a*e*f - b*e*f*n))/e - (2*b*d*g^3*(4*a - b*n))/e))/e - (12*
b*f*g*(2*a*d*g + 2*a*e*f - b*e*f*n))/e))/(2*e) + (4*b*f^2*(3*a*d*g + a*e*f
- b*e*f*n))/e))/2 + (x^3*((4*b*g^2*(a*d*g + 3*a*e*f - b*e*f*n))/(3*e) - (b*
d*g^3*(4*a - b*n))/(3*e)))/2 - (x^2*((d*((8*b*g^2*(a*d*g + 3*a*e*f - b*e*f*
n))/e - (2*b*d*g^3*(4*a - b*n))/e))/(4*e) - (3*b*f*g*(2*a*d*g + 2*a*e*f - b
*e*f*n))/e))/2 + (b*g^3*x^4*(4*a - b*n))/8) + (log(d + e*x)*(25*b^2*d^4*g^3
```

```
*n^2 - 12*a*b*d^4*g^3*n - 48*b^2*d*e^3*f^3*n^2 - 88*b^2*d^3*e*f*g^2*n^2 + 4
8*a*b*d*e^3*f^3*n + 108*b^2*d^2*e^2*f^2*g*n^2 - 72*a*b*d^2*e^2*f^2*g*n + 48
*a*b*d^3*e*f*g^2*n))/(24*e^4) + (g^3*x^4*(8*a^2 + b^2*n^2 - 4*a*b*n))/32
```

sympy [A] time = 21.77, size = 1744, normalized size = 4.78

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**3*(a+b*ln(c*(e*x+d)**n))**2,x)
```

```
[Out] Piecewise((a**2*f**3*x + 3*a**2*f**2*g*x**2/2 + a**2*f*g**2*x**3 + a**2*g**
3*x**4/4 - a*b*d**4*g**3*n*log(d + e*x)/(2*e**4) + 2*a*b*d**3*f*g**2*n*log(
d + e*x)/e**3 + a*b*d**3*g**3*n*x/(2*e**3) - 3*a*b*d**2*f**2*g*n*log(d + e*
x)/e**2 - 2*a*b*d**2*f*g**2*n*x/e**2 - a*b*d**2*g**3*n*x**2/(4*e**2) + 2*a*
b*d*f**3*n*log(d + e*x)/e + 3*a*b*d*f**2*g*n*x/e + a*b*d*f*g**2*n*x**2/e +
a*b*d*g**3*n*x**3/(6*e) + 2*a*b*f**3*n*x*log(d + e*x) - 2*a*b*f**3*n*x + 2*
a*b*f**3*x*log(c) + 3*a*b*f**2*g*n*x**2*log(d + e*x) - 3*a*b*f**2*g*n*x**2/
2 + 3*a*b*f**2*g*x**2*log(c) + 2*a*b*f*g**2*n*x**3*log(d + e*x) - 2*a*b*f*g
**2*n*x**3/3 + 2*a*b*f*g**2*x**3*log(c) + a*b*g**3*n*x**4*log(d + e*x)/2 -
a*b*g**3*n*x**4/8 + a*b*g**3*x**4*log(c)/2 - b**2*d**4*g**3*n**2*log(d + e*
x)**2/(4*e**4) + 25*b**2*d**4*g**3*n**2*log(d + e*x)/(24*e**4) - b**2*d**4*
g**3*n*log(c)*log(d + e*x)/(2*e**4) + b**2*d**3*f*g**2*n**2*log(d + e*x)**2
/e**3 - 11*b**2*d**3*f*g**2*n**2*log(d + e*x)/(3*e**3) + 2*b**2*d**3*f*g**2
*n*log(c)*log(d + e*x)/e**3 + b**2*d**3*g**3*n**2*x*log(d + e*x)/(2*e**3) -
 25*b**2*d**3*g**3*n**2*x/(24*e**3) + b**2*d**3*g**3*n*x*log(c)/(2*e**3) -
3*b**2*d**2*f**2*g*n**2*log(d + e*x)**2/(2*e**2) + 9*b**2*d**2*f**2*g*n**2*
log(d + e*x)/(2*e**2) - 3*b**2*d**2*f**2*g*n*log(c)*log(d + e*x)/e**2 - 2*b
**2*d**2*f*g**2*n**2*x*log(d + e*x)/e**2 + 11*b**2*d**2*f*g**2*n**2*x/(3*e*
*2) - 2*b**2*d**2*f*g**2*n*x*log(c)/e**2 - b**2*d**2*g**3*n**2*x**2*log(d +
 e*x)/(4*e**2) + 13*b**2*d**2*g**3*n**2*x**2/(48*e**2) - b**2*d**2*g**3*n*x
**2*log(c)/(4*e**2) + b**2*d*f**3*n**2*log(d + e*x)**2/e - 2*b**2*d*f**3*n*
*2*log(d + e*x)/e + 2*b**2*d*f**3*n*log(c)*log(d + e*x)/e + 3*b**2*d*f**2*g
*n**2*x*log(d + e*x)/e - 9*b**2*d*f**2*g*n**2*x/(2*e) + 3*b**2*d*f**2*g*n*x
*log(c)/e + b**2*d*f*g**2*n**2*x**2*log(d + e*x)/e - 5*b**2*d*f*g**2*n**2*x
**2/(6*e) + b**2*d*f*g**2*n*x**2*log(c)/e + b**2*d*g**3*n**2*x**3*log(d + e
*x)/(6*e) - 7*b**2*d*g**3*n**2*x**3/(72*e) + b**2*d*g**3*n*x**3*log(c)/(6*e
) + b**2*f**3*n**2*x*log(d + e*x)**2 - 2*b**2*f**3*n**2*x*log(d + e*x) + 2*
b**2*f**3*n**2*x + 2*b**2*f**3*n*x*log(c)*log(d + e*x) - 2*b**2*f**3*n*x*lo
g(c) + b**2*f**3*x*log(c)**2 + 3*b**2*f**2*g*n**2*x**2*log(d + e*x)**2/2 -
3*b**2*f**2*g*n**2*x**2*log(d + e*x)/2 + 3*b**2*f**2*g*n**2*x**2/4 + 3*b**2
*f**2*g*n*x**2*log(c)*log(d + e*x) - 3*b**2*f**2*g*n*x**2*log(c)/2 + 3*b**2
*f**2*g*x**2*log(c)**2/2 + b**2*f*g**2*n**2*x**3*log(d + e*x)**2 - 2*b**2*f
*g**2*n**2*x**3*log(d + e*x)/3 + 2*b**2*f*g**2*n**2*x**3/9 + 2*b**2*f*g**2*
n*x**3*log(c)*log(d + e*x) - 2*b**2*f*g**2*n*x**3*log(c)/3 + b**2*f*g**2*x*
*3*log(c)**2 + b**2*g**3*n**2*x**4*log(d + e*x)**2/4 - b**2*g**3*n**2*x**4*
log(d + e*x)/8 + b**2*g**3*n**2*x**4/32 + b**2*g**3*n*x**4*log(c)*log(d + e
*x)/2 - b**2*g**3*n*x**4*log(c)/8 + b**2*g**3*x**4*log(c)**2/4, Ne(e, 0)),
((a + b*log(c*d**n))**2*(f**3*x + 3*f**2*g*x**2/2 + f*g**2*x**3 + g**3*x**4
/4), True))
```

3.45 $\int (f+gx)^2 \left(a+b\log\left(c(d+ex)^n\right)\right)^2 \, dx$

Optimal. Leaf size=287

$$-\frac{2bn(ef-dg)^3\log(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)}{3e^3g}-\frac{2bn(d+ex)(ef-dg)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{e^3}-\frac{bgn(d+ex)^2}{}$$

```
[Out] 2*b^2*(-d*g+e*f)^2*n^2*x/e^2+1/2*b^2*g*(-d*g+e*f)*n^2*(e*x+d)^2/e^3+2/27*b^
2*g^2*n^2*(e*x+d)^3/e^3+1/3*b^2*(-d*g+e*f)^3*n^2*ln(e*x+d)^2/e^3/g-2*b*(-d*
g+e*f)^2*n*(e*x+d)*(a+b*ln(c*(e*x+d)^n))/e^3-b*g*(-d*g+e*f)*n*(e*x+d)^2*(a+
b*ln(c*(e*x+d)^n))/e^3-2/9*b*g^2*n*(e*x+d)^3*(a+b*ln(c*(e*x+d)^n))/e^3-2/3*
b*(-d*g+e*f)^3*n*ln(e*x+d)*(a+b*ln(c*(e*x+d)^n))/e^3/g+1/3*(g*x+f)^3*(a+b*l
n(c*(e*x+d)^n))^2/g
```

Rubi [A] time = 0.41, antiderivative size = 243, normalized size of antiderivative = 0.85, number of steps used = 8, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.292$, Rules used = {2398, 2411, 43, 2334, 12, 14, 2301}

$$-\frac{bn\left(\frac{9g^2(d+ex)^2(ef-dg)}{e^3}+\frac{18g(d+ex)(ef-dg)^2}{e^3}+\frac{6(ef-dg)^3\log(d+ex)}{e^3}+\frac{2g^3(d+ex)^3}{e^3}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{9g}+\frac{(f+gx)^3\left(a+b\log\right.}{3g}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^2*(a + b*Log[c*(d + e*x)^n])^2,x]
```

```
[Out] (2*b^2*(e*f - d*g)^2*n^2*x)/e^2 + (b^2*g*(e*f - d*g)*n^2*(d + e*x)^2)/(2*e^
3) + (2*b^2*g^2*n^2*(d + e*x)^3)/(27*e^3) + (b^2*(e*f - d*g)^3*n^2*Log[d +
e*x]^2)/(3*e^3*g) - (b*n*((18*g*(e*f - d*g)^2*(d + e*x))/e^3 + (9*g^2*(e*f
- d*g)*(d + e*x)^2)/e^3 + (2*g^3*(d + e*x)^3)/e^3 + (6*(e*f - d*g)^3*Log[d
+ e*x])/e^3)*(a + b*Log[c*(d + e*x)^n]))/(9*g) + ((f + g*x)^3*(a + b*Log[c*
(d + e*x)^n])^2)/(3*g)
```

Rule 12

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

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 43

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

Rule 2301

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

Rule 2334

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*(x_)^(m_.)*((d_) + (e_.)*(x_)^(r_
.))^(q_.), x_Symbol] :> With[{u = IntHide[x^m*(d + e*x^r)^q, x]}, Simp[u*(a
```

```
 + b*Log[c*x^n]), x] - Dist[b*n, Int[SimplifyIntegrand[u/x, x], x], x]] /;
FreeQ[{a, b, c, d, e, n, r}, x] && IGtQ[q, 0] && IntegerQ[m] &&  !(EqQ[q, 1
] && EqQ[m, -1])
```

Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rubi steps

$$\int (f+gx)^2 \left(a+b\log\left(c(d+ex)^n\right)\right)^2 dx = \frac{(f+gx)^3\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{3g} - \frac{(2ben)\int \frac{(f+gx)^3\left(a+b\log(c(d+ex)^n)\right)}{d+ex}}{3g}$$

$$= \frac{(f+gx)^3\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{3g} - \frac{(2bn)\,\mathrm{Subst}\left(\int \frac{\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^3\left(a+b\right.}{x}\right.}{3g}$$

$$= -\frac{bn\left(\frac{18g(ef-dg)^2(d+ex)}{e^3} + \frac{9g^2(ef-dg)(d+ex)^2}{e^3} + \frac{2g^3(d+ex)^3}{e^3} + \frac{6(ef-dg)^3\log(d+e}{e^3}\right.}{9g}$$

$$= -\frac{bn\left(\frac{18g(ef-dg)^2(d+ex)}{e^3} + \frac{9g^2(ef-dg)(d+ex)^2}{e^3} + \frac{2g^3(d+ex)^3}{e^3} + \frac{6(ef-dg)^3\log(d+e}{e^3}\right.}{9g}$$

$$= -\frac{bn\left(\frac{18g(ef-dg)^2(d+ex)}{e^3} + \frac{9g^2(ef-dg)(d+ex)^2}{e^3} + \frac{2g^3(d+ex)^3}{e^3} + \frac{6(ef-dg)^3\log(d+e}{e^3}\right.}{9g}$$

$$= -\frac{bn\left(\frac{18g(ef-dg)^2(d+ex)}{e^3} + \frac{9g^2(ef-dg)(d+ex)^2}{e^3} + \frac{2g^3(d+ex)^3}{e^3} + \frac{6(ef-dg)^3\log(d+e}{e^3}\right.}{9g}$$

$$= \frac{2b^2(ef-dg)^2n^2x}{e^2} + \frac{b^2g(ef-dg)n^2(d+ex)^2}{2e^3} + \frac{2b^2g^2n^2(d+ex)^3}{27e^3} +$$

Mathematica [A] time = 0.16, size = 247, normalized size = 0.86

$$\frac{4bg^2n\left(benx\left(3d^2+3dex+e^2x^2\right)-3(d+ex)^3\left(a+b\log\left(c(d+ex)^n\right)\right)\right)+54g(d+ex)^2(ef-dg)\left(a+b\log\left(c(d\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^2*(a + b*Log[c*(d + e*x)^n])^2,x]
```

```
[Out] (54*(e*f - d*g)^2*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2 + 54*g*(e*f - d*g)
*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n])^2 + 18*g^2*(d + e*x)^3*(a + b*Log[c
*(d + e*x)^n])^2 - 108*b*(e*f - d*g)^2*n*(e*(a - b*n)*x + b*(d + e*x)*Log[c
*(d + e*x)^n]) + 27*b*g*(e*f - d*g)*n*(b*e*n*x*(2*d + e*x) - 2*(d + e*x)^2*
(a + b*Log[c*(d + e*x)^n])) + 4*b*g^2*n*(b*e*n*x*(3*d^2 + 3*d*e*x + e^2*x^2
) - 3*(d + e*x)^3*(a + b*Log[c*(d + e*x)^n])))/(54*e^3)
```

fricas [B] time = 0.59, size = 760, normalized size = 2.65

$$\frac{2\left(2\,b^2e^3g^2n^2-6\,abe^3g^2n+9\,a^2e^3g^2\right)x^3+3\left(18\,a^2e^3fg+\left(9\,b^2e^3fg-5\,b^2de^2g^2\right)n^2-6\left(3\,abe^3fg-abde^2g^2\right)n\right)x^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/54*(2*(2*b^2*e^3*g^2*n^2 - 6*a*b*e^3*g^2*n + 9*a^2*e^3*g^2)*x^3 + 3*(18*a
^2*e^3*f*g + (9*b^2*e^3*f*g - 5*b^2*d*e^2*g^2)*n^2 - 6*(3*a*b*e^3*f*g - a*b
*d*e^2*g^2)*n)*x^2 + 18*(b^2*e^3*g^2*n^2*x^3 + 3*b^2*e^3*f*g*n^2*x^2 + 3*b^
2*e^3*f^2*n^2*x + (3*b^2*d*e^2*f^2 - 3*b^2*d^2*e*f*g + b^2*d^3*g^2)*n^2)*lo
g(e*x + d)^2 + 18*(b^2*e^3*g^2*x^3 + 3*b^2*e^3*f*g*x^2 + 3*b^2*e^3*f^2*x)*l
og(c)^2 + 6*(9*a^2*e^3*f^2 + (18*b^2*e^3*f^2 - 27*b^2*d*e^2*f*g + 11*b^2*d^
2*e*g^2)*n^2 - 6*(3*a*b*e^3*f^2 - 3*a*b*d*e^2*f*g + a*b*d^2*e*g^2)*n)*x - 6
*(2*(b^2*e^3*g^2*n^2 - 3*a*b*e^3*g^2*n)*x^3 + (18*b^2*d*e^2*f^2 - 27*b^2*d^
2*e*f*g + 11*b^2*d^3*g^2)*n^2 - 3*(6*a*b*e^3*f*g*n - (3*b^2*e^3*f*g - b^2*d
*e^2*g^2)*n^2)*x^2 - 6*(3*a*b*d*e^2*f^2 - 3*a*b*d^2*e*f*g + a*b*d^3*g^2)*n
- 6*(3*a*b*e^3*f^2*n - (3*b^2*e^3*f^2 - 3*b^2*d*e^2*f*g + b^2*d^2*e*g^2)*n^
2)*x - 6*(b^2*e^3*g^2*n*x^3 + 3*b^2*e^3*f*g*n*x^2 + 3*b^2*e^3*f^2*n*x + (3*
b^2*d*e^2*f^2 - 3*b^2*d^2*e*f*g + b^2*d^3*g^2)*n)*log(c))*log(e*x + d) - 6*
(2*(b^2*e^3*g^2*n - 3*a*b*e^3*g^2)*x^3 - 3*(6*a*b*e^3*f*g - (3*b^2*e^3*f*g
- b^2*d*e^2*g^2)*n)*x^2 - 6*(3*a*b*e^3*f^2 - (3*b^2*e^3*f^2 - 3*b^2*d*e^2*f
*g + b^2*d^2*e*g^2)*n)*x)*log(c))/e^3
```

giac [B] time = 0.27, size = 1339, normalized size = 4.67

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/3*(x*e + d)^3*b^2*g^2*n^2*e^(-3)*log(x*e + d)^2 - (x*e + d)^2*b^2*d*g^2*n
^2*e^(-3)*log(x*e + d)^2 + (x*e + d)*b^2*d^2*g^2*n^2*e^(-3)*log(x*e + d)^2
- 2/9*(x*e + d)^3*b^2*g^2*n^2*e^(-3)*log(x*e + d) + (x*e + d)^2*b^2*d*g^2*n
^2*e^(-3)*log(x*e + d) - 2*(x*e + d)*b^2*d^2*g^2*n^2*e^(-3)*log(x*e + d) +
(x*e + d)^2*b^2*f*g*n^2*e^(-2)*log(x*e + d)^2 - 2*(x*e + d)*b^2*d*f*g*n^2*e
^(-2)*log(x*e + d)^2 + 2/3*(x*e + d)^3*b^2*g^2*n*e^(-3)*log(x*e + d)*log(c)
 - 2*(x*e + d)^2*b^2*d*g^2*n*e^(-3)*log(x*e + d)*log(c) + 2*(x*e + d)*b^2*d
^2*g^2*n*e^(-3)*log(x*e + d)*log(c) + 2/27*(x*e + d)^3*b^2*g^2*n^2*e^(-3) -
 1/2*(x*e + d)^2*b^2*d*g^2*n^2*e^(-3) + 2*(x*e + d)*b^2*d^2*g^2*n^2*e^(-3)
- (x*e + d)^2*b^2*f*g*n^2*e^(-2)*log(x*e + d) + 4*(x*e + d)*b^2*d*f*g*n^2*e
^(-2)*log(x*e + d) + 2/3*(x*e + d)^3*a*b*g^2*n*e^(-3)*log(x*e + d) - 2*(x*e
 + d)^2*a*b*d*g^2*n*e^(-3)*log(x*e + d) + 2*(x*e + d)*a*b*d^2*g^2*n*e^(-3)*
log(x*e + d) + (x*e + d)*b^2*f^2*n^2*e^(-1)*log(x*e + d)^2 - 2/9*(x*e + d)^
3*b^2*g^2*n*e^(-3)*log(c) + (x*e + d)^2*b^2*d*g^2*n*e^(-3)*log(c) - 2*(x*e
+ d)*b^2*d^2*g^2*n*e^(-3)*log(c) + 2*(x*e + d)^2*b^2*f*g*n*e^(-2)*log(x*e +
 d)*log(c) - 4*(x*e + d)*b^2*d*f*g*n*e^(-2)*log(x*e + d)*log(c) + 1/3*(x*e
+ d)^3*b^2*g^2*e^(-3)*log(c)^2 - (x*e + d)^2*b^2*d*g^2*e^(-3)*log(c)^2 + (x
*e + d)*b^2*d^2*g^2*e^(-3)*log(c)^2 + 1/2*(x*e + d)^2*b^2*f*g*n^2*e^(-2) -
4*(x*e + d)*b^2*d*f*g*n^2*e^(-2) - 2/9*(x*e + d)^3*a*b*g^2*n*e^(-3) + (x*e
+ d)^2*a*b*d*g^2*n*e^(-3) - 2*(x*e + d)*a*b*d^2*g^2*n*e^(-3) - 2*(x*e + d)*
```

```
b^2*f^2*n^2*e^(-1)*log(x*e + d) + 2*(x*e + d)^2*a*b*f*g*n*e^(-2)*log(x*e +
d) - 4*(x*e + d)*a*b*d*f*g*n*e^(-2)*log(x*e + d) - (x*e + d)^2*b^2*f*g*n*e^
(-2)*log(c) + 4*(x*e + d)*b^2*d*f*g*n*e^(-2)*log(c) + 2/3*(x*e + d)^3*a*b*g
^2*e^(-3)*log(c) - 2*(x*e + d)^2*a*b*d*g^2*e^(-3)*log(c) + 2*(x*e + d)*a*b*
d^2*g^2*e^(-3)*log(c) + 2*(x*e + d)*b^2*f^2*n*e^(-1)*log(x*e + d)*log(c) +
(x*e + d)^2*b^2*f*g*e^(-2)*log(c)^2 - 2*(x*e + d)*b^2*d*f*g*e^(-2)*log(c)^2
 + 2*(x*e + d)*b^2*f^2*n^2*e^(-1) - (x*e + d)^2*a*b*f*g*n*e^(-2) + 4*(x*e +
 d)*a*b*d*f*g*n*e^(-2) + 1/3*(x*e + d)^3*a^2*g^2*e^(-3) - (x*e + d)^2*a^2*d
*g^2*e^(-3) + (x*e + d)*a^2*d^2*g^2*e^(-3) + 2*(x*e + d)*a*b*f^2*n*e^(-1)*l
og(x*e + d) - 2*(x*e + d)*b^2*f^2*n*e^(-1)*log(c) + 2*(x*e + d)^2*a*b*f*g*e
^(-2)*log(c) - 4*(x*e + d)*a*b*d*f*g*e^(-2)*log(c) + (x*e + d)*b^2*f^2*e^(-
1)*log(c)^2 - 2*(x*e + d)*a*b*f^2*n*e^(-1) + (x*e + d)^2*a^2*f*g*e^(-2) - 2
*(x*e + d)*a^2*d*f*g*e^(-2) + 2*(x*e + d)*a*b*f^2*e^(-1)*log(c) + (x*e + d)
*a^2*f^2*e^(-1)
```

maple [C] time = 0.79, size = 4597, normalized size = 16.02

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^2*(b*ln(c*(e*x+d)^n)+a)^2,x)
```

```
[Out] -1/3*I/e^3*g^2*ln(e*x+d)*Pi*b^2*d^3*n*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*
(e*x+d)^n)-I/e*ln(e*x+d)*Pi*b^2*d*f^2*n*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*
c*(e*x+d)^n)+1/3*a^2*g^2*x^3+a^2*f^2*x+a^2*f*g*x^2+2/27*b^2*g^2*n^2*x^3+2*b
^2*f^2*n^2*x+1/3*ln(c)^2*b^2*g^2*x^3+ln(c)^2*b^2*f^2*x-a*b*f*g*n*x^2-2/3/e^
2*g^2*a*b*d^2*n*x+1/3/e*g^2*a*b*d*n*x^2-3/e*g*b^2*d*f*n^2*x+3/e^2*g*ln(e*x+
d)*b^2*d^2*f*n^2-2/3/e^2*g^2*ln(c)*b^2*d^2*n*x+1/3/e*g^2*ln(c)*b^2*d*n*x^2+
1/6*g^2*Pi^2*b^2*x^3*csgn(I*c)*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^3-1/
3*g^2*Pi^2*b^2*x^3*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^4+2/e*ln
(e*x+d)*ln(c)*b^2*d*f^2*n+2/e*ln(e*x+d)*a*b*d*f^2*n+1/6*g^2*Pi^2*b^2*x^3*cs
gn(I*c)^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^3-1/4*g*Pi^2*b^2*f*x^2*csgn
(I*c)^2*csgn(I*c*(e*x+d)^n)^4+1/2*g*Pi^2*b^2*f*x^2*csgn(I*c)*csgn(I*c*(e*x+
d)^n)^5-1/4*g*Pi^2*b^2*f*x^2*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^4+1/2*
g*Pi^2*b^2*f*x^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^5-1/12*g^2*Pi^2*b^2*
x^3*csgn(I*c)^2*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^2+2/3/e^3*g^2*ln(e*
x+d)*ln(c)*b^2*d^3*n-2/9*a*b*g^2*n*x^3+1/2*b^2*f*g*n^2*x^2-2*a*b*f^2*n*x+1/
3*(g*x+f)^3*b^2/g*ln((e*x+d)^n)^2+I*g*ln(c)*Pi*b^2*f*x^2*csgn(I*c)*csgn(I*c
*(e*x+d)^n)^2+I*Pi*b^2*f^2*n*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)
^n)+I*g*Pi*a*b*f*x^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*g*Pi*a*b*f*x^2*csgn(
I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+I*g*ln(c)*Pi*b^2*f*x^2*csgn(I*(e*x+d)^n)
*csgn(I*c*(e*x+d)^n)^2+2/e*g*a*b*d*f*n*x+2/e*g*ln(c)*b^2*d*f*n*x-2/e^2*g*ln
(e*x+d)*ln(c)*b^2*d^2*f*n-2/e^2*g*ln(e*x+d)*a*b*d^2*f*n-1/4*g*Pi^2*b^2*f*x^
2*csgn(I*c)^2*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^2+1/2*g*Pi^2*b^2*f*x^
2*csgn(I*c)^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^3-5/18/e*g^2*b^2*d*n^2*
x^2+11/9/e^2*g^2*b^2*d^2*n^2*x+2*ln(c)*a*b*f*g*x^2-ln(c)*b^2*f*g*n*x^2-1/4*
g*Pi^2*b^2*f*x^2*csgn(I*c*(e*x+d)^n)^6-2/e*ln(e*x+d)*b^2*d*f^2*n^2-1/12*g^2
*Pi^2*b^2*x^3*csgn(I*c)^2*csgn(I*c*(e*x+d)^n)^4+1/6*g^2*Pi^2*b^2*x^3*csgn(I
*c)*csgn(I*c*(e*x+d)^n)^5-1/4*Pi^2*b^2*f^2*x*csgn(I*(e*x+d)^n)^2*csgn(I*c*(
e*x+d)^n)^4+1/2*Pi^2*b^2*f^2*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^5+1/2*
Pi^2*b^2*f^2*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^5-1/4*Pi^2*b^2*f^2*x*csgn(I*c)
^2*csgn(I*c*(e*x+d)^n)^4-11/9/e^3*g^2*ln(e*x+d)*b^2*d^3*n^2-1/3/e^3*g^2*b^2
*d^3*n^2*ln(e*x+d)^2-1/e*b^2*d*f^2*n^2*ln(e*x+d)^2-1/12*g^2*Pi^2*b^2*x^3*cs
gn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^4+1/6*g^2*Pi^2*b^2*x^3*csgn(I*(e*x+d)
^n)*csgn(I*c*(e*x+d)^n)^5-1/2*I*g*Pi*b^2*f*n*x^2*csgn(I*c)*csgn(I*c*(e*x+d)
^n)^2-1/3*I*g^2*ln(c)*Pi*b^2*x^3*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+
d)^n)-1/6*I/e*g^2*Pi*b^2*d*n*x^2*csgn(I*c*(e*x+d)^n)^3+1/3*I/e^2*g^2*Pi*b^2
*d^2*n*x*csgn(I*c*(e*x+d)^n)^3-1/3*I/e^3*g^2*ln(e*x+d)*Pi*b^2*d^3*n*csgn(I*
c*(e*x+d)^n)^3-1/2*I*g*Pi*b^2*f*n*x^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)
^2+1/9*b*(6*ln(e*x+d)*b*d^3*g^3*n-6*b*e^3*f^3*n*ln(e*x+d)+6*ln(c)*b*e^3*g^3
```

*x^3-2*b*e^3*g^3*n*x^3+18*a*e^3*f*g^2*x^2+18*a*e^3*f^2*g*x+3*b*d*e^2*g^3*n*
x^2-9*b*e^3*f*g^2*n*x^2-6*b*d^2*e*g^3*n*x-18*b*e^3*f^2*g*n*x+6*a*e^3*g^3*x^
3+9*I*Pi*b*e^3*f*g^2*x^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+9*I*Pi*b*e^3*f*g^2
*x^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-9*I*Pi*b*e^3*f^2*g*x*csgn(I*c*
(e*x+d)^n)^3+3*I*Pi*b*e^3*g^3*x^3*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-9*I*Pi*b*
e^3*f^2*g*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+18*ln(c)*b*e^3*
f*g^2*x^2+18*ln(c)*b*e^3*f^2*g*x+18*b*d*e^2*f*g^2*n*x+3*I*Pi*b*e^3*g^3*x^3*
csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-9*I*Pi*b*e^3*f*g^2*x^2*csgn(I*c*(e*
x+d)^n)^3-9*I*Pi*b*e^3*f*g^2*x^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+
d)^n)-18*ln(e*x+d)*b*d^2*e*f*g^2*n+18*ln(e*x+d)*b*d*e^2*f^2*g*n-3*I*Pi*b*e^
3*g^3*x^3*csgn(I*c*(e*x+d)^n)^3+9*I*Pi*b*e^3*f^2*g*x*csgn(I*c)*csgn(I*c*(e*
x+d)^n)^2+9*I*Pi*b*e^3*f^2*g*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-3*I*
Pi*b*e^3*g^3*x^3*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n))/e^3/g*ln(
(e*x+d)^n)+ln(c)^2*b^2*f*g*x^2+2/3*ln(c)*a*b*g^2*x^3-2*ln(c)*b^2*f^2*n*x+2*
ln(c)*a*b*f^2*x-1/12*g^2*Pi^2*b^2*x^3*csgn(I*c*(e*x+d)^n)^6+1/3/g*b^2*f^3*n
^2*ln(e*x+d)^2-1/4*Pi^2*b^2*f^2*x*csgn(I*c*(e*x+d)^n)^6-2/9*ln(c)*b^2*g^2*n
*x^3+I/e*g*Pi*b^2*d*f*n*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I/e*g*Pi*b^2*d*f*
n*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/6*I/e*g^2*Pi*b^2*d*n*x^2*csgn
(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-I/e^2*g*ln(e*x+d)*Pi*b^2*d^2*f*
n*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/3*I/e^2*g^2*Pi*b^2*d^2*n*x*csgn(I*c)*cs
gn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-I/e^2*g*ln(e*x+d)*Pi*b^2*d^2*f*n*csgn(I
*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+2/3/e^3*g^2*ln(e*x+d)*a*b*d^3*n+1/e^2*g*b
^2*d^2*f*n^2*ln(e*x+d)^2+1/2*Pi^2*b^2*f^2*x*csgn(I*c)*csgn(I*(e*x+d)^n)^2*c
sgn(I*c*(e*x+d)^n)^3-Pi^2*b^2*f^2*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e
*x+d)^n)^4+I*Pi*b^2*f^2*n*x*csgn(I*c*(e*x+d)^n)^3-1/4*Pi^2*b^2*f^2*x*csgn(I
*c)^2*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^2+1/2*Pi^2*b^2*f^2*x*csgn(I*c
)^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^3-1/3*I*g^2*Pi*a*b*x^3*csgn(I*c*(
e*x+d)^n)^3-1/3*I*g^2*ln(c)*Pi*b^2*x^3*csgn(I*c*(e*x+d)^n)^3+1/9*I*g^2*Pi*b
^2*n*x^3*csgn(I*c*(e*x+d)^n)^3-I*ln(c)*Pi*b^2*f^2*x*csgn(I*c*(e*x+d)^n)^3-I
*Pi*a*b*f^2*x*csgn(I*c*(e*x+d)^n)^3-I*ln(c)*Pi*b^2*f^2*x*csgn(I*c)*csgn(I*(
e*x+d)^n)*csgn(I*c*(e*x+d)^n)-I*Pi*a*b*f^2*x*csgn(I*c)*csgn(I*(e*x+d)^n)*cs
gn(I*c*(e*x+d)^n)-1/3*I*g^2*Pi*a*b*x^3*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c
*(e*x+d)^n)+1/9*I*g^2*Pi*b^2*n*x^3*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*
x+d)^n)+1/2*g*Pi^2*b^2*f*x^2*csgn(I*c)*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)
^n)^3-g*Pi^2*b^2*f*x^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^4+I*
Pi*a*b*f^2*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*Pi*a*b*f^2*x*csgn(I*(e*x+d)^
n)*csgn(I*c*(e*x+d)^n)^2+I*ln(c)*Pi*b^2*f^2*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)
^2+I*ln(c)*Pi*b^2*f^2*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*g*ln(c)*P
i*b^2*f*x^2*csgn(I*c*(e*x+d)^n)^3+1/3*I*g^2*ln(c)*Pi*b^2*x^3*csgn(I*(e*x+d)
^n)*csgn(I*c*(e*x+d)^n)^2-1/9*I*g^2*Pi*b^2*n*x^3*csgn(I*c)*csgn(I*c*(e*x+d)
^n)^2-1/9*I*g^2*Pi*b^2*n*x^3*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/2*I*
g*Pi*b^2*f*n*x^2*csgn(I*c*(e*x+d)^n)^3+1/3*I*g^2*Pi*a*b*x^3*csgn(I*c)*csgn(
I*c*(e*x+d)^n)^2+1/3*I*g^2*Pi*a*b*x^3*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)
^2-I*g*Pi*a*b*f*x^2*csgn(I*c*(e*x+d)^n)^3+1/3*I*g^2*ln(c)*Pi*b^2*x^3*csgn(I
*c)*csgn(I*c*(e*x+d)^n)^2-I*Pi*b^2*f^2*n*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-
I*Pi*b^2*f^2*n*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+I/e^2*g*ln(e*x+d)*
Pi*b^2*d^2*f*n*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-I/e*g*Pi*b^2
*d*f*n*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-I/e*ln(e*x+d)*Pi*b
^2*d*f^2*n*csgn(I*c*(e*x+d)^n)^3+I/e*ln(e*x+d)*Pi*b^2*d*f^2*n*csgn(I*c)*csg
n(I*c*(e*x+d)^n)^2+I/e*ln(e*x+d)*Pi*b^2*d*f^2*n*csgn(I*(e*x+d)^n)*csgn(I*c*
(e*x+d)^n)^2+I/e^2*g*ln(e*x+d)*Pi*b^2*d^2*f*n*csgn(I*c*(e*x+d)^n)^3+1/3*I/e
^3*g^2*ln(e*x+d)*Pi*b^2*d^3*n*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/3*I/e^3*g^2
*ln(e*x+d)*Pi*b^2*d^3*n*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/2*I*g*Pi*
b^2*f*n*x^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-I*g*Pi*a*b*f*x^
2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-I*g*ln(c)*Pi*b^2*f*x^2*cs
gn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/3*I/e^2*g^2*Pi*b^2*d^2*n*x*
csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/6*I/e*g^2*Pi*b^2*d*n*x^2*csgn(I*(e*x+d)^n
)*csgn(I*c*(e*x+d)^n)^2-I/e*g*Pi*b^2*d*f*n*x*csgn(I*c*(e*x+d)^n)^3-1/3*I/e^
2*g^2*Pi*b^2*d^2*n*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/6*I/e*g^2*Pi

```
*b^2*d*n*x^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2
```

maxima [B] time = 1.41, size = 554, normalized size = 1.93

$$\frac{1}{3}\, b^2g^2x^3 \log\left(\left(ex+d\right)^n c\right)^2 + \frac{2}{3}\, abg^2x^3 \log\left(\left(ex+d\right)^n c\right) + b^2fgx^2 \log\left(\left(ex+d\right)^n c\right)^2 + \frac{1}{3}\, a^2g^2x^3 - 2\, abef^2n\left(\frac{x}{e} - \frac{d\log}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/3*b^2*g^2*x^3*log((e*x + d)^n*c)^2 + 2/3*a*b*g^2*x^3*log((e*x + d)^n*c) +
 b^2*f*g*x^2*log((e*x + d)^n*c)^2 + 1/3*a^2*g^2*x^3 - 2*a*b*e*f^2*n*(x/e -
d*log(e*x + d)/e^2) + 1/9*a*b*e*g^2*n*(6*d^3*log(e*x + d)/e^4 - (2*e^2*x^3
- 3*d*e*x^2 + 6*d^2*x)/e^3) - a*b*e*f*g*n*(2*d^2*log(e*x + d)/e^3 + (e*x^2
- 2*d*x)/e^2) + 2*a*b*f*g*x^2*log((e*x + d)^n*c) + b^2*f^2*x*log((e*x + d)^
n*c)^2 + a^2*f*g*x^2 + 2*a*b*f^2*x*log((e*x + d)^n*c) - (2*e*n*(x/e - d*log
(e*x + d)/e^2)*log((e*x + d)^n*c) + (d*log(e*x + d)^2 - 2*e*x + 2*d*log(e*x
 + d))*n^2/e)*b^2*f^2 - 1/2*(2*e*n*(2*d^2*log(e*x + d)/e^3 + (e*x^2 - 2*d*x
)/e^2)*log((e*x + d)^n*c) - (e^2*x^2 + 2*d^2*log(e*x + d)^2 - 6*d*e*x + 6*d
^2*log(e*x + d))*n^2/e^2)*b^2*f*g + 1/54*(6*e*n*(6*d^3*log(e*x + d)/e^4 - (
2*e^2*x^3 - 3*d*e*x^2 + 6*d^2*x)/e^3)*log((e*x + d)^n*c) + (4*e^3*x^3 - 15*
d*e^2*x^2 - 18*d^3*log(e*x + d)^2 + 66*d^2*e*x - 66*d^3*log(e*x + d))*n^2/e
^3)*b^2*g^2 + a^2*f^2*x
```

mupad [B] time = 0.55, size = 591, normalized size = 2.06

$$\ln\left(c\,(d+e\,x)^n\right)\left(\frac{x^2\left(\frac{3\,b\,g\left(a\,d\,g+2\,a\,e\,f-b\,e\,f\,n\right)}{e}-\frac{b\,d\,g^2\,(3\,a-b\,n)}{e}\right)}{3}-\frac{x\left(\frac{d\left(\frac{18\,b\,g\left(a\,d\,g+2\,a\,e\,f-b\,e\,f\,n\right)}{e}-\frac{6\,b\,d\,g^2\,(3\,a-b\,n)}{e}\right)}{3\,e}-\frac{6\,b\,f\,\left(2\,a\,d\,g+a\right.}{e}\right.}{3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^2*(a + b*log(c*(d + e*x)^n))^2,x)
```

```
[Out] log(c*(d + e*x)^n)*((x^2*((3*b*g*(a*d*g + 2*a*e*f - b*e*f*n))/e - (b*d*g^2*
(3*a - b*n))/e))/3 - (x*((d*((18*b*g*(a*d*g + 2*a*e*f - b*e*f*n))/e - (6*b*
d*g^2*(3*a - b*n))/e))/(3*e) - (6*b*f*(2*a*d*g + a*e*f - b*e*f*n))/e))/3 +
(2*b*g^2*x^3*(3*a - b*n))/9) + x*((9*a^2*e^2*f^2 + 6*b^2*d^2*g^2*n^2 + 18*b
^2*e^2*f^2*n^2 - 18*a*b*e^2*f^2*n + 18*a^2*d*e*f*g - 18*b^2*d*e*f*g*n^2)/(9
*e^2) - (d*((g*(3*a^2*d*g + 6*a^2*e*f - b^2*d*g*n^2 + 3*b^2*e*f*n^2 - 6*a*b
*e*f*n))/(3*e) - (d*g^2*(9*a^2 + 2*b^2*n^2 - 6*a*b*n))/(9*e)))/e) + x^2*((g
*(3*a^2*d*g + 6*a^2*e*f - b^2*d*g*n^2 + 3*b^2*e*f*n^2 - 6*a*b*e*f*n))/(6*e)
 - (d*g^2*(9*a^2 + 2*b^2*n^2 - 6*a*b*n))/(18*e)) + log(c*(d + e*x)^n)^2*(b^
2*f^2*x + (b^2*g^2*x^3)/3 + (d*(b^2*d^2*g^2 + 3*b^2*e^2*f^2 - 3*b^2*d*e*f*g
))/(3*e^3) + b^2*f*g*x^2) - (log(d + e*x)*(11*b^2*d^3*g^2*n^2 - 6*a*b*d^3*g
^2*n + 18*b^2*d*e^2*f^2*n^2 - 18*a*b*d*e^2*f^2*n - 27*b^2*d^2*e*f*g*n^2 + 1
8*a*b*d^2*e*f*g*n))/(9*e^3) + (g^2*x^3*(9*a^2 + 2*b^2*n^2 - 6*a*b*n))/27
```

sympy [A] time = 10.98, size = 1103, normalized size = 3.84

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**2*(a+b*ln(c*(e*x+d)**n))**2,x)
```

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

```
g**2*n*x/(3*e**2) + 2*a*b*d*f**2*n*log(d + e*x)/e + 2*a*b*d*f*g*n*x/e + a*b
*d*g**2*n*x**2/(3*e) + 2*a*b*f**2*n*x*log(d + e*x) - 2*a*b*f**2*n*x + 2*a*b
*f**2*x*log(c) + 2*a*b*f*g*n*x**2*log(d + e*x) - a*b*f*g*n*x**2 + 2*a*b*f*g
*x**2*log(c) + 2*a*b*g**2*n*x**3*log(d + e*x)/3 - 2*a*b*g**2*n*x**3/9 + 2*a
*b*g**2*x**3*log(c)/3 + b**2*d**3*g**2*n**2*log(d + e*x)**2/(3*e**3) - 11*b
**2*d**3*g**2*n**2*log(d + e*x)/(9*e**3) + 2*b**2*d**3*g**2*n*log(c)*log(d
+ e*x)/(3*e**3) - b**2*d**2*f*g*n**2*log(d + e*x)**2/e**2 + 3*b**2*d**2*f*g
*n**2*log(d + e*x)/e**2 - 2*b**2*d**2*f*g*n*log(c)*log(d + e*x)/e**2 - 2*b*
*2*d**2*g**2*n**2*x*log(d + e*x)/(3*e**2) + 11*b**2*d**2*g**2*n**2*x/(9*e**
2) - 2*b**2*d**2*g**2*n*x*log(c)/(3*e**2) + b**2*d*f**2*n**2*log(d + e*x)**
2/e - 2*b**2*d*f**2*n**2*log(d + e*x)/e + 2*b**2*d*f**2*n*log(c)*log(d + e*
x)/e + 2*b**2*d*f*g*n**2*x*log(d + e*x)/e - 3*b**2*d*f*g*n**2*x/e + 2*b**2*
d*f*g*n*x*log(c)/e + b**2*d*g**2*n**2*x**2*log(d + e*x)/(3*e) - 5*b**2*d*g*
*2*n**2*x**2/(18*e) + b**2*d*g**2*n*x**2*log(c)/(3*e) + b**2*f**2*n**2*x*lo
g(d + e*x)**2 - 2*b**2*f**2*n**2*x*log(d + e*x) + 2*b**2*f**2*n**2*x + 2*b*
*2*f**2*n*x*log(c)*log(d + e*x) - 2*b**2*f**2*n*x*log(c) + b**2*f**2*x*log(
c)**2 + b**2*f*g*n**2*x**2*log(d + e*x)**2 - b**2*f*g*n**2*x**2*log(d + e*x
) + b**2*f*g*n**2*x**2/2 + 2*b**2*f*g*n*x**2*log(c)*log(d + e*x) - b**2*f*g
*n*x**2*log(c) + b**2*f*g*x**2*log(c)**2 + b**2*g**2*n**2*x**3*log(d + e*x)
**2/3 - 2*b**2*g**2*n**2*x**3*log(d + e*x)/9 + 2*b**2*g**2*n**2*x**3/27 + 2
*b**2*g**2*n*x**3*log(c)*log(d + e*x)/3 - 2*b**2*g**2*n*x**3*log(c)/9 + b**
2*g**2*x**3*log(c)**2/3, Ne(e, 0)), ((a + b*log(c*d**n))**2*(f**2*x + f*g*x
**2 + g**2*x**3/3), True))
```

3.46 $\int (f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^2\,dx$

Optimal. Leaf size=186

$$\frac{(d+ex)(ef-dg)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{e^2}-\frac{bgn(d+ex)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2e^2}+\frac{g(d+ex)^2\left(a+b\log\left(c(d+\right.\right.}{2e^2}$$

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

Rubi [A] time = 0.16, antiderivative size = 186, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.318, Rules used = {2401, 2389, 2296, 2295, 2390, 2305, 2304}

$$\frac{(d+ex)(ef-dg)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{e^2}-\frac{bgn(d+ex)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2e^2}+\frac{g(d+ex)^2\left(a+b\log\left(c(d+\right.\right.}{2e^2}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)*(a + b*Log[c*(d + e*x)^n])^2,x]
```

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

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2390

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

Rule 2401

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

Rubi steps

$$\int (f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^2 dx = \int \left(\frac{(ef-dg)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{e} + \frac{g(d+ex)\left(a+b\log\left(c(d+ex)\right.\right.}{e}\right.$$

$$= \frac{g\int (d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2 dx}{e} + \frac{(ef-dg)\int \left(a+b\log\left(c(d+\right.\right.}{e}$$

$$= \frac{g\,\text{Subst}\left(\int x\left(a+b\log\left(cx^n\right)\right)^2 dx, x, d+ex\right)}{e^2} + \frac{(ef-dg)\,\text{Subst}\left(\int \left(a+\right.\right.}{}$$

$$= \frac{(ef-dg)(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{e^2} + \frac{g(d+ex)^2\left(a+b\log\left(c(d\right.\right.}{2e^2}$$

$$= -\frac{2ab(ef-dg)nx}{e} + \frac{b^2gn^2(d+ex)^2}{4e^2} - \frac{bgn(d+ex)^2\left(a+b\log\left(c(d+ex\right.\right.}{2e^2}$$

$$= -\frac{2ab(ef-dg)nx}{e} + \frac{2b^2(ef-dg)n^2x}{e} + \frac{b^2gn^2(d+ex)^2}{4e^2} - \frac{2b^2(ef-dg)n}{}$$

Mathematica [A] time = 0.08, size = 144, normalized size = 0.77

$$\frac{4(d+ex)(ef-dg)\left(a+b\log\left(c(d+ex)^n\right)\right)^2 - 8bn(ef-dg)\left(ex(a-bn)+b(d+ex)\log\left(c(d+ex)^n\right)\right) + 2g(d+ex)^2}{4e^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)*(a + b*Log[c*(d + e*x)^n])^2,x]
```

```
[Out] (4*(e*f - d*g)*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2 + 2*g*(d + e*x)^2*(a
+ b*Log[c*(d + e*x)^n])^2 - 8*b*(e*f - d*g)*n*(e*(a - b*n)*x + b*(d + e*x)*
Log[c*(d + e*x)^n]) + b*g*n*(b*e*n*x*(2*d + e*x) - 2*(d + e*x)^2*(a + b*Log
[c*(d + e*x)^n])))/(4*e^2)
```

fricas [B] time = 0.47, size = 401, normalized size = 2.16

$$\frac{\left(b^2e^2gn^2 - 2\,abe^2gn + 2\,a^2e^2g\right)x^2 + 2\left(b^2e^2gn^2x^2 + 2\,b^2e^2fn^2x + \left(2\,b^2def - b^2d^2g\right)n^2\right)\log\left(ex+d\right)^2 + 2\left(b^2e^2gx^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

```
(b^2*e^2*g*x^2 + 2*b^2*e^2*f*x)*log(c)^2 + 2*(2*a^2*e^2*f + (4*b^2*e^2*f -
3*b^2*d*e*g)*n^2 - 2*(2*a*b*e^2*f - a*b*d*e*g)*n)*x - 2*((4*b^2*d*e*f - 3*b
^2*d^2*g)*n^2 + (b^2*e^2*g*n^2 - 2*a*b*e^2*g*n)*x^2 - 2*(2*a*b*d*e*f - a*b*
d^2*g)*n - 2*(2*a*b*e^2*f*n - (2*b^2*e^2*f - b^2*d*e*g)*n^2)*x - 2*(b^2*e^2
*g*n*x^2 + 2*b^2*e^2*f*n*x + (2*b^2*d*e*f - b^2*d^2*g)*n)*log(c))*log(e*x +
 d) - 2*((b^2*e^2*g*n - 2*a*b*e^2*g)*x^2 - 2*(2*a*b*e^2*f - (2*b^2*e^2*f -
b^2*d*e*g)*n)*x)*log(c))/e^2
```

giac [B] time = 0.25, size = 595, normalized size = 3.20

$$\frac{1}{2}\,(xe+d)^2 b^2 g n^2 e^{(-2)} \log{(xe+d)}^2 - (xe+d) b^2 d g n^2 e^{(-2)} \log{(xe+d)}^2 - \frac{1}{2}\,(xe+d)^2 b^2 g n^2 e^{(-2)} \log{(xe+d)} + 2\,(xe$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*(x*e + d)^2*b^2*g*n^2*e^(-2)*log(x*e + d)^2 - (x*e + d)*b^2*d*g*n^2*e^(
-2)*log(x*e + d)^2 - 1/2*(x*e + d)^2*b^2*g*n^2*e^(-2)*log(x*e + d) + 2*(x*e
 + d)*b^2*d*g*n^2*e^(-2)*log(x*e + d) + (x*e + d)*b^2*f*n^2*e^(-1)*log(x*e
+ d)^2 + (x*e + d)^2*b^2*g*n*e^(-2)*log(x*e + d)*log(c) - 2*(x*e + d)*b^2*d
*g*n*e^(-2)*log(x*e + d)*log(c) + 1/4*(x*e + d)^2*b^2*g*n^2*e^(-2) - 2*(x*e
 + d)*b^2*d*g*n^2*e^(-2) - 2*(x*e + d)*b^2*f*n^2*e^(-1)*log(x*e + d) + (x*e
 + d)^2*a*b*g*n*e^(-2)*log(x*e + d) - 2*(x*e + d)*a*b*d*g*n*e^(-2)*log(x*e
+ d) - 1/2*(x*e + d)^2*b^2*g*n*e^(-2)*log(c) + 2*(x*e + d)*b^2*d*g*n*e^(-2)
*log(c) + 2*(x*e + d)*b^2*f*n*e^(-1)*log(x*e + d)*log(c) + 1/2*(x*e + d)^2*
b^2*g*e^(-2)*log(c)^2 - (x*e + d)*b^2*d*g*e^(-2)*log(c)^2 + 2*(x*e + d)*b^2
*f*n^2*e^(-1) - 1/2*(x*e + d)^2*a*b*g*n*e^(-2) + 2*(x*e + d)*a*b*d*g*n*e^(-
2) + 2*(x*e + d)*a*b*f*n*e^(-1)*log(x*e + d) - 2*(x*e + d)*b^2*f*n*e^(-1)*l
og(c) + (x*e + d)^2*a*b*g*e^(-2)*log(c) - 2*(x*e + d)*a*b*d*g*e^(-2)*log(c)
 + (x*e + d)*b^2*f*e^(-1)*log(c)^2 - 2*(x*e + d)*a*b*f*n*e^(-1) + 1/2*(x*e
+ d)^2*a^2*g*e^(-2) - (x*e + d)*a^2*d*g*e^(-2) + 2*(x*e + d)*a*b*f*e^(-1)*l
og(c) + (x*e + d)*a^2*f*e^(-1)
```

maple [C] time = 0.57, size = 2616, normalized size = 14.06

Expression too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(b*ln(c*(e*x+d)^n)+a)^2,x)
```

```
[Out] ln(c)^2*b^2*f*x+1/2*ln(c)^2*b^2*g*x^2+a^2*f*x+1/2*a^2*g*x^2-3/2/e*b^2*d*g*n
^2*x-2/e*ln(e*x+d)*b^2*d*f*n^2+1/4*Pi^2*b^2*g*x^2*csgn(I*c)*csgn(I*c*(e*x+d
)^n)^5+1/4*Pi^2*b^2*g*x^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^5-1/8*Pi^2*
b^2*g*x^2*csgn(I*c)^2*csgn(I*c*(e*x+d)^n)^4-1/4*Pi^2*b^2*f*x*csgn(I*(e*x+d)
^n)^2*csgn(I*c*(e*x+d)^n)^4-1/8*Pi^2*b^2*g*x^2*csgn(I*(e*x+d)^n)^2*csgn(I*c
*(e*x+d)^n)^4+1/2*Pi^2*b^2*f*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^5+1/2*Pi^2*b^2
*f*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^5-1/4*Pi^2*b^2*f*x*csgn(I*c)^2*c
sgn(I*c*(e*x+d)^n)^4+1/2/e^2*b^2*d^2*g*n^2*ln(e*x+d)^2-1/e*b^2*d*f*n^2*ln(e
*x+d)^2+3/2/e^2*ln(e*x+d)*b^2*d^2*g*n^2-I/e*ln(e*x+d)*Pi*b^2*d*f*n*csgn(I*c
*(e*x+d)^n)^3-1/2*I*ln(c)*Pi*b^2*g*x^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c
*(e*x+d)^n)+1/4*I*Pi*b^2*g*n*x^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+
d)^n)-I*ln(c)*Pi*b^2*f*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/
2*I*Pi*a*b*g*x^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-I*Pi*a*b*f
*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/2*b*(I*Pi*b*e^2*g*x^2*
csgn(I*c*(e*x+d)^n)^3+2*I*Pi*b*e^2*f*x*csgn(I*c*(e*x+d)^n)^3-I*Pi*b*e^2*g*x
^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+2*I*Pi*b*e^2*f*x*csgn(I*c)*csgn(I*(e*x+d
)^n)*csgn(I*c*(e*x+d)^n)-2*I*Pi*b*e^2*f*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d
)^n)^2-2*I*Pi*b*e^2*f*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*Pi*b*e^2*g*x^2*cs
gn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-I*Pi*b*e^2*g*x^2*csgn(I*(e*x+
d)^n)*csgn(I*c*(e*x+d)^n)^2-2*ln(c)*b*e^2*g*x^2+b*e^2*g*n*x^2-4*ln(c)*b*e^2
```

```
*f*x-2*a*e^2*g*x^2+2*b*d^2*g*n*ln(e*x+d)-4*b*d*e*f*n*ln(e*x+d)-2*b*d*e*g*n*
x+4*b*e^2*f*n*x-4*a*e^2*f*x)/e^2*ln((e*x+d)^n)+1/2*b^2*x*(g*x+2*f)*ln((e*x+
d)^n)^2+1/4*b^2*g*n^2*x^2+I*Pi*b^2*f*n*x*csgn(I*c*(e*x+d)^n)^3-1/2*I*ln(c)*
Pi*b^2*g*x^2*csgn(I*c*(e*x+d)^n)^3+1/4*I*Pi*b^2*g*n*x^2*csgn(I*c*(e*x+d)^n)
^3+I/e*ln(e*x+d)*Pi*b^2*d*f*n*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/2*I
/e^2*ln(e*x+d)*Pi*b^2*d^2*g*n*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/2*I/e^2*ln(
e*x+d)*Pi*b^2*d^2*g*n*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/2*I/e*Pi*b^
2*d*g*n*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/2*I/e*Pi*b^2*d*g*n*x*csgn(I*(e*
x+d)^n)*csgn(I*c*(e*x+d)^n)^2+2*b^2*f*n^2*x+2/e*ln(e*x+d)*a*b*d*f*n-1/e^2*l
n(e*x+d)*ln(c)*b^2*d^2*g*n+2/e*ln(e*x+d)*ln(c)*b^2*d*f*n-1/2*Pi^2*b^2*g*x^2
*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^4+1/4*Pi^2*b^2*g*x^2*csgn(
I*c)^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^3+1/4*Pi^2*b^2*g*x^2*csgn(I*c)
*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^3+1/2*I/e^2*ln(e*x+d)*Pi*b^2*d^2*g
*n*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-I/e*ln(e*x+d)*Pi*b^2*d*f
*n*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/2*I/e*Pi*b^2*d*g*n*x*c
sgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-I*ln(c)*Pi*b^2*f*x*csgn(I*c*
(e*x+d)^n)^3-1/2*I*Pi*a*b*g*x^2*csgn(I*c*(e*x+d)^n)^3-I*Pi*a*b*f*x*csgn(I*c
*(e*x+d)^n)^3-1/8*Pi^2*b^2*g*x^2*csgn(I*c*(e*x+d)^n)^6-1/4*Pi^2*b^2*f*x*csg
n(I*c*(e*x+d)^n)^6+ln(c)*a*b*g*x^2+2*ln(c)*a*b*f*x-1/2*ln(c)*b^2*g*n*x^2-2*
ln(c)*b^2*f*n*x-1/2*a*b*g*n*x^2+I*Pi*a*b*f*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*
x+d)^n)^2+I*ln(c)*Pi*b^2*f*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*ln(c)*Pi*b^2
*f*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/2*I*Pi*a*b*g*x^2*csgn(I*c)*c
sgn(I*c*(e*x+d)^n)^2-I*Pi*b^2*f*n*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/2*I*P
i*a*b*g*x^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*Pi*b^2*f*n*x*csgn(I*(
e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/2*I*ln(c)*Pi*b^2*g*x^2*csgn(I*c)*csgn(I*c
*(e*x+d)^n)^2+1/2*I*ln(c)*Pi*b^2*g*x^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n
)^2-1/4*I*Pi*b^2*g*n*x^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/4*I*Pi*b^2*g*n*x
^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/e*a*b*d*g*n*x+1/e*ln(c)*b^2*d*
g*n*x-1/e^2*ln(e*x+d)*a*b*d^2*g*n-1/8*Pi^2*b^2*g*x^2*csgn(I*c)^2*csgn(I*(e*
x+d)^n)^2*csgn(I*c*(e*x+d)^n)^2-Pi^2*b^2*f*x*csgn(I*c)*csgn(I*(e*x+d)^n)*cs
gn(I*c*(e*x+d)^n)^4+1/2*Pi^2*b^2*f*x*csgn(I*c)^2*csgn(I*(e*x+d)^n)*csgn(I*c
*(e*x+d)^n)^3+1/2*Pi^2*b^2*f*x*csgn(I*c)*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+
d)^n)^3-1/4*Pi^2*b^2*f*x*csgn(I*c)^2*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n
)^2-2*a*b*f*n*x+I*Pi*b^2*f*n*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)
^n)-1/2*I/e*Pi*b^2*d*g*n*x*csgn(I*c*(e*x+d)^n)^3+1/2*I/e^2*ln(e*x+d)*Pi*b^2
*d^2*g*n*csgn(I*c*(e*x+d)^n)^3+I*Pi*a*b*f*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2
+I/e*ln(e*x+d)*Pi*b^2*d*f*n*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2
```

maxima [A] time = 1.10, size = 314, normalized size = 1.69

$$\frac{1}{2}b^2gx^2\log\left((ex+d)^nc\right)^2-2abefn\left(\frac{x}{e}-\frac{d\log(ex+d)}{e^2}\right)-\frac{1}{2}abegn\left(\frac{2d^2\log(ex+d)}{e^3}+\frac{ex^2-2dx}{e^2}\right)+abgx^2\log\left((ex\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

mupad [B] time = 0.35, size = 268, normalized size = 1.44

$$\ln\left(c\,(d+e\,x)^n\right)^2\,\left(\frac{b^2\,g\,x^2}{2}-\frac{d\,\left(b^2\,d\,g-2\,b^2\,e\,f\right)}{2\,e^2}+b^2\,f\,x\right)+x\,\left(\frac{2\,a^2\,d\,g+2\,a^2\,e\,f-2\,b^2\,d\,g\,n^2+4\,b^2\,e\,f\,n^2-4\,a\,b\,e\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(a + b*log(c*(d + e*x)^n))^2,x)
```

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

sympy [A] time = 4.53, size = 561, normalized size = 3.02

$$\begin{cases} a^2fx + \frac{a^2gx^2}{2} - \frac{abd^2gn\log(d+ex)}{e^2} + \frac{2abdfn\log(d+ex)}{e} + \frac{abdgnx}{e} + 2abfnx\log(d+ex) - 2abfnx + 2abfx\log(c) + al \\ \left(a + b\log(cd^n)\right)^2\left(fx + \frac{gx^2}{2}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*ln(c*(e*x+d)**n))**2,x)
```

```
[Out] Piecewise((a**2*f*x + a**2*g*x**2/2 - a*b*d**2*g*n*log(d + e*x)/e**2 + 2*a*
b*d*f*n*log(d + e*x)/e + a*b*d*g*n*x/e + 2*a*b*f*n*x*log(d + e*x) - 2*a*b*f
*n*x + 2*a*b*f*x*log(c) + a*b*g*n*x**2*log(d + e*x) - a*b*g*n*x**2/2 + a*b*
g*x**2*log(c) - b**2*d**2*g*n**2*log(d + e*x)**2/(2*e**2) + 3*b**2*d**2*g*n
**2*log(d + e*x)/(2*e**2) - b**2*d**2*g*n*log(c)*log(d + e*x)/e**2 + b**2*d
*f*n**2*log(d + e*x)**2/e - 2*b**2*d*f*n**2*log(d + e*x)/e + 2*b**2*d*f*n*l
og(c)*log(d + e*x)/e + b**2*d*g*n**2*x*log(d + e*x)/e - 3*b**2*d*g*n**2*x/(
2*e) + b**2*d*g*n*x*log(c)/e + b**2*f*n**2*x*log(d + e*x)**2 - 2*b**2*f*n**
2*x*log(d + e*x) + 2*b**2*f*n**2*x + 2*b**2*f*n*x*log(c)*log(d + e*x) - 2*b
**2*f*n*x*log(c) + b**2*f*x*log(c)**2 + b**2*g*n**2*x**2*log(d + e*x)**2/2
- b**2*g*n**2*x**2*log(d + e*x)/2 + b**2*g*n**2*x**2/4 + b**2*g*n*x**2*log(
c)*log(d + e*x) - b**2*g*n*x**2*log(c)/2 + b**2*g*x**2*log(c)**2/2, Ne(e, 0
)), ((a + b*log(c*d**n))**2*(f*x + g*x**2/2), True))
```

3.47 $\int \left(a+b\log\left(c(d+ex)^n\right)\right)^2 dx$

Optimal. Leaf size=65

$$\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{e}-2abnx-\frac{2b^2n(d+ex)\log\left(c(d+ex)^n\right)}{e}+2b^2n^2x$$

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

Rubi [A] time = 0.04, antiderivative size = 65, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188, Rules used = {2389, 2296, 2295}

$$\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{e}-2abnx-\frac{2b^2n(d+ex)\log\left(c(d+ex)^n\right)}{e}+2b^2n^2x$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^2,x]
```

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

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rubi steps

$$\begin{aligned}
\int \left(a+b\log\left(c(d+ex)^n\right)\right)^2 dx &= \frac{\text{Subst}\left(\int \left(a+b\log\left(cx^n\right)\right)^2 dx, x, d+ex\right)}{e}\\
&= \frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{e}-\frac{(2bn)\,\text{Subst}\left(\int \left(a+b\log\left(cx^n\right)\right) dx, x, d+e\right.}{e}\\
&= -2abnx+\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{e}-\frac{\left(2b^2n\right)\text{Subst}\left(\int \log\left(cx^n\right) dx, x, c\right.}{e}\\
&= -2abnx+2b^2n^2x-\frac{2b^2n(d+ex)\log\left(c(d+ex)^n\right)}{e}+\frac{(d+ex)\left(a+b\log\left(c(d+e\right.\right.}{e}
\end{aligned}$$

Mathematica [A] time = 0.00, size = 59, normalized size = 0.91

$$\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{e}-2bn\left(ax+\frac{b(d+ex)\log\left(c(d+ex)^n\right)}{e}-bnx\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^2,x]
```

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

fricas [B] time = 0.43, size = 140, normalized size = 2.15

$$\frac{b^2ex\log(c)^2 + \left(b^2en^2x + b^2dn^2\right)\log(ex+d)^2 - 2\left(b^2en - abe\right)x\log(c) + \left(2\,b^2en^2 - 2\,aben + a^2e\right)x - 2\left(b^2dn^2\right.}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

giac [B] time = 0.18, size = 178, normalized size = 2.74

$$(xe+d)b^2n^2e^{(-1)}\log(xe+d)^2 - 2\,(xe+d)b^2n^2e^{(-1)}\log(xe+d) + 2\,(xe+d)b^2ne^{(-1)}\log(xe+d)\log(c) + 2\,(xe+d$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] (x*e + d)*b^2*n^2*e^(-1)*log(x*e + d)^2 - 2*(x*e + d)*b^2*n^2*e^(-1)*log(x*
e + d) + 2*(x*e + d)*b^2*n*e^(-1)*log(x*e + d)*log(c) + 2*(x*e + d)*b^2*n^2
*e^(-1) + 2*(x*e + d)*a*b*n*e^(-1)*log(x*e + d) - 2*(x*e + d)*b^2*n*e^(-1)*
log(c) + (x*e + d)*b^2*e^(-1)*log(c)^2 - 2*(x*e + d)*a*b*n*e^(-1) + 2*(x*e
+ d)*a*b*e^(-1)*log(c) + (x*e + d)*a^2*e^(-1)
```

maple [A] time = 0.07, size = 130, normalized size = 2.00

$$-\frac{2b^2d\,n^2\ln(ex+d)}{e} + 2b^2n^2x - 2b^2nx\ln\left(c\,e^{n\ln(ex+d)}\right) + b^2x\ln\left(c\,e^{n\ln(ex+d)}\right)^2 + \frac{2abdn\ln(ex+d)}{e} - 2abnx + 2abx\ln$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)^2,x)
```

```
[Out] a^2*x+b^2*x*ln(c*exp(n*ln(e*x+d)))^2+b^2*d/e*ln(c*exp(n*ln(e*x+d)))^2+2*b^2
*n^2*x-2*b^2*n*x*ln(c*exp(n*ln(e*x+d)))-2*n^2*b^2*d/e*ln(e*x+d)+2*a*b*x*ln(
c*(e*x+d)^n)-2*a*b*n*x+2*a*b/e*n*d*ln(e*x+d)
```

maxima [B] time = 1.00, size = 131, normalized size = 2.02

$$-2\,aben\left(\frac{x}{e} - \frac{d\log(ex+d)}{e^2}\right) + b^2x\log\left((ex+d)^nc\right)^2 + 2\,abx\log\left((ex+d)^nc\right) - \left(2\,en\left(\frac{x}{e} - \frac{d\log(ex+d)}{e^2}\right)\log\left((ex\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

mupad [B] time = 0.00, size = 94, normalized size = 1.45

$$x\,\left(a^2-2\,a\,b\,n+2\,b^2\,n^2\right)+\ln\left(c\,{\left(d+e\,x\right)}^n\right)^2\,\left(b^2\,x+\frac{b^2\,d}{e}\right)-\frac{\ln\left(d+e\,x\right)\,\left(2\,b^2\,d\,n^2-2\,a\,b\,d\,n\right)}{e}+2\,b\,x\,\ln\left(c\,{\left(d+e\,x\right)}^n\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^2,x)
```

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

sympy [A] time = 1.48, size = 211, normalized size = 3.25

$$\begin{cases} a^2x+\frac{2abdn\log\left(d+ex\right)}{e}+2abnx\log\left(d+ex\right)-2abnx+2abx\log\left(c\right)+\frac{b^2dn^2\log\left(d+ex\right)^2}{e}-\frac{2b^2dn^2\log\left(d+ex\right)}{e}+\frac{2b^2dn\log\left(c\right)\log}{e} \\ x\left(a+b\log\left(cd^n\right)\right)^2 \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2,x)
```

```
[Out] Piecewise((a**2*x + 2*a*b*d*n*log(d + e*x)/e + 2*a*b*n*x*log(d + e*x) - 2*a
*b*n*x + 2*a*b*x*log(c) + b**2*d*n**2*log(d + e*x)**2/e - 2*b**2*d*n**2*log
(d + e*x)/e + 2*b**2*d*n*log(c)*log(d + e*x)/e + b**2*n**2*x*log(d + e*x)**
2 - 2*b**2*n**2*x*log(d + e*x) + 2*b**2*n**2*x + 2*b**2*n*x*log(c)*log(d +
e*x) - 2*b**2*n*x*log(c) + b**2*x*log(c)**2, Ne(e, 0)), (x*(a + b*log(c*d**
n))**2, True))
```

3.48 $\int \frac{(a+b\log(c(d+ex)^n))^2}{f+gx}\,dx$

Optimal. Leaf size=111

$$\frac{2bn\text{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g}+\frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{g}-\frac{2b^2n^2\text{Li}_3\left(-\frac{g(d+ex)}{ef-dg}\right)}{g}$$

```
[Out] (a+b*ln(c*(e*x+d)^n))^2*ln(e*(g*x+f)/(-d*g+e*f))/g+2*b*n*(a+b*ln(c*(e*x+d)^
n))*polylog(2,-g*(e*x+d)/(-d*g+e*f))/g-2*b^2*n^2*polylog(3,-g*(e*x+d)/(-d*g
+e*f))/g
```

Rubi [A] time = 0.11, antiderivative size = 111, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {2396, 2433, 2374, 6589}

$$\frac{2bn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g}-\frac{2b^2n^2\text{PolyLog}\left(3,-\frac{g(d+ex)}{ef-dg}\right)}{g}+\frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+\right.\right.}{g}$$

Antiderivative was successfully verified.

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

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

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2396

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

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{f+gx}\,dx = \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} - \frac{(2ben)\int \frac{\left(a+b\log(c(d+ex)^n)\right)\log\left(\frac{e(f+gx)}{ef-dg}\right)}{d+ex}dx}{g}$$

$$= \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} - \frac{(2bn)\,\text{Subst}\left(\int \frac{\left(a+b\log(cx^n)\right)\log\left(\frac{e\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)}{ef-dg}\right)}{x}\right.}{g}$$

$$= \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} + \frac{2bn\left(a+b\log\left(c(d+ex)^n\right)\right)\text{Li}_2\left(-\frac{g(d+e}{ef-d}\right.}{g}$$

$$= \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} + \frac{2bn\left(a+b\log\left(c(d+ex)^n\right)\right)\text{Li}_2\left(-\frac{g(d+e}{ef-d}\right.}{g}$$

Mathematica [A] time = 0.13, size = 194, normalized size = 1.75

$$\frac{2bn\left(\text{Li}_2\left(\frac{g(d+ex)}{dg-ef}\right)+\log(d+ex)\log\left(\frac{e(f+gx)}{ef-dg}\right)\right)\left(a+b\log\left(c(d+ex)^n\right)-bn\log(d+ex)\right)+\log(f+gx)\left(a+b\log\left(\right.\right.}{g}$$

Antiderivative was successfully verified.

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

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

fricas [F] time = 0.42, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b^2\log\left((ex+d)^n c\right)^2+2\,ab\log\left((ex+d)^n c\right)+a^2}{gx+f},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)^2}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

maple [C] time = 0.47, size = 2018, normalized size = 18.18

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -I/g*n*ln(g*x+f)*ln((d*g-e*f+(g*x+f)*e)/(d*g-e*f))*b^2*Pi*csgn(I*(e*x+d)^n)
*csgn(I*c*(e*x+d)^n)^2+I*ln(g*x+f)/g*ln(c)*Pi*b^2*csgn(I*c)*csgn(I*c*(e*x+d
)^n)^2+a^2*ln(g*x+f)/g+ln(g*x+f)/g*ln(c)^2*b^2-I*ln(g*x+f)/g*ln(c)*Pi*b^2*c
sgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I/g*n*ln(g*x+f)*ln((d*g-e*f+
(g*x+f)*e)/(d*g-e*f))*b^2*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n
)+b^2*ln(g*(e*x+d)-d*g+e*f)/g*ln(e*x+d)^2*n^2+b^2*ln(g*(e*x+d)-d*g+e*f)/g*l
n((e*x+d)^n)^2+1/2*ln(g*x+f)/g*Pi^2*b^2*csgn(I*c)^2*csgn(I*(e*x+d)^n)*csgn(
I*c*(e*x+d)^n)^3-I*ln(g*x+f)/g*ln(c)*Pi*b^2*csgn(I*c*(e*x+d)^n)^3+I/g*n*dil
og((d*g-e*f+(g*x+f)*e)/(d*g-e*f))*b^2*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I
*c*(e*x+d)^n)-2*b/g*n*dilog((d*g-e*f+(g*x+f)*e)/(d*g-e*f))*a-2/g*n*dilog((d
*g-e*f+(g*x+f)*e)/(d*g-e*f))*b^2*ln(c)+2*ln(g*x+f)/g*ln(c)*a*b-I/g*n*dilog(
(d*g-e*f+(g*x+f)*e)/(d*g-e*f))*b^2*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)
^2-I*ln(g*x+f)/g*Pi*a*b*csgn(I*c*(e*x+d)^n)^3-I/g*n*ln(g*x+f)*ln((d*g-e*f+(
g*x+f)*e)/(d*g-e*f))*b^2*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-2*b^2*n^2/g*pol
ylog(3,g/(d*g-e*f)*(e*x+d))+I*ln(g*x+f)/g*ln((e*x+d)^n)*b^2*Pi*csgn(I*(e*x+
d)^n)*csgn(I*c*(e*x+d)^n)^2+I*ln(g*x+f)/g*Pi*a*b*csgn(I*(e*x+d)^n)*csgn(I*c
*(e*x+d)^n)^2+I*ln(g*x+f)/g*Pi*a*b*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I/g*n*ln
(g*x+f)*ln((d*g-e*f+(g*x+f)*e)/(d*g-e*f))*b^2*Pi*csgn(I*c*(e*x+d)^n)^3+I*ln
(g*x+f)/g*ln(c)*Pi*b^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I/g*n*dilog(
(d*g-e*f+(g*x+f)*e)/(d*g-e*f))*b^2*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*ln(
g*x+f)/g*ln((e*x+d)^n)*b^2*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-I*ln(g*x+f)/g
*ln((e*x+d)^n)*b^2*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-I*ln(
g*x+f)/g*Pi*a*b*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/4*ln(g*x+
f)/g*Pi^2*b^2*csgn(I*c*(e*x+d)^n)^6+2*b^2*n*dilog((g*(e*x+d)-d*g+e*f)/(-d*g
+e*f))/g*ln((e*x+d)^n)+b^2*n^2/g*ln(e*x+d)^2*ln(1-g/(d*g-e*f)*(e*x+d))+2*b^
2*n^2/g*ln(e*x+d)*polylog(2,g/(d*g-e*f)*(e*x+d))-2*b^2*n^2*dilog((g*(e*x+d)
-d*g+e*f)/(-d*g+e*f))/g*ln(e*x+d)-2*b^2*n^2*ln(e*x+d)^2*ln((g*(e*x+d)-d*g+e
*f)/(-d*g+e*f))/g+1/2*ln(g*x+f)/g*Pi^2*b^2*csgn(I*c)*csgn(I*(e*x+d)^n)^2*cs
gn(I*c*(e*x+d)^n)^3+2*b*ln(g*x+f)/g*ln((e*x+d)^n)*a+2*ln(g*x+f)/g*ln((e*x+d
)^n)*b^2*ln(c)+I/g*n*dilog((d*g-e*f+(g*x+f)*e)/(d*g-e*f))*b^2*Pi*csgn(I*c*(
e*x+d)^n)^3-1/4*ln(g*x+f)/g*Pi^2*b^2*csgn(I*c)^2*csgn(I*(e*x+d)^n)^2*csgn(I
*c*(e*x+d)^n)^2-ln(g*x+f)/g*Pi^2*b^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(
e*x+d)^n)^4-1/4*ln(g*x+f)/g*Pi^2*b^2*csgn(I*c)^2*csgn(I*c*(e*x+d)^n)^4-I*ln
(g*x+f)/g*ln((e*x+d)^n)*b^2*Pi*csgn(I*c*(e*x+d)^n)^3-2/g*n*ln(g*x+f)*ln((d*
g-e*f+(g*x+f)*e)/(d*g-e*f))*b^2*ln(c)-2*b/g*n*ln(g*x+f)*ln((d*g-e*f+(g*x+f)
*e)/(d*g-e*f))*a-1/4*ln(g*x+f)/g*Pi^2*b^2*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x
+d)^n)^4+1/2*ln(g*x+f)/g*Pi^2*b^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^5-2
*b^2*ln(g*(e*x+d)-d*g+e*f)/g*ln(e*x+d)*ln((e*x+d)^n)*n+2*b^2*n*ln(e*x+d)*ln
((g*(e*x+d)-d*g+e*f)/(-d*g+e*f))/g*ln((e*x+d)^n)+1/2*ln(g*x+f)/g*Pi^2*b^2*c
sgn(I*c)*csgn(I*c*(e*x+d)^n)^5
```

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

$$\frac{a^2\log\left(gx+f\right)}{g}+\int\frac{b^2\log\left((ex+d)^n\right)^2+b^2\log(c)^2+2\,ab\log(c)+2\left(b^2\log(c)+ab\right)\log\left((ex+d)^n\right)}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\int \frac{\left(a+b\,\ln\left(c\,(d+e\,x)^n\right)\right)^2}{f+g\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

$$\int \frac{\left(a+b\log\left(c\,(d+ex)^n\right)\right)^2}{f+gx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2/(g*x+f),x)
[Out] Integral((a + b*log(c*(d + e*x)**n))**2/(f + g*x), x)
```

3.49 $\int \frac{(a+b\log(c(d+ex)^n))^2}{(f+gx)^2}\,dx$

Optimal. Leaf size=132

$$-\frac{2ben\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g(ef-dg)}+\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{(f+gx)(ef-dg)}-\frac{2b^2en^2\text{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)}{g(ef-dg)}$$

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

Rubi [A] time = 0.09, antiderivative size = 132, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {2397, 2394, 2393, 2391}

$$-\frac{2b^2en^2\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g(ef-dg)}-\frac{2ben\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g(ef-dg)}+\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{(f+gx)(ef-dg)}$$

Antiderivative was successfully verified.

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

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

Rule 2391

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

Rule 2393

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

Rule 2394

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

Rule 2397

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_))^2, x_Symbol] :> Simp[((d + e*x)*(a + b*Log[c*(d + e*x)^n])^p)/((e*f
 - d*g)*(f + g*x)), x] - Dist[(b*e*n*p)/(e*f - d*g), Int[(a + b*Log[c*(d +
e*x)^n])^(p - 1)/(f + g*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] &&
 NeQ[e*f - d*g, 0] && GtQ[p, 0]
```

Rubi steps

$$\int \frac{\left(a+b\log \left(c(d+ex)^n\right)\right)^2}{(f+gx)^2}\,dx = \frac{(d+ex)\left(a+b\log \left(c(d+ex)^n\right)\right)^2}{(ef-dg)(f+gx)} - \frac{(2ben)\int \frac{a+b\log(c(d+ex)^n)}{f+gx}\,dx}{ef-dg}$$

$$= \frac{(d+ex)\left(a+b\log \left(c(d+ex)^n\right)\right)^2}{(ef-dg)(f+gx)} - \frac{2ben\left(a+b\log \left(c(d+ex)^n\right)\right)\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g(ef-dg)} +$$

$$= \frac{(d+ex)\left(a+b\log \left(c(d+ex)^n\right)\right)^2}{(ef-dg)(f+gx)} - \frac{2ben\left(a+b\log \left(c(d+ex)^n\right)\right)\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g(ef-dg)} +$$

$$= \frac{(d+ex)\left(a+b\log \left(c(d+ex)^n\right)\right)^2}{(ef-dg)(f+gx)} - \frac{2ben\left(a+b\log \left(c(d+ex)^n\right)\right)\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g(ef-dg)} -$$

Mathematica [A] time = 0.09, size = 126, normalized size = 0.95

$$\frac{2b^2en^2(f+gx)\text{Li}_2\left(\frac{g(d+ex)}{dg-ef}\right) - \left(a+b\log \left(c(d+ex)^n\right)\right)\left(ag(d+ex)+bg(d+ex)\log \left(c(d+ex)^n\right) - 2ben(f+gx)\log\right.}{g(f+gx)(dg-ef)}$$

Antiderivative was successfully verified.

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

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

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b^2\log\left(\left(ex+d\right)^n c\right)^2 + 2\,ab\log\left(\left(ex+d\right)^n c\right) + a^2}{g^2x^2+2\,fgx+f^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\int \frac{\left(b\log\left(\left(ex+d\right)^n c\right)+a\right)^2}{\left(gx+f\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

maple [C] time = 0.38, size = 1092, normalized size = 8.27

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$2\,aben\left(\frac{\log\left(ex+d\right)}{efg-dg^2}-\frac{\log\left(gx+f\right)}{efg-dg^2}\right)-b^2\left(\frac{\log\left(\left(ex+d\right)^n\right)^2}{g^2x+fg}-\int\frac{egx\log(c)^2+dg\log(c)^2+2\left(efn+dg\log(c)+\right.}{eg^3x^3+df^2g+\left(2\,efg^2+dg^3\right)x}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\int \frac{\left(a + b \log{\left(c \left(d + e x\right)^{n} \right)}\right)^{2}}{\left(f + g x\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.50 $\int \frac{(a+b\log(c(d+ex)^n))^2}{(f+gx)^3}\,dx$

Optimal. Leaf size=202

$$-\frac{be^2n\log\left(\frac{ef-dg}{g(d+ex)}+1\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g(ef-dg)^2}-\frac{ben(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)}{(f+gx)(ef-dg)^2}-\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2g(f+gx)^2}+\frac{b}{}$$

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

Rubi [A] time = 0.39, antiderivative size = 233, normalized size of antiderivative = 1.15, number of steps used = 9, number of rules used = 9, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.375, Rules used = {2398, 2411, 2347, 2344, 2301, 2317, 2391, 2314, 31}

$$-\frac{b^2e^2n^2\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g(ef-dg)^2}+\frac{e^2\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2g(ef-dg)^2}-\frac{be^2n\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g(ef-dg)^2}-\frac{ben(d+e}{(}$$

Antiderivative was successfully verified.

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

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

Rule 31

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

Rule 2301

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

Rule 2314

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_), x
_Symbol] :> Simp[(x*(d + e*x^r)^(q + 1)*(a + b*Log[c*x^n]))/d, x] - Dist[(b
*n)/d, Int[(d + e*x^r)^(q + 1), x], x] /; FreeQ[{a, b, c, d, e, n, q, r}, x
] && EqQ[r*(q + 1) + 1, 0]
```

Rule 2317

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

Rule 2344

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

```
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2347

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/x
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2391

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

Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{(f+gx)^3}\,dx = -\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2g(f+gx)^2}+\frac{(ben)\int \frac{a+b\log(c(d+ex)^n)}{(d+ex)(f+gx)^2}\,dx}{g}$$

$$= -\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2g(f+gx)^2}+\frac{(bn)\,\text{Subst}\left(\int \frac{a+b\log(cx^n)}{x\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^2}\,dx,x,d+ex\right)}{g}$$

$$= -\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2g(f+gx)^2}-\frac{(bn)\,\text{Subst}\left(\int \frac{a+b\log(cx^n)}{\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^2}\,dx,x,d+ex\right)}{ef-dg}+\frac{(ben)\,\text{S}}{}$$

$$= -\frac{ben(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)}{(ef-dg)^2(f+gx)}-\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2g(f+gx)^2}-\frac{(ben)\,\text{Sub}}{}$$

$$= -\frac{ben(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)}{(ef-dg)^2(f+gx)}+\frac{e^2\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2g(ef-dg)^2}-\frac{(a+b}{2}$$

$$= -\frac{ben(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)}{(ef-dg)^2(f+gx)}+\frac{e^2\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2g(ef-dg)^2}-\frac{(a+b}{2}$$

Mathematica [A] time = 0.20, size = 204, normalized size = 1.01

$$\frac{\frac{e(f+gx)\left(2bn(ef-dg)\left(a+b\log(c(d+ex)^n)\right)-2ben(f+gx)\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log(c(d+ex)^n)\right)+e(f+gx)\left(a+b\log(c(d+ex)^n)\right)^2-2b^2en^2(f+gx)\text{Li}_2\left(\frac{g(d+ex)}{dg-ef}\right)-2b^2}{(ef-dg)^2}}{2g(f+gx)^2}$$

Antiderivative was successfully verified.

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

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

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b^2\log\left((ex+d)^n c\right)^2 + 2\,ab\log\left((ex+d)^n c\right) + a^2}{g^3x^3 + 3\,fg^2x^2 + 3\,f^2gx + f^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^3,x, algorithm="fricas")
```

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

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

$$\int \frac{\left(b\log\left((ex+d)^n c\right) + a\right)^2}{\left(gx+f\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^3,x, algorithm="giac")
```

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

maple [C] time = 0.47, size = 1473, normalized size = 7.29

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/2*I/g*n*e/(d*g-e*f)/(g*x+f)*Pi*b^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)
^2-1/2*I/g*n*e^2/(d*g-e*f)^2*ln(g*x+f)*Pi*b^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)
^2-1/8*(-I*Pi*b*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*Pi*b*csgn
(I*c)*csgn(I*c*(e*x+d)^n)^2+I*Pi*b*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-
I*Pi*b*csgn(I*c*(e*x+d)^n)^3+2*b*ln(c)+2*a)^2/(g*x+f)^2/g-1/2*b^2/(g*x+f)^2
/g*ln((e*x+d)^n)^2+1/2*I/g*n*e^2/(d*g-e*f)^2*ln(e*x+d)*Pi*b^2*csgn(I*c)*csg
n(I*c*(e*x+d)^n)^2-1/2*I/(g*x+f)^2/g*ln((e*x+d)^n)*Pi*b^2*csgn(I*c)*csgn(I*
c*(e*x+d)^n)^2+1/2*I/g*n*e/(d*g-e*f)/(g*x+f)*Pi*b^2*csgn(I*c)*csgn(I*(e*x+d
)^n)*csgn(I*c*(e*x+d)^n)+1/2*I/g*n*e^2/(d*g-e*f)^2*ln(g*x+f)*Pi*b^2*csgn(I*
c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-b^2/g*n^2*e^2/(d*g-e*f)^2*ln(e*x+d
)+b^2/g*n^2*e^2/(d*g-e*f)^2*dilog((d*g-e*f+(g*x+f)*e)/(d*g-e*f))-b/g*n*e^2/
(d*g-e*f)^2*ln(g*x+f)*a+b/g*n*e^2/(d*g-e*f)^2*ln(e*x+d)*a-1/g*n*e^2/(d*g-e*
f)^2*ln(g*x+f)*b^2*ln(c)+1/g*n*e^2/(d*g-e*f)^2*ln(e*x+d)*b^2*ln(c)-1/g*n*e/
```

```
(d*g-e*f)/(g*x+f)*b^2*ln(c)-1/2*I/g*n*e^2/(d*g-e*f)^2*ln(e*x+d)*Pi*b^2*csgn
(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/2*I/(g*x+f)^2/g*ln((e*x+d)^n)
*Pi*b^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-b^2/g*n*e*ln((e*x+d)^n)/(d*
g-e*f)/(g*x+f)-b^2/g*n*e^2*ln((e*x+d)^n)/(d*g-e*f)^2*ln(g*x+f)+b^2/g*n*e^2*
ln((e*x+d)^n)/(d*g-e*f)^2*ln(e*x+d)+1/2*I/(g*x+f)^2/g*ln((e*x+d)^n)*Pi*b^2*
csgn(I*c*(e*x+d)^n)^3-b/(g*x+f)^2/g*ln((e*x+d)^n)*a-1/(g*x+f)^2/g*ln((e*x+d
)^n)*b^2*ln(c)-1/2*I/g*n*e^2/(d*g-e*f)^2*ln(g*x+f)*Pi*b^2*csgn(I*(e*x+d)^n)
*csgn(I*c*(e*x+d)^n)^2+b^2/g*n^2*e^2/(d*g-e*f)^2*ln(g*x+f)*ln((d*g-e*f+(g*x
+f)*e)/(d*g-e*f))+1/2*I/g*n*e^2/(d*g-e*f)^2*ln(e*x+d)*Pi*b^2*csgn(I*(e*x+d)
^n)*csgn(I*c*(e*x+d)^n)^2-1/2*I/g*n*e/(d*g-e*f)/(g*x+f)*Pi*b^2*csgn(I*c)*cs
gn(I*c*(e*x+d)^n)^2+1/2*I/(g*x+f)^2/g*ln((e*x+d)^n)*Pi*b^2*csgn(I*c)*csgn(I
*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/2*I/g*n*e/(d*g-e*f)/(g*x+f)*Pi*b^2*csgn(I
*c*(e*x+d)^n)^3+1/2*I/g*n*e^2/(d*g-e*f)^2*ln(g*x+f)*Pi*b^2*csgn(I*c*(e*x+d)
^n)^3-1/2*I/g*n*e^2/(d*g-e*f)^2*ln(e*x+d)*Pi*b^2*csgn(I*c*(e*x+d)^n)^3-1/2*
b^2/g*n^2*e^2/(d*g-e*f)^2*ln(e*x+d)^2+b^2/g*n^2*e^2/(d*g-e*f)^2*ln(g*x+f)-b
/g*n*e/(d*g-e*f)/(g*x+f)*a
```

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

$$aben\left(\frac{e\log(ex+d)}{e^2f^2g-2defg^2+d^2g^3}-\frac{e\log\left(gx+f\right)}{e^2f^2g-2defg^2+d^2g^3}+\frac{1}{ef^2g-dfg^2+\left(efg^2-dg^3\right)x}\right)-\frac{1}{2}b^2\left(\frac{\log\left((ex+d\right.}{g^3x^2+2fg^2x}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^3,x, algorithm="maxima")
```

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

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

$$\int \frac{{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^2}{{\left(f+g\,x\right)}^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\int \frac{\left(a+b\log\left(c\left(d+ex\right)^{n}\right)\right)^{2}}{\left(f+gx\right)^{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.51 $\int \frac{\left(a+b\log(c(d+ex)^n)\right)^2}{(f+gx)^4}\,dx$

Optimal. Leaf size=317

$$-\frac{2be^3n\log\left(\frac{ef-dg}{g(d+ex)}+1\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{3g(ef-dg)^3}-\frac{2be^2n(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)}{3(f+gx)(ef-dg)^3}+\frac{ben\left(a+b\log\left(c(d+ex\right.\right.}{3g(f+gx)^2(ef-dg}$$

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

Rubi [A] time = 0.60, antiderivative size = 347, normalized size of antiderivative = 1.09, number of steps used = 13, number of rules used = 11, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.458, Rules used = {2398, 2411, 2347, 2344, 2301, 2317, 2391, 2314, 31, 2319, 44}

$$-\frac{2b^2e^3n^2\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{3g(ef-dg)^3}+\frac{e^3\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{3g(ef-dg)^3}-\frac{2be^3n\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{3g(ef-dg)^3}-\frac{2be^2n(}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^2/(f + g*x)^4,x]
```

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

Rule 31

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

Rule 44

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

Rule 2301

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

Rule 2314

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_), x
_Symbol] :> Simp[(x*(d + e*x^r)^(q + 1)*(a + b*Log[c*x^n]))/d, x] - Dist[(b
*n)/d, Int[(d + e*x^r)^(q + 1), x], x] /; FreeQ[{a, b, c, d, e, n, q, r}, x
```

```
] && EqQ[r*(q + 1) + 1, 0]
```

Rule 2317

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

Rule 2319

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/(e*(q + 1)), x]
- Dist[(b*n*p)/(e*(q + 1)), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2347

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/x
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2391

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

Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{(f+gx)^4}\,dx = -\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{3g(f+gx)^3} + \frac{(2ben)\int \frac{a+b\log(c(d+ex)^n)}{(d+ex)(f+gx)^3}\,dx}{3g}$$

$$= -\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{3g(f+gx)^3} + \frac{(2bn)\,\mathrm{Subst}\left(\int \frac{a+b\log(cx^n)}{x\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^3}\,dx, x, d+ex\right)}{3g}$$

$$= -\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{3g(f+gx)^3} - \frac{(2bn)\,\mathrm{Subst}\left(\int \frac{a+b\log(cx^n)}{\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^3}\,dx, x, d+ex\right)}{3(ef-dg)} + \frac{(2ben)\,\mathrm{S}}{}$$

$$= \frac{ben\left(a+b\log\left(c(d+ex)^n\right)\right)}{3g(ef-dg)(f+gx)^2} - \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{3g(f+gx)^3} - \frac{(2ben)\,\mathrm{Subst}\left(\int \frac{a+b\log}{\left(\frac{ef-dg}{e}\right.}\right.}{3(ef-}$$

$$= \frac{ben\left(a+b\log\left(c(d+ex)^n\right)\right)}{3g(ef-dg)(f+gx)^2} - \frac{2be^2n(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)}{3(ef-dg)^3(f+gx)} - \frac{\left(a+b\log\right.}{3g}$$

$$= -\frac{b^2e^2n^2}{3g(ef-dg)^2(f+gx)} - \frac{b^2e^3n^2\log(d+ex)}{3g(ef-dg)^3} + \frac{ben\left(a+b\log\left(c(d+ex)^n\right)\right)}{3g(ef-dg)(f+gx)^2} - \frac{2b}{}$$

$$= -\frac{b^2e^2n^2}{3g(ef-dg)^2(f+gx)} - \frac{b^2e^3n^2\log(d+ex)}{3g(ef-dg)^3} + \frac{ben\left(a+b\log\left(c(d+ex)^n\right)\right)}{3g(ef-dg)(f+gx)^2} - \frac{2b}{}$$

Mathematica [A] time = 0.34, size = 302, normalized size = 0.95

$$\frac{e(f+gx)\left(e^2(f+gx)^2\left(a+b\log(c(d+ex)^n)\right)^2-2be^2n(f+gx)^2\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log(c(d+ex)^n)\right)+bn(ef-dg)^2\left(a+b\log(c(d+ex)^n)\right)+2ben(f+gx)(ef-dg)\left(a+b\log\right.}{(ef-}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^2/(f + g*x)^4,x]
```

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

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{b^2\log\left((ex+d)^n c\right)^2 + 2\,ab\log\left((ex+d)^n c\right) + a^2}{g^4x^4 + 4\,fg^3x^3 + 6\,f^2g^2x^2 + 4\,f^3gx + f^4}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^4,x, algorithm="fricas")
```

```
[Out] integral((b^2*log((e*x + d)^n*c)^2 + 2*a*b*log((e*x + d)^n*c) + a^2)/(g^4*x
^4 + 4*f*g^3*x^3 + 6*f^2*g^2*x^2 + 4*f^3*g*x + f^4), x)
```

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

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)^2}{\left(gx+f\right)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^4,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2/(g*x + f)^4, x)
```

maple [C] time = 0.54, size = 1815, normalized size = 5.73

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)^2/(g*x+f)^4,x)
```

```
[Out] -1/6*I/g*n*e/(d*g-e*f)/(g*x+f)^2*Pi*b^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^
n)^2-1/12*(-I*Pi*b*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*Pi*b*c
sgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*Pi*b*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)
^2-I*Pi*b*csgn(I*c*(e*x+d)^n)^3+2*b*ln(c)+2*a)^2/(g*x+f)^3/g+1/3*I/g*n*e^3/
(d*g-e*f)^3*ln(g*x+f)*Pi*b^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/3*b^2/(g*x+f
)^3/g*ln((e*x+d)^n)^2+1/3*I/(g*x+f)^3/g*ln((e*x+d)^n)*Pi*b^2*csgn(I*c*(e*x+
d)^n)^3-1/3*b^2/g*n*e*ln((e*x+d)^n)/(d*g-e*f)/(g*x+f)^2+2/3*b^2/g*n*e^3*ln(
(e*x+d)^n)/(d*g-e*f)^3*ln(g*x+f)+2/3*b^2/g*n*e^2*ln((e*x+d)^n)/(d*g-e*f)^2/
(g*x+f)-2/3*b^2/g*n*e^3*ln((e*x+d)^n)/(d*g-e*f)^3*ln(e*x+d)-2/3*b^2/g*n^2*e
^3/(d*g-e*f)^3*ln(g*x+f)*ln((d*g-e*f+(g*x+f)*e)/(d*g-e*f))-1/3*I/g*n*e^2/(d
*g-e*f)^2/(g*x+f)*Pi*b^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/
3*I/g*n*e^3/(d*g-e*f)^3*ln(e*x+d)*Pi*b^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I
*c*(e*x+d)^n)-1/3*b^2/g*n^2*e^2/(d*g-e*f)^2/(g*x+f)-b^2/g*n^2*e^3/(d*g-e*f)
^3*ln(g*x+f)+b^2/g*n^2*e^3/(d*g-e*f)^3*ln(e*x+d)+1/3*b^2/g*n^2*e^3/(d*g-e*f
)^3*ln(e*x+d)^2-2/3*b^2/g*n^2*e^3/(d*g-e*f)^3*dilog((d*g-e*f+(g*x+f)*e)/(d*
g-e*f))+2/3*b/g*n*e^3/(d*g-e*f)^3*ln(g*x+f)*a-2/3*b/g*n*e^3/(d*g-e*f)^3*ln(
e*x+d)*a+2/3/g*n*e^3/(d*g-e*f)^3*ln(g*x+f)*b^2*ln(c)-2/3/g*n*e^3/(d*g-e*f)^
3*ln(e*x+d)*b^2*ln(c)-1/3/g*n*e/(d*g-e*f)/(g*x+f)^2*b^2*ln(c)+2/3/g*n*e^2/(
d*g-e*f)^2/(g*x+f)*b^2*ln(c)-1/3*I/g*n*e^3/(d*g-e*f)^3*ln(g*x+f)*Pi*b^2*csg
n(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/6*I/g*n*e/(d*g-e*f)/(g*x+f)^
2*Pi*b^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/3*I/g*n*e^2/(d*g
-e*f)^2/(g*x+f)*Pi*b^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/3*I/g*n*e^
3/(d*g-e*f)^3*ln(e*x+d)*Pi*b^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/3*I/g*n*e^
3/(d*g-e*f)^3*ln(e*x+d)*Pi*b^2*csgn(I*c*(e*x+d)^n)^3+1/3*I/(g*x+f)^3/g*ln((
e*x+d)^n)*Pi*b^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+2/3*b/g*n*
e^2/(d*g-e*f)^2/(g*x+f)*a-1/3*b/g*n*e/(d*g-e*f)/(g*x+f)^2*a-1/3*I/(g*x+f)^3
/g*ln((e*x+d)^n)*Pi*b^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/3*I/(g*x+f)^3/g*l
n((e*x+d)^n)*Pi*b^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-2/3*b/(g*x+f)^3
/g*ln((e*x+d)^n)*a-2/3/(g*x+f)^3/g*ln((e*x+d)^n)*b^2*ln(c)-1/3*I/g*n*e^2/(d
*g-e*f)^2/(g*x+f)*Pi*b^2*csgn(I*c*(e*x+d)^n)^3+1/6*I/g*n*e/(d*g-e*f)/(g*x+f
)^2*Pi*b^2*csgn(I*c*(e*x+d)^n)^3-1/3*I/g*n*e^3/(d*g-e*f)^3*ln(g*x+f)*Pi*b^2
*csgn(I*c*(e*x+d)^n)^3-1/3*I/g*n*e^3/(d*g-e*f)^3*ln(e*x+d)*Pi*b^2*csgn(I*(e
*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/3*I/g*n*e^2/(d*g-e*f)^2/(g*x+f)*Pi*b^2*csg
n(I*c)*csgn(I*c*(e*x+d)^n)^2-1/6*I/g*n*e/(d*g-e*f)/(g*x+f)^2*Pi*b^2*csgn(I*
c)*csgn(I*c*(e*x+d)^n)^2+1/3*I/g*n*e^3/(d*g-e*f)^3*ln(g*x+f)*Pi*b^2*csgn(I*
(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2
```

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

$$\frac{1}{3}\left(\frac{2\,e^2\log\left(ex+d\right)}{e^3f^3g-3\,de^2f^2g^2+3\,d^2efg^3-d^3g^4}-\frac{2\,e^2\log\left(gx+f\right)}{e^3f^3g-3\,de^2f^2g^2+3\,d^2efg^3-d^3g^4}+\frac{}{e^2f^4g-2\,def^3g^2+d^2f^2g^3+\left(\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^4,x, algorithm="maxima")
```

```
[Out] 1/3*(2*e^2*log(e*x + d)/(e^3*f^3*g - 3*d*e^2*f^2*g^2 + 3*d^2*e*f*g^3 - d^3*
g^4) - 2*e^2*log(g*x + f)/(e^3*f^3*g - 3*d*e^2*f^2*g^2 + 3*d^2*e*f*g^3 - d^
3*g^4) + (2*e*g*x + 3*e*f - d*g)/(e^2*f^4*g - 2*d*e*f^3*g^2 + d^2*f^2*g^3 +
 (e^2*f^2*g^3 - 2*d*e*f*g^4 + d^2*g^5)*x^2 + 2*(e^2*f^3*g^2 - 2*d*e*f^2*g^3
 + d^2*f*g^4)*x))*a*b*e*n - 1/3*b^2*(log((e*x + d)^n)^2/(g^4*x^3 + 3*f*g^3*
x^2 + 3*f^2*g^2*x + f^3*g) - 3*integrate(1/3*(3*e*g*x*log(c)^2 + 3*d*g*log(
c)^2 + 2*(e*f*n + 3*d*g*log(c) + (e*g*n + 3*e*g*log(c))*x)*log((e*x + d)^n)
)/(e*g^5*x^5 + d*f^4*g + (4*e*f*g^4 + d*g^5)*x^4 + 2*(3*e*f^2*g^3 + 2*d*f*g
^4)*x^3 + 2*(2*e*f^3*g^2 + 3*d*f^2*g^3)*x^2 + (e*f^4*g + 4*d*f^3*g^2)*x), x
)) - 2/3*a*b*log((e*x + d)^n*c)/(g^4*x^3 + 3*f*g^3*x^2 + 3*f^2*g^2*x + f^3*
g) - 1/3*a^2/(g^4*x^3 + 3*f*g^3*x^2 + 3*f^2*g^2*x + f^3*g)
```

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

$$\int \frac{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)^2}{{\left(f+g\,x\right)}^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^2/(f + g*x)^4,x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))^2/(f + g*x)^4, x)
```

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

$$\int \frac{\left(a+b\log\left(c\left(d+ex\right)^{n}\right)\right)^{2}}{\left(f+gx\right)^{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2/(g*x+f)**4,x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**2/(f + g*x)**4, x)
```

3.52 $\int (f+gx)^3 \left(a+b\log\left(c(d+ex)^n\right)\right)^3 dx$

Optimal. Leaf size=598

$$\frac{2b^2g^2n^2(d+ex)^3(ef-dg)\left(a+b\log\left(c(d+ex)^n\right)\right)}{3e^4}+\frac{9b^2gn^2(d+ex)^2(ef-dg)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{4e^4}+\frac{3b^2g^3}{}$$

```
[Out] 6*a*b^2*(-d*g+e*f)^3*n^2*x/e^3-6*b^3*(-d*g+e*f)^3*n^3*x/e^3-9/8*b^3*g*(-d*g
+e*f)^2*n^3*(e*x+d)^2/e^4-2/9*b^3*g^2*(-d*g+e*f)*n^3*(e*x+d)^3/e^4-3/128*b^
3*g^3*n^3*(e*x+d)^4/e^4+6*b^3*(-d*g+e*f)^3*n^2*(e*x+d)*ln(c*(e*x+d)^n)/e^4+
9/4*b^2*g*(-d*g+e*f)^2*n^2*(e*x+d)^2*(a+b*ln(c*(e*x+d)^n))/e^4+2/3*b^2*g^2*
(-d*g+e*f)*n^2*(e*x+d)^3*(a+b*ln(c*(e*x+d)^n))/e^4+3/32*b^2*g^3*n^2*(e*x+d)
^4*(a+b*ln(c*(e*x+d)^n))/e^4-3*b*(-d*g+e*f)^3*n*(e*x+d)*(a+b*ln(c*(e*x+d)^n
))^2/e^4-9/4*b*g*(-d*g+e*f)^2*n*(e*x+d)^2*(a+b*ln(c*(e*x+d)^n))^2/e^4-b*g^2
*(-d*g+e*f)*n*(e*x+d)^3*(a+b*ln(c*(e*x+d)^n))^2/e^4-3/16*b*g^3*n*(e*x+d)^4*
(a+b*ln(c*(e*x+d)^n))^2/e^4+(-d*g+e*f)^3*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^3/e^
4+3/2*g*(-d*g+e*f)^2*(e*x+d)^2*(a+b*ln(c*(e*x+d)^n))^3/e^4+g^2*(-d*g+e*f)*(
e*x+d)^3*(a+b*ln(c*(e*x+d)^n))^3/e^4+1/4*g^3*(e*x+d)^4*(a+b*ln(c*(e*x+d)^n)
)^3/e^4
```

Rubi [A] time = 0.55, antiderivative size = 598, normalized size of antiderivative = 1.00, number of steps used = 19, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.292, Rules used = {2401, 2389, 2296, 2295, 2390, 2305, 2304}

$$\frac{2b^2g^2n^2(d+ex)^3(ef-dg)\left(a+b\log\left(c(d+ex)^n\right)\right)}{3e^4}+\frac{9b^2gn^2(d+ex)^2(ef-dg)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{4e^4}+\frac{3b^2g^3}{}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^3*(a + b*Log[c*(d + e*x)^n])^3,x]
```

```
[Out] (6*a*b^2*(e*f - d*g)^3*n^2*x)/e^3 - (6*b^3*(e*f - d*g)^3*n^3*x)/e^3 - (9*b^
3*g*(e*f - d*g)^2*n^3*(d + e*x)^2)/(8*e^4) - (2*b^3*g^2*(e*f - d*g)*n^3*(d
+ e*x)^3)/(9*e^4) - (3*b^3*g^3*n^3*(d + e*x)^4)/(128*e^4) + (6*b^3*(e*f - d
*g)^3*n^2*(d + e*x)*Log[c*(d + e*x)^n])/e^4 + (9*b^2*g*(e*f - d*g)^2*n^2*(d
 + e*x)^2*(a + b*Log[c*(d + e*x)^n]))/(4*e^4) + (2*b^2*g^2*(e*f - d*g)*n^2*
(d + e*x)^3*(a + b*Log[c*(d + e*x)^n]))/(3*e^4) + (3*b^2*g^3*n^2*(d + e*x)^
4*(a + b*Log[c*(d + e*x)^n]))/(32*e^4) - (3*b*(e*f - d*g)^3*n*(d + e*x)*(a
+ b*Log[c*(d + e*x)^n])^2)/e^4 - (9*b*g*(e*f - d*g)^2*n*(d + e*x)^2*(a + b*
Log[c*(d + e*x)^n])^2)/(4*e^4) - (b*g^2*(e*f - d*g)*n*(d + e*x)^3*(a + b*Lo
g[c*(d + e*x)^n])^2)/e^4 - (3*b*g^3*n*(d + e*x)^4*(a + b*Log[c*(d + e*x)^n]
)^2)/(16*e^4) + ((e*f - d*g)^3*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^3)/e^4
+ (3*g*(e*f - d*g)^2*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n])^3)/(2*e^4) + (g
^2*(e*f - d*g)*(d + e*x)^3*(a + b*Log[c*(d + e*x)^n])^3)/e^4 + (g^3*(d + e*
x)^4*(a + b*Log[c*(d + e*x)^n])^3)/(4*e^4)
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2390

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

Rule 2401

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

Rubi steps

$$\int (f+gx)^3\left(a+b\log\left(c(d+ex)^n\right)\right)^3\,dx=\int\left(\frac{(ef-dg)^3\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{e^3}+\frac{3g(ef-dg)^2(d+ex)\left(a+b\right.}{e^3}\right.$$

$$=\frac{g^3\int(d+ex)^3\left(a+b\log\left(c(d+ex)^n\right)\right)^3\,dx}{e^3}+\frac{\left(3g^2(ef-dg)\right)\int(d+ex)^2}{}$$

$$=\frac{g^3\,\mathrm{Subst}\left(\int x^3\left(a+b\log\left(cx^n\right)\right)^3\,dx,x,d+ex\right)}{e^4}+\frac{\left(3g^2(ef-dg)\right)\mathrm{Subs}}{}$$

$$=\frac{(ef-dg)^3(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{e^4}+\frac{3g(ef-dg)^2(d+ex)^2\left(a\right.}{2e}$$

$$=-\frac{3b(ef-dg)^3n(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{e^4}-\frac{9bg(ef-dg)^2n(d+}{}$$

$$=\frac{6ab^2(ef-dg)^3n^2x}{e^3}-\frac{9b^3g(ef-dg)^2n^3(d+ex)^2}{8e^4}-\frac{2b^3g^2(ef-dg)n^3(d}{9e^4}$$

$$=\frac{6ab^2(ef-dg)^3n^2x}{e^3}-\frac{6b^3(ef-dg)^3n^3x}{e^3}-\frac{9b^3g(ef-dg)^2n^3(d+ex)^2}{8e^4}-$$

Mathematica [A] time = 0.43, size = 475, normalized size = 0.79

$$\frac{-128bg^2n(ef-dg)\left(2bn\left(benx\left(3d^2+3dex+e^2x^2\right)-3(d+ex)^3\left(a+b\log\left(c(d+ex)^n\right)\right)\right)+9(d+ex)^3\left(a+b\log\left(\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^3*(a + b*Log[c*(d + e*x)^n])^3,x]
```

```
[Out] (1152*(e*f - d*g)^3*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^3 + 1728*g*(e*f -
d*g)^2*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n])^3 + 1152*g^2*(e*f - d*g)*(d +
 e*x)^3*(a + b*Log[c*(d + e*x)^n])^3 + 288*g^3*(d + e*x)^4*(a + b*Log[c*(d
+ e*x)^n])^3 - 3456*b*(e*f - d*g)^3*n*((d + e*x)*(a + b*Log[c*(d + e*x)^n])
^2 - 2*b*n*(e*(a - b*n)*x + b*(d + e*x)*Log[c*(d + e*x)^n])) - 1296*b*g*(e*
f - d*g)^2*n*(2*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n])^2 + b*n*(b*e*n*x*(2*
d + e*x) - 2*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n]))) - 128*b*g^2*(e*f - d*
g)*n*(9*(d + e*x)^3*(a + b*Log[c*(d + e*x)^n])^2 + 2*b*n*(b*e*n*x*(3*d^2 +
3*d*e*x + e^2*x^2) - 3*(d + e*x)^3*(a + b*Log[c*(d + e*x)^n]))) - 27*b*g^3*
n*(8*(d + e*x)^4*(a + b*Log[c*(d + e*x)^n])^2 + b*n*(b*e*n*x*(4*d^3 + 6*d^2
*e*x + 4*d*e^2*x^2 + e^3*x^3) - 4*(d + e*x)^4*(a + b*Log[c*(d + e*x)^n]))))
/(1152*e^4)
```

fricas [B] time = 0.58, size = 2802, normalized size = 4.69

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/1152*(9*(3*b^3*e^4*g^3*n^3 - 12*a*b^2*e^4*g^3*n^2 + 24*a^2*b*e^4*g^3*n -
 32*a^3*e^4*g^3)*x^4 - 4*(288*a^3*e^4*f*g^2 - (64*b^3*e^4*f*g^2 - 37*b^3*d*
e^3*g^3)*n^3 + 12*(16*a*b^2*e^4*f*g^2 - 7*a*b^2*d*e^3*g^3)*n^2 - 72*(4*a^2*
b*e^4*f*g^2 - a^2*b*d*e^3*g^3)*n)*x^3 - 288*(b^3*e^4*g^3*n^3*x^4 + 4*b^3*e^
4*f*g^2*n^3*x^3 + 6*b^3*e^4*f^2*g*n^3*x^2 + 4*b^3*e^4*f^3*n^3*x + (4*b^3*d*
e^3*f^3 - 6*b^3*d^2*e^2*f^2*g + 4*b^3*d^3*e*f*g^2 - b^3*d^4*g^3)*n^3)*log(e
*x + d)^3 - 288*(b^3*e^4*g^3*x^4 + 4*b^3*e^4*f*g^2*x^3 + 6*b^3*e^4*f^2*g*x^
2 + 4*b^3*e^4*f^3*x)*log(c)^3 - 6*(288*a^3*e^4*f^2*g - (216*b^3*e^4*f^2*g -
 304*b^3*d*e^3*f*g^2 + 115*b^3*d^2*e^2*g^3)*n^3 + 12*(36*a*b^2*e^4*f^2*g -
40*a*b^2*d*e^3*f*g^2 + 13*a*b^2*d^2*e^2*g^3)*n^2 - 72*(6*a^2*b*e^4*f^2*g -
4*a^2*b*d*e^3*f*g^2 + a^2*b*d^2*e^2*g^3)*n)*x^2 + 72*(3*(b^3*e^4*g^3*n^3 -
4*a*b^2*e^4*g^3*n^2)*x^4 + (48*b^3*d*e^3*f^3 - 108*b^3*d^2*e^2*f^2*g + 88*b
^3*d^3*e*f*g^2 - 25*b^3*d^4*g^3)*n^3 - 4*(12*a*b^2*e^4*f*g^2*n^2 - (4*b^3*e
^4*f*g^2 - b^3*d*e^3*g^3)*n^3)*x^3 - 12*(4*a*b^2*d*e^3*f^3 - 6*a*b^2*d^2*e^
2*f^2*g + 4*a*b^2*d^3*e*f*g^2 - a*b^2*d^4*g^3)*n^2 - 6*(12*a*b^2*e^4*f^2*g*
n^2 - (6*b^3*e^4*f^2*g - 4*b^3*d*e^3*f*g^2 + b^3*d^2*e^2*g^3)*n^3)*x^2 - 12
*(4*a*b^2*e^4*f^3*n^2 - (4*b^3*e^4*f^3 - 6*b^3*d*e^3*f^2*g + 4*b^3*d^2*e^2*
f*g^2 - b^3*d^3*e*g^3)*n^3)*x - 12*(b^3*e^4*g^3*n^2*x^4 + 4*b^3*e^4*f*g^2*n
^2*x^3 + 6*b^3*e^4*f^2*g*n^2*x^2 + 4*b^3*e^4*f^3*n^2*x + (4*b^3*d*e^3*f^3 -
 6*b^3*d^2*e^2*f^2*g + 4*b^3*d^3*e*f*g^2 - b^3*d^4*g^3)*n^2)*log(c))*log(e*
x + d)^2 + 72*(3*(b^3*e^4*g^3*n - 4*a*b^2*e^4*g^3)*x^4 - 4*(12*a*b^2*e^4*f*
g^2 - (4*b^3*e^4*f*g^2 - b^3*d*e^3*g^3)*n)*x^3 - 6*(12*a*b^2*e^4*f^2*g - (6
*b^3*e^4*f^2*g - 4*b^3*d*e^3*f*g^2 + b^3*d^2*e^2*g^3)*n)*x^2 - 12*(4*a*b^2*
e^4*f^3 - (4*b^3*e^4*f^3 - 6*b^3*d*e^3*f^2*g + 4*b^3*d^2*e^2*f*g^2 - b^3*d^
3*e*g^3)*n)*x)*log(c)^2 - 12*(96*a^3*e^4*f^3 - (576*b^3*e^4*f^3 - 1512*b^3*
d*e^3*f^2*g + 1360*b^3*d^2*e^2*f*g^2 - 415*b^3*d^3*e*g^3)*n^3 + 12*(48*a*b^
2*e^4*f^3 - 108*a*b^2*d*e^3*f^2*g + 88*a*b^2*d^2*e^2*f*g^2 - 25*a*b^2*d^3*e
*g^3)*n^2 - 72*(4*a^2*b*e^4*f^3 - 6*a^2*b*d*e^3*f^2*g + 4*a^2*b*d^2*e^2*f*g
^2 - a^2*b*d^3*e*g^3)*n)*x - 12*(9*(b^3*e^4*g^3*n^3 - 4*a*b^2*e^4*g^3*n^2 +
 8*a^2*b*e^4*g^3*n)*x^4 + (576*b^3*d*e^3*f^3 - 1512*b^3*d^2*e^2*f^2*g + 136
0*b^3*d^3*e*f*g^2 - 415*b^3*d^4*g^3)*n^3 + 4*(72*a^2*b*e^4*f*g^2*n + (16*b^
3*e^4*f*g^2 - 7*b^3*d*e^3*g^3)*n^3 - 12*(4*a*b^2*e^4*f*g^2 - a*b^2*d*e^3*g^
3)*n^2)*x^3 - 12*(48*a*b^2*d*e^3*f^3 - 108*a*b^2*d^2*e^2*f^2*g + 88*a*b^2*d
^3*e*f*g^2 - 25*a*b^2*d^4*g^3)*n^2 + 6*(72*a^2*b*e^4*f^2*g*n + (36*b^3*e^4*
f^2*g - 40*b^3*d*e^3*f*g^2 + 13*b^3*d^2*e^2*g^3)*n^3 - 12*(6*a*b^2*e^4*f^2*
g - 4*a*b^2*d*e^3*f*g^2 + a*b^2*d^2*e^2*g^3)*n^2)*x^2 + 72*(b^3*e^4*g^3*n*x
```

```
^4 + 4*b^3*e^4*f*g^2*n*x^3 + 6*b^3*e^4*f^2*g*n*x^2 + 4*b^3*e^4*f^3*n*x + (4
*b^3*d*e^3*f^3 - 6*b^3*d^2*e^2*f^2*g + 4*b^3*d^3*e*f*g^2 - b^3*d^4*g^3)*n)*
log(c)^2 + 72*(4*a^2*b*d*e^3*f^3 - 6*a^2*b*d^2*e^2*f^2*g + 4*a^2*b*d^3*e*f*
g^2 - a^2*b*d^4*g^3)*n + 12*(24*a^2*b*e^4*f^3*n + (48*b^3*e^4*f^3 - 108*b^3
*d*e^3*f^2*g + 88*b^3*d^2*e^2*f*g^2 - 25*b^3*d^3*e*g^3)*n^3 - 12*(4*a*b^2*e
^4*f^3 - 6*a*b^2*d*e^3*f^2*g + 4*a*b^2*d^2*e^2*f*g^2 - a*b^2*d^3*e*g^3)*n^2
)*x - 12*(3*(b^3*e^4*g^3*n^2 - 4*a*b^2*e^4*g^3*n)*x^4 - 4*(12*a*b^2*e^4*f*g
^2*n - (4*b^3*e^4*f*g^2 - b^3*d*e^3*g^3)*n^2)*x^3 + (48*b^3*d*e^3*f^3 - 108
*b^3*d^2*e^2*f^2*g + 88*b^3*d^3*e*f*g^2 - 25*b^3*d^4*g^3)*n^2 - 6*(12*a*b^2
*e^4*f^2*g*n - (6*b^3*e^4*f^2*g - 4*b^3*d*e^3*f*g^2 + b^3*d^2*e^2*g^3)*n^2)
*x^2 - 12*(4*a*b^2*d*e^3*f^3 - 6*a*b^2*d^2*e^2*f^2*g + 4*a*b^2*d^3*e*f*g^2
- a*b^2*d^4*g^3)*n - 12*(4*a*b^2*e^4*f^3*n - (4*b^3*e^4*f^3 - 6*b^3*d*e^3*f
^2*g + 4*b^3*d^2*e^2*f*g^2 - b^3*d^3*e*g^3)*n^2)*x)*log(c))*log(e*x + d) -
12*(9*(b^3*e^4*g^3*n^2 - 4*a*b^2*e^4*g^3*n + 8*a^2*b*e^4*g^3)*x^4 + 4*(72*a
^2*b*e^4*f*g^2 + (16*b^3*e^4*f*g^2 - 7*b^3*d*e^3*g^3)*n^2 - 12*(4*a*b^2*e^4
*f*g^2 - a*b^2*d*e^3*g^3)*n)*x^3 + 6*(72*a^2*b*e^4*f^2*g + (36*b^3*e^4*f^2*
g - 40*b^3*d*e^3*f*g^2 + 13*b^3*d^2*e^2*g^3)*n^2 - 12*(6*a*b^2*e^4*f^2*g -
4*a*b^2*d*e^3*f*g^2 + a*b^2*d^2*e^2*g^3)*n)*x^2 + 12*(24*a^2*b*e^4*f^3 + (4
8*b^3*e^4*f^3 - 108*b^3*d*e^3*f^2*g + 88*b^3*d^2*e^2*f*g^2 - 25*b^3*d^3*e*g
^3)*n^2 - 12*(4*a*b^2*e^4*f^3 - 6*a*b^2*d*e^3*f^2*g + 4*a*b^2*d^2*e^2*f*g^2
 - a*b^2*d^3*e*g^3)*n)*x)*log(c))/e^4
```

giac [B] time = 0.64, size = 5282, normalized size = 8.83

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/4*(x*e + d)^4*b^3*g^3*n^3*e^(-4)*log(x*e + d)^3 - (x*e + d)^3*b^3*d*g^3*n
^3*e^(-4)*log(x*e + d)^3 + 3/2*(x*e + d)^2*b^3*d^2*g^3*n^3*e^(-4)*log(x*e +
 d)^3 - (x*e + d)*b^3*d^3*g^3*n^3*e^(-4)*log(x*e + d)^3 - 3/16*(x*e + d)^4*
b^3*g^3*n^3*e^(-4)*log(x*e + d)^2 + (x*e + d)^3*b^3*d*g^3*n^3*e^(-4)*log(x*
e + d)^2 - 9/4*(x*e + d)^2*b^3*d^2*g^3*n^3*e^(-4)*log(x*e + d)^2 + 3*(x*e +
 d)*b^3*d^3*g^3*n^3*e^(-4)*log(x*e + d)^2 + (x*e + d)^3*b^3*f*g^2*n^3*e^(-3
)*log(x*e + d)^3 - 3*(x*e + d)^2*b^3*d*f*g^2*n^3*e^(-3)*log(x*e + d)^3 + 3*
(x*e + d)*b^3*d^2*f*g^2*n^3*e^(-3)*log(x*e + d)^3 + 3/4*(x*e + d)^4*b^3*g^3
*n^2*e^(-4)*log(x*e + d)^2*log(c) - 3*(x*e + d)^3*b^3*d*g^3*n^2*e^(-4)*log(
x*e + d)^2*log(c) + 9/2*(x*e + d)^2*b^3*d^2*g^3*n^2*e^(-4)*log(x*e + d)^2*l
og(c) - 3*(x*e + d)*b^3*d^3*g^3*n^2*e^(-4)*log(x*e + d)^2*log(c) + 3/32*(x*
e + d)^4*b^3*g^3*n^3*e^(-4)*log(x*e + d) - 2/3*(x*e + d)^3*b^3*d*g^3*n^3*e^
(-4)*log(x*e + d) + 9/4*(x*e + d)^2*b^3*d^2*g^3*n^3*e^(-4)*log(x*e + d) - 6
*(x*e + d)*b^3*d^3*g^3*n^3*e^(-4)*log(x*e + d) - (x*e + d)^3*b^3*f*g^2*n^3*
e^(-3)*log(x*e + d)^2 + 9/2*(x*e + d)^2*b^3*d*f*g^2*n^3*e^(-3)*log(x*e + d)
^2 - 9*(x*e + d)*b^3*d^2*f*g^2*n^3*e^(-3)*log(x*e + d)^2 + 3/4*(x*e + d)^4*
a*b^2*g^3*n^2*e^(-4)*log(x*e + d)^2 - 3*(x*e + d)^3*a*b^2*d*g^3*n^2*e^(-4)*
log(x*e + d)^2 + 9/2*(x*e + d)^2*a*b^2*d^2*g^3*n^2*e^(-4)*log(x*e + d)^2 -
3*(x*e + d)*a*b^2*d^3*g^3*n^2*e^(-4)*log(x*e + d)^2 + 3/2*(x*e + d)^2*b^3*f
^2*g*n^3*e^(-2)*log(x*e + d)^3 - 3*(x*e + d)*b^3*d*f^2*g*n^3*e^(-2)*log(x*e
 + d)^3 - 3/8*(x*e + d)^4*b^3*g^3*n^2*e^(-4)*log(x*e + d)*log(c) + 2*(x*e +
 d)^3*b^3*d*g^3*n^2*e^(-4)*log(x*e + d)*log(c) - 9/2*(x*e + d)^2*b^3*d^2*g^
3*n^2*e^(-4)*log(x*e + d)*log(c) + 6*(x*e + d)*b^3*d^3*g^3*n^2*e^(-4)*log(x
*e + d)*log(c) + 3*(x*e + d)^3*b^3*f*g^2*n^2*e^(-3)*log(x*e + d)^2*log(c) -
 9*(x*e + d)^2*b^3*d*f*g^2*n^2*e^(-3)*log(x*e + d)^2*log(c) + 9*(x*e + d)*b
^3*d^2*f*g^2*n^2*e^(-3)*log(x*e + d)^2*log(c) + 3/4*(x*e + d)^4*b^3*g^3*n*e
^(-4)*log(x*e + d)*log(c)^2 - 3*(x*e + d)^3*b^3*d*g^3*n*e^(-4)*log(x*e + d)
*log(c)^2 + 9/2*(x*e + d)^2*b^3*d^2*g^3*n*e^(-4)*log(x*e + d)*log(c)^2 - 3*
(x*e + d)*b^3*d^3*g^3*n*e^(-4)*log(x*e + d)*log(c)^2 - 3/128*(x*e + d)^4*b^
3*g^3*n^3*e^(-4) + 2/9*(x*e + d)^3*b^3*d*g^3*n^3*e^(-4) - 9/8*(x*e + d)^2*b
^3*d^2*g^3*n^3*e^(-4) + 6*(x*e + d)*b^3*d^3*g^3*n^3*e^(-4) + 2/3*(x*e + d)^
```

```
3*b^3*f*g^2*n^3*e^(-3)*log(x*e + d) - 9/2*(x*e + d)^2*b^3*d*f*g^2*n^3*e^(-3
)*log(x*e + d) + 18*(x*e + d)*b^3*d^2*f*g^2*n^3*e^(-3)*log(x*e + d) - 3/8*(
x*e + d)^4*a*b^2*g^3*n^2*e^(-4)*log(x*e + d) + 2*(x*e + d)^3*a*b^2*d*g^3*n^
2*e^(-4)*log(x*e + d) - 9/2*(x*e + d)^2*a*b^2*d^2*g^3*n^2*e^(-4)*log(x*e +
d) + 6*(x*e + d)*a*b^2*d^3*g^3*n^2*e^(-4)*log(x*e + d) - 9/4*(x*e + d)^2*b^
3*f^2*g*n^3*e^(-2)*log(x*e + d)^2 + 9*(x*e + d)*b^3*d*f^2*g*n^3*e^(-2)*log(
x*e + d)^2 + 3*(x*e + d)^3*a*b^2*f*g^2*n^2*e^(-3)*log(x*e + d)^2 - 9*(x*e +
 d)^2*a*b^2*d*f*g^2*n^2*e^(-3)*log(x*e + d)^2 + 9*(x*e + d)*a*b^2*d^2*f*g^2
*n^2*e^(-3)*log(x*e + d)^2 + (x*e + d)*b^3*f^3*n^3*e^(-1)*log(x*e + d)^3 +
3/32*(x*e + d)^4*b^3*g^3*n^2*e^(-4)*log(c) - 2/3*(x*e + d)^3*b^3*d*g^3*n^2*
e^(-4)*log(c) + 9/4*(x*e + d)^2*b^3*d^2*g^3*n^2*e^(-4)*log(c) - 6*(x*e + d)
*b^3*d^3*g^3*n^2*e^(-4)*log(c) - 2*(x*e + d)^3*b^3*f*g^2*n^2*e^(-3)*log(x*e
 + d)*log(c) + 9*(x*e + d)^2*b^3*d*f*g^2*n^2*e^(-3)*log(x*e + d)*log(c) - 1
8*(x*e + d)*b^3*d^2*f*g^2*n^2*e^(-3)*log(x*e + d)*log(c) + 3/2*(x*e + d)^4*
a*b^2*g^3*n*e^(-4)*log(x*e + d)*log(c) - 6*(x*e + d)^3*a*b^2*d*g^3*n*e^(-4)
*log(x*e + d)*log(c) + 9*(x*e + d)^2*a*b^2*d^2*g^3*n*e^(-4)*log(x*e + d)*lo
g(c) - 6*(x*e + d)*a*b^2*d^3*g^3*n*e^(-4)*log(x*e + d)*log(c) + 9/2*(x*e +
d)^2*b^3*f^2*g*n^2*e^(-2)*log(x*e + d)^2*log(c) - 9*(x*e + d)*b^3*d*f^2*g*n
^2*e^(-2)*log(x*e + d)^2*log(c) - 3/16*(x*e + d)^4*b^3*g^3*n*e^(-4)*log(c)^
2 + (x*e + d)^3*b^3*d*g^3*n*e^(-4)*log(c)^2 - 9/4*(x*e + d)^2*b^3*d^2*g^3*n
*e^(-4)*log(c)^2 + 3*(x*e + d)*b^3*d^3*g^3*n*e^(-4)*log(c)^2 + 3*(x*e + d)^
3*b^3*f*g^2*n*e^(-3)*log(x*e + d)*log(c)^2 - 9*(x*e + d)^2*b^3*d*f*g^2*n*e^
(-3)*log(x*e + d)*log(c)^2 + 9*(x*e + d)*b^3*d^2*f*g^2*n*e^(-3)*log(x*e + d
)*log(c)^2 + 1/4*(x*e + d)^4*b^3*g^3*e^(-4)*log(c)^3 - (x*e + d)^3*b^3*d*g^
3*e^(-4)*log(c)^3 + 3/2*(x*e + d)^2*b^3*d^2*g^3*e^(-4)*log(c)^3 - (x*e + d)
*b^3*d^3*g^3*e^(-4)*log(c)^3 - 2/9*(x*e + d)^3*b^3*f*g^2*n^3*e^(-3) + 9/4*(
x*e + d)^2*b^3*d*f*g^2*n^3*e^(-3) - 18*(x*e + d)*b^3*d^2*f*g^2*n^3*e^(-3) +
 3/32*(x*e + d)^4*a*b^2*g^3*n^2*e^(-4) - 2/3*(x*e + d)^3*a*b^2*d*g^3*n^2*e^
(-4) + 9/4*(x*e + d)^2*a*b^2*d^2*g^3*n^2*e^(-4) - 6*(x*e + d)*a*b^2*d^3*g^3
*n^2*e^(-4) + 9/4*(x*e + d)^2*b^3*f^2*g*n^3*e^(-2)*log(x*e + d) - 18*(x*e +
 d)*b^3*d*f^2*g*n^3*e^(-2)*log(x*e + d) - 2*(x*e + d)^3*a*b^2*f*g^2*n^2*e^(
-3)*log(x*e + d) + 9*(x*e + d)^2*a*b^2*d*f*g^2*n^2*e^(-3)*log(x*e + d) - 18
*(x*e + d)*a*b^2*d^2*f*g^2*n^2*e^(-3)*log(x*e + d) + 3/4*(x*e + d)^4*a^2*b*
g^3*n*e^(-4)*log(x*e + d) - 3*(x*e + d)^3*a^2*b*d*g^3*n*e^(-4)*log(x*e + d)
 + 9/2*(x*e + d)^2*a^2*b*d^2*g^3*n*e^(-4)*log(x*e + d) - 3*(x*e + d)*a^2*b*
d^3*g^3*n*e^(-4)*log(x*e + d) - 3*(x*e + d)*b^3*f^3*n^3*e^(-1)*log(x*e + d)
^2 + 9/2*(x*e + d)^2*a*b^2*f^2*g*n^2*e^(-2)*log(x*e + d)^2 - 9*(x*e + d)*a*
b^2*d*f^2*g*n^2*e^(-2)*log(x*e + d)^2 + 2/3*(x*e + d)^3*b^3*f*g^2*n^2*e^(-3
)*log(c) - 9/2*(x*e + d)^2*b^3*d*f*g^2*n^2*e^(-3)*log(c) + 18*(x*e + d)*b^3
*d^2*f*g^2*n^2*e^(-3)*log(c) - 3/8*(x*e + d)^4*a*b^2*g^3*n*e^(-4)*log(c) +
2*(x*e + d)^3*a*b^2*d*g^3*n*e^(-4)*log(c) - 9/2*(x*e + d)^2*a*b^2*d^2*g^3*n
*e^(-4)*log(c) + 6*(x*e + d)*a*b^2*d^3*g^3*n*e^(-4)*log(c) - 9/2*(x*e + d)^
2*b^3*f^2*g*n^2*e^(-2)*log(x*e + d)*log(c) + 18*(x*e + d)*b^3*d*f^2*g*n^2*e
^(-2)*log(x*e + d)*log(c) + 6*(x*e + d)^3*a*b^2*f*g^2*n*e^(-3)*log(x*e + d)
*log(c) - 18*(x*e + d)^2*a*b^2*d*f*g^2*n*e^(-3)*log(x*e + d)*log(c) + 18*(x
*e + d)*a*b^2*d^2*f*g^2*n*e^(-3)*log(x*e + d)*log(c) + 3*(x*e + d)*b^3*f^3*
n^2*e^(-1)*log(x*e + d)^2*log(c) - (x*e + d)^3*b^3*f*g^2*n*e^(-3)*log(c)^2
+ 9/2*(x*e + d)^2*b^3*d*f*g^2*n*e^(-3)*log(c)^2 - 9*(x*e + d)*b^3*d^2*f*g^2
*n*e^(-3)*log(c)^2 + 3/4*(x*e + d)^4*a*b^2*g^3*e^(-4)*log(c)^2 - 3*(x*e + d
)^3*a*b^2*d*g^3*e^(-4)*log(c)^2 + 9/2*(x*e + d)^2*a*b^2*d^2*g^3*e^(-4)*log(
c)^2 - 3*(x*e + d)*a*b^2*d^3*g^3*e^(-4)*log(c)^2 + 9/2*(x*e + d)^2*b^3*f^2*
g*n*e^(-2)*log(x*e + d)*log(c)^2 - 9*(x*e + d)*b^3*d*f^2*g*n*e^(-2)*log(x*e
 + d)*log(c)^2 + (x*e + d)^3*b^3*f*g^2*e^(-3)*log(c)^3 - 3*(x*e + d)^2*b^3*
d*f*g^2*e^(-3)*log(c)^3 + 3*(x*e + d)*b^3*d^2*f*g^2*e^(-3)*log(c)^3 - 9/8*(
x*e + d)^2*b^3*f^2*g*n^3*e^(-2) + 18*(x*e + d)*b^3*d*f^2*g*n^3*e^(-2) + 2/3
*(x*e + d)^3*a*b^2*f*g^2*n^2*e^(-3) - 9/2*(x*e + d)^2*a*b^2*d*f*g^2*n^2*e^(
-3) + 18*(x*e + d)*a*b^2*d^2*f*g^2*n^2*e^(-3) - 3/16*(x*e + d)^4*a^2*b*g^3*
n*e^(-4) + (x*e + d)^3*a^2*b*d*g^3*n*e^(-4) - 9/4*(x*e + d)^2*a^2*b*d^2*g^3
*n*e^(-4) + 3*(x*e + d)*a^2*b*d^3*g^3*n*e^(-4) + 6*(x*e + d)*b^3*f^3*n^3*e^
```

```
(-1)*log(x*e + d) - 9/2*(x*e + d)^2*a*b^2*f^2*g*n^2*e^(-2)*log(x*e + d) + 1
8*(x*e + d)*a*b^2*d*f^2*g*n^2*e^(-2)*log(x*e + d) + 3*(x*e + d)^3*a^2*b*f*g
^2*n*e^(-3)*log(x*e + d) - 9*(x*e + d)^2*a^2*b*d*f*g^2*n*e^(-3)*log(x*e + d
) + 9*(x*e + d)*a^2*b*d^2*f*g^2*n*e^(-3)*log(x*e + d) + 3*(x*e + d)*a*b^2*f
^3*n^2*e^(-1)*log(x*e + d)^2 + 9/4*(x*e + d)^2*b^3*f^2*g*n^2*e^(-2)*log(c)
- 18*(x*e + d)*b^3*d*f^2*g*n^2*e^(-2)*log(c) - 2*(x*e + d)^3*a*b^2*f*g^2*n*
e^(-3)*log(c) + 9*(x*e + d)^2*a*b^2*d*f*g^2*n*e^(-3)*log(c) - 18*(x*e + d)*
a*b^2*d^2*f*g^2*n*e^(-3)*log(c) + 3/4*(x*e + d)^4*a^2*b*g^3*e^(-4)*log(c) -
 3*(x*e + d)^3*a^2*b*d*g^3*e^(-4)*log(c) + 9/2*(x*e + d)^2*a^2*b*d^2*g^3*e^
(-4)*log(c) - 3*(x*e + d)*a^2*b*d^3*g^3*e^(-4)*log(c) - 6*(x*e + d)*b^3*f^3
*n^2*e^(-1)*log(x*e + d)*log(c) + 9*(x*e + d)^2*a*b^2*f^2*g*n*e^(-2)*log(x*
e + d)*log(c) - 18*(x*e + d)*a*b^2*d*f^2*g*n*e^(-2)*log(x*e + d)*log(c) - 9
/4*(x*e + d)^2*b^3*f^2*g*n*e^(-2)*log(c)^2 + 9*(x*e + d)*b^3*d*f^2*g*n*e^(-
2)*log(c)^2 + 3*(x*e + d)^3*a*b^2*f*g^2*e^(-3)*log(c)^2 - 9*(x*e + d)^2*a*b
^2*d*f*g^2*e^(-3)*log(c)^2 + 9*(x*e + d)*a*b^2*d^2*f*g^2*e^(-3)*log(c)^2 +
3*(x*e + d)*b^3*f^3*n*e^(-1)*log(x*e + d)*log(c)^2 + 3/2*(x*e + d)^2*b^3*f^
2*g*e^(-2)*log(c)^3 - 3*(x*e + d)*b^3*d*f^2*g*e^(-2)*log(c)^3 - 6*(x*e + d)
*b^3*f^3*n^3*e^(-1) + 9/4*(x*e + d)^2*a*b^2*f^2*g*n^2*e^(-2) - 18*(x*e + d)
*a*b^2*d*f^2*g*n^2*e^(-2) - (x*e + d)^3*a^2*b*f*g^2*n*e^(-3) + 9/2*(x*e + d
)^2*a^2*b*d*f*g^2*n*e^(-3) - 9*(x*e + d)*a^2*b*d^2*f*g^2*n*e^(-3) + 1/4*(x*
e + d)^4*a^3*g^3*e^(-4) - (x*e + d)^3*a^3*d*g^3*e^(-4) + 3/2*(x*e + d)^2*a^
3*d^2*g^3*e^(-4) - (x*e + d)*a^3*d^3*g^3*e^(-4) - 6*(x*e + d)*a*b^2*f^3*n^2
*e^(-1)*log(x*e + d) + 9/2*(x*e + d)^2*a^2*b*f^2*g*n*e^(-2)*log(x*e + d) -
9*(x*e + d)*a^2*b*d*f^2*g*n*e^(-2)*log(x*e + d) + 6*(x*e + d)*b^3*f^3*n^2*e
^(-1)*log(c) - 9/2*(x*e + d)^2*a*b^2*f^2*g*n*e^(-2)*log(c) + 18*(x*e + d)*a
*b^2*d*f^2*g*n*e^(-2)*log(c) + 3*(x*e + d)^3*a^2*b*f*g^2*e^(-3)*log(c) - 9*
(x*e + d)^2*a^2*b*d*f*g^2*e^(-3)*log(c) + 9*(x*e + d)*a^2*b*d^2*f*g^2*e^(-3
)*log(c) + 6*(x*e + d)*a*b^2*f^3*n*e^(-1)*log(x*e + d)*log(c) - 3*(x*e + d)
*b^3*f^3*n*e^(-1)*log(c)^2 + 9/2*(x*e + d)^2*a*b^2*f^2*g*e^(-2)*log(c)^2 -
9*(x*e + d)*a*b^2*d*f^2*g*e^(-2)*log(c)^2 + (x*e + d)*b^3*f^3*e^(-1)*log(c)
^3 + 6*(x*e + d)*a*b^2*f^3*n^2*e^(-1) - 9/4*(x*e + d)^2*a^2*b*f^2*g*n*e^(-2
) + 9*(x*e + d)*a^2*b*d*f^2*g*n*e^(-2) + (x*e + d)^3*a^3*f*g^2*e^(-3) - 3*(
x*e + d)^2*a^3*d*f*g^2*e^(-3) + 3*(x*e + d)*a^3*d^2*f*g^2*e^(-3) + 3*(x*e +
 d)*a^2*b*f^3*n*e^(-1)*log(x*e + d) - 6*(x*e + d)*a*b^2*f^3*n*e^(-1)*log(c)
 + 9/2*(x*e + d)^2*a^2*b*f^2*g*e^(-2)*log(c) - 9*(x*e + d)*a^2*b*d*f^2*g*e^
(-2)*log(c) + 3*(x*e + d)*a*b^2*f^3*e^(-1)*log(c)^2 - 3*(x*e + d)*a^2*b*f^3
*n*e^(-1) + 3/2*(x*e + d)^2*a^3*f^2*g*e^(-2) - 3*(x*e + d)*a^3*d*f^2*g*e^(-
2) + 3*(x*e + d)*a^2*b*f^3*e^(-1)*log(c) + (x*e + d)*a^3*f^3*e^(-1)
```

maple [C] time = 2.99, size = 30495, normalized size = 50.99

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^3*(b*ln(c*(e*x+d)^n)+a)^3,x)
```

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

maxima [B] time = 1.70, size = 1687, normalized size = 2.82

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/4*b^3*g^3*x^4*log((e*x + d)^n*c)^3 + 3/4*a*b^2*g^3*x^4*log((e*x + d)^n*c)
^2 + b^3*f*g^2*x^3*log((e*x + d)^n*c)^3 + 3/4*a^2*b*g^3*x^4*log((e*x + d)^n
*c) + 3*a*b^2*f*g^2*x^3*log((e*x + d)^n*c)^2 + 3/2*b^3*f^2*g*x^2*log((e*x +
 d)^n*c)^3 + 1/4*a^3*g^3*x^4 + 3*a^2*b*f*g^2*x^3*log((e*x + d)^n*c) + 9/2*a
*b^2*f^2*g*x^2*log((e*x + d)^n*c)^2 + b^3*f^3*x*log((e*x + d)^n*c)^3 + a^3*
```

```
f*g^2*x^3 - 3*a^2*b*e*f^3*n*(x/e - d*log(e*x + d)/e^2) - 1/16*a^2*b*e*g^3*n
*(12*d^4*log(e*x + d)/e^5 + (3*e^3*x^4 - 4*d*e^2*x^3 + 6*d^2*e*x^2 - 12*d^3
*x)/e^4) + 1/2*a^2*b*e*f*g^2*n*(6*d^3*log(e*x + d)/e^4 - (2*e^2*x^3 - 3*d*e
*x^2 + 6*d^2*x)/e^3) - 9/4*a^2*b*e*f^2*g*n*(2*d^2*log(e*x + d)/e^3 + (e*x^2
 - 2*d*x)/e^2) + 9/2*a^2*b*f^2*g*x^2*log((e*x + d)^n*c) + 3*a*b^2*f^3*x*log
((e*x + d)^n*c)^2 + 3/2*a^3*f^2*g*x^2 + 3*a^2*b*f^3*x*log((e*x + d)^n*c) -
3*(2*e*n*(x/e - d*log(e*x + d)/e^2)*log((e*x + d)^n*c) + (d*log(e*x + d)^2
- 2*e*x + 2*d*log(e*x + d))*n^2/e)*a*b^2*f^3 - (3*e*n*(x/e - d*log(e*x + d)
/e^2)*log((e*x + d)^n*c)^2 - e*n*((d*log(e*x + d)^3 + 3*d*log(e*x + d)^2 -
6*e*x + 6*d*log(e*x + d))*n^2/e^2 - 3*(d*log(e*x + d)^2 - 2*e*x + 2*d*log(e
*x + d))*n*log((e*x + d)^n*c)/e^2))*b^3*f^3 - 9/4*(2*e*n*(2*d^2*log(e*x + d
)/e^3 + (e*x^2 - 2*d*x)/e^2)*log((e*x + d)^n*c) - (e^2*x^2 + 2*d^2*log(e*x
+ d)^2 - 6*d*e*x + 6*d^2*log(e*x + d))*n^2/e^2)*a*b^2*f^2*g - 3/8*(6*e*n*(2
*d^2*log(e*x + d)/e^3 + (e*x^2 - 2*d*x)/e^2)*log((e*x + d)^n*c)^2 + e*n*((4
*d^2*log(e*x + d)^3 + 3*e^2*x^2 + 18*d^2*log(e*x + d)^2 - 42*d*e*x + 42*d^2
*log(e*x + d))*n^2/e^3 - 6*(e^2*x^2 + 2*d^2*log(e*x + d)^2 - 6*d*e*x + 6*d^
2*log(e*x + d))*n*log((e*x + d)^n*c)/e^3))*b^3*f^2*g + 1/6*(6*e*n*(6*d^3*lo
g(e*x + d)/e^4 - (2*e^2*x^3 - 3*d*e*x^2 + 6*d^2*x)/e^3)*log((e*x + d)^n*c)
+ (4*e^3*x^3 - 15*d*e^2*x^2 - 18*d^3*log(e*x + d)^2 + 66*d^2*e*x - 66*d^3*l
og(e*x + d))*n^2/e^3)*a*b^2*f*g^2 + 1/36*(18*e*n*(6*d^3*log(e*x + d)/e^4 -
(2*e^2*x^3 - 3*d*e*x^2 + 6*d^2*x)/e^3)*log((e*x + d)^n*c)^2 - e*n*((8*e^3*x
^3 - 36*d^3*log(e*x + d)^3 - 57*d*e^2*x^2 - 198*d^3*log(e*x + d)^2 + 510*d^
2*e*x - 510*d^3*log(e*x + d))*n^2/e^4 - 6*(4*e^3*x^3 - 15*d*e^2*x^2 - 18*d^
3*log(e*x + d)^2 + 66*d^2*e*x - 66*d^3*log(e*x + d))*n*log((e*x + d)^n*c)/e
^4))*b^3*f*g^2 - 1/96*(12*e*n*(12*d^4*log(e*x + d)/e^5 + (3*e^3*x^4 - 4*d*e
^2*x^3 + 6*d^2*e*x^2 - 12*d^3*x)/e^4)*log((e*x + d)^n*c) - (9*e^4*x^4 - 28*
d*e^3*x^3 + 78*d^2*e^2*x^2 + 72*d^4*log(e*x + d)^2 - 300*d^3*e*x + 300*d^4*
log(e*x + d))*n^2/e^4)*a*b^2*g^3 - 1/1152*(72*e*n*(12*d^4*log(e*x + d)/e^5
+ (3*e^3*x^4 - 4*d*e^2*x^3 + 6*d^2*e*x^2 - 12*d^3*x)/e^4)*log((e*x + d)^n*c
)^2 + e*n*((27*e^4*x^4 - 148*d*e^3*x^3 + 288*d^4*log(e*x + d)^3 + 690*d^2*e
^2*x^2 + 1800*d^4*log(e*x + d)^2 - 4980*d^3*e*x + 4980*d^4*log(e*x + d))*n^
2/e^5 - 12*(9*e^4*x^4 - 28*d*e^3*x^3 + 78*d^2*e^2*x^2 + 72*d^4*log(e*x + d)
^2 - 300*d^3*e*x + 300*d^4*log(e*x + d))*n*log((e*x + d)^n*c)/e^5))*b^3*g^3
 + a^3*f^3*x
```

mupad [B] time = 1.21, size = 2133, normalized size = 3.57

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^3*(a + b*log(c*(d + e*x)^n))^3,x)
```

```
[Out] x^3*((g^2*(24*a^3*d*g + 72*a^3*e*f + 7*b^3*d*g*n^3 - 16*b^3*e*f*n^3 - 12*a*
b^2*d*g*n^2 + 48*a*b^2*e*f*n^2 - 72*a^2*b*e*f*n))/(72*e) - (d*g^3*(32*a^3 -
 3*b^3*n^3 + 12*a*b^2*n^2 - 24*a^2*b*n))/(96*e)) + log(c*(d + e*x)^n)^3*(b^
3*f^3*x - (d*(b^3*d^3*g^3 - 4*b^3*e^3*f^3 + 6*b^3*d*e^2*f^2*g - 4*b^3*d^2*e
*f*g^2))/(4*e^4) + (b^3*g^3*x^4)/4 + (3*b^3*f^2*g*x^2)/2 + b^3*f*g^2*x^3) -
 x^2*((d*((g^2*(24*a^3*d*g + 72*a^3*e*f + 7*b^3*d*g*n^3 - 16*b^3*e*f*n^3 -
12*a*b^2*d*g*n^2 + 48*a*b^2*e*f*n^2 - 72*a^2*b*e*f*n))/(24*e) - (d*g^3*(32*
a^3 - 3*b^3*n^3 + 12*a*b^2*n^2 - 24*a^2*b*n))/(32*e)))/(2*e) - (g*(48*a^3*e
^2*f^2 - 13*b^3*d^2*g^2*n^3 - 36*b^3*e^2*f^2*n^3 - 72*a^2*b*e^2*f^2*n + 48*
a^3*d*e*f*g + 12*a*b^2*d^2*g^2*n^2 + 72*a*b^2*e^2*f^2*n^2 + 40*b^3*d*e*f*g*
n^3 - 48*a*b^2*d*e*f*g*n^2))/(32*e^2)) + log(c*(d + e*x)^n)^2*((x^3*((4*b^2
*g^2*(a*d*g + 3*a*e*f - b*e*f*n))/e - (b^2*d*g^3*(4*a - b*n))/e))/4 - (x^2*
((d*((48*b^2*g^2*(a*d*g + 3*a*e*f - b*e*f*n))/e - (12*b^2*d*g^3*(4*a - b*n)
)/e))/(8*e) - (9*b^2*f*g*(2*a*d*g + 2*a*e*f - b*e*f*n))/e))/4 + (x*((d*((d*
((48*b^2*g^2*(a*d*g + 3*a*e*f - b*e*f*n))/e - (12*b^2*d*g^3*(4*a - b*n))/e)
)/e - (72*b^2*f*g*(2*a*d*g + 2*a*e*f - b*e*f*n))/e))/(4*e) + (12*b^2*f^2*(3
*a*d*g + a*e*f - b*e*f*n))/e))/4 - (12*a*b^2*d^4*g^3 - 25*b^3*d^4*g^3*n - 4
8*a*b^2*d*e^3*f^3 + 48*b^3*d*e^3*f^3*n + 72*a*b^2*d^2*e^2*f^2*g - 108*b^3*d
```

```
^2*e^2*f^2*g*n - 48*a*b^2*d^3*e*f*g^2 + 88*b^3*d^3*e*f*g^2*n)/(16*e^4) + (3
*b^2*g^3*x^4*(4*a - b*n))/16) + x*((96*a^3*e^3*f^3 + 300*b^3*d^3*g^3*n^3 -
576*b^3*e^3*f^3*n^3 + 288*a^3*d*e^2*f^2*g - 288*a^2*b*e^3*f^3*n - 144*a*b^2
*d^3*g^3*n^2 + 576*a*b^2*e^3*f^3*n^2 + 1296*b^3*d*e^2*f^2*g*n^3 - 1056*b^3*
d^2*e*f*g^2*n^3 - 864*a*b^2*d*e^2*f^2*g*n^2 + 576*a*b^2*d^2*e*f*g^2*n^2)/(9
6*e^3) + (d*((d*((g^2*(24*a^3*d*g + 72*a^3*e*f + 7*b^3*d*g*n^3 - 16*b^3*e*f
*n^3 - 12*a*b^2*d*g*n^2 + 48*a*b^2*e*f*n^2 - 72*a^2*b*e*f*n))/(24*e) - (d*g
^3*(32*a^3 - 3*b^3*n^3 + 12*a*b^2*n^2 - 24*a^2*b*n))/(32*e)))/e - (g*(48*a^
3*e^2*f^2 - 13*b^3*d^2*g^2*n^3 - 36*b^3*e^2*f^2*n^3 - 72*a^2*b*e^2*f^2*n +
48*a^3*d*e*f*g + 12*a*b^2*d^2*g^2*n^2 + 72*a*b^2*e^2*f^2*n^2 + 40*b^3*d*e*f
*g*n^3 - 48*a*b^2*d*e*f*g*n^2))/(16*e^2)))/e) - (log(d + e*x)*(415*b^3*d^4*
g^3*n^3 + 72*a^2*b*d^4*g^3*n - 300*a*b^2*d^4*g^3*n^2 - 576*b^3*d*e^3*f^3*n^
3 + 576*a*b^2*d*e^3*f^3*n^2 - 1360*b^3*d^3*e*f*g^2*n^3 + 1512*b^3*d^2*e^2*f
^2*g*n^3 - 288*a^2*b*d*e^3*f^3*n - 1296*a*b^2*d^2*e^2*f^2*g*n^2 - 288*a^2*b
*d^3*e*f*g^2*n + 432*a^2*b*d^2*e^2*f^2*g*n + 1056*a*b^2*d^3*e*f*g^2*n^2))/(
96*e^4) + (g^3*x^4*(32*a^3 - 3*b^3*n^3 + 12*a*b^2*n^2 - 24*a^2*b*n))/128 +
(log(c*(d + e*x)^n)*((x^3*(32*b*e^3*g^2*(6*a^2*d*g + 18*a^2*e*f - b^2*d*g*n
^2 + 4*b^2*e*f*n^2 - 12*a*b*e*f*n) - 24*b*d*e^3*g^3*(8*a^2 + b^2*n^2 - 4*a*
b*n)))/(24*e^2) - (x^2*((d*(32*b*e^3*g^2*(6*a^2*d*g + 18*a^2*e*f - b^2*d*g*
n^2 + 4*b^2*e*f*n^2 - 12*a*b*e*f*n) - 24*b*d*e^3*g^3*(8*a^2 + b^2*n^2 - 4*a
*b*n)))/e - 48*b*e^2*g*(12*a^2*e^2*f^2 + b^2*d^2*g^2*n^2 + 6*b^2*e^2*f^2*n^
2 - 12*a*b*e^2*f^2*n + 12*a^2*d*e*f*g - 4*b^2*d*e*f*g*n^2)))/(16*e^2) + (x*
((192*a^2*b*e^5*f^3 + 384*b^3*e^5*f^3*n^2 - 96*b^3*d^3*e^2*g^3*n^2 - 384*a*
b^2*e^5*f^3*n - 576*b^3*d*e^4*f^2*g*n^2 + 384*b^3*d^2*e^3*f*g^2*n^2 + 576*a
^2*b*d*e^4*f^2*g)/e + (d*((d*(32*b*e^3*g^2*(6*a^2*d*g + 18*a^2*e*f - b^2*d*
g*n^2 + 4*b^2*e*f*n^2 - 12*a*b*e*f*n) - 24*b*d*e^3*g^3*(8*a^2 + b^2*n^2 - 4
*a*b*n)))/e - 48*b*e^2*g*(12*a^2*e^2*f^2 + b^2*d^2*g^2*n^2 + 6*b^2*e^2*f^2*
n^2 - 12*a*b*e^2*f^2*n + 12*a^2*d*e*f*g - 4*b^2*d*e*f*g*n^2)))/e))/(8*e^2)
+ (3*b*e^2*g^3*x^4*(8*a^2 + b^2*n^2 - 4*a*b*n))/4))/(8*e^2)
```

sympy [A] time = 48.31, size = 4495, normalized size = 7.52

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**3*(a+b*ln(c*(e*x+d)**n))**3,x)
```

```
[Out] Piecewise((a**3*f**3*x + 3*a**3*f**2*g*x**2/2 + a**3*f*g**2*x**3 + a**3*g**
3*x**4/4 - 3*a**2*b*d**4*g**3*n*log(d + e*x)/(4*e**4) + 3*a**2*b*d**3*f*g**
2*n*log(d + e*x)/e**3 + 3*a**2*b*d**3*g**3*n*x/(4*e**3) - 9*a**2*b*d**2*f**
2*g*n*log(d + e*x)/(2*e**2) - 3*a**2*b*d**2*f*g**2*n*x/e**2 - 3*a**2*b*d**2
*g**3*n*x**2/(8*e**2) + 3*a**2*b*d*f**3*n*log(d + e*x)/e + 9*a**2*b*d*f**2*
g*n*x/(2*e) + 3*a**2*b*d*f*g**2*n*x**2/(2*e) + a**2*b*d*g**3*n*x**3/(4*e) +
 3*a**2*b*f**3*n*x*log(d + e*x) - 3*a**2*b*f**3*n*x + 3*a**2*b*f**3*x*log(c
) + 9*a**2*b*f**2*g*n*x**2*log(d + e*x)/2 - 9*a**2*b*f**2*g*n*x**2/4 + 9*a*
*2*b*f**2*g*x**2*log(c)/2 + 3*a**2*b*f*g**2*n*x**3*log(d + e*x) - a**2*b*f*
g**2*n*x**3 + 3*a**2*b*f*g**2*x**3*log(c) + 3*a**2*b*g**3*n*x**4*log(d + e*
x)/4 - 3*a**2*b*g**3*n*x**4/16 + 3*a**2*b*g**3*x**4*log(c)/4 - 3*a*b**2*d**
4*g**3*n**2*log(d + e*x)**2/(4*e**4) + 25*a*b**2*d**4*g**3*n**2*log(d + e*x
)/(8*e**4) - 3*a*b**2*d**4*g**3*n*log(c)*log(d + e*x)/(2*e**4) + 3*a*b**2*d
**3*f*g**2*n**2*log(d + e*x)**2/e**3 - 11*a*b**2*d**3*f*g**2*n**2*log(d + e
*x)/e**3 + 6*a*b**2*d**3*f*g**2*n*log(c)*log(d + e*x)/e**3 + 3*a*b**2*d**3*
g**3*n**2*x*log(d + e*x)/(2*e**3) - 25*a*b**2*d**3*g**3*n**2*x/(8*e**3) + 3
*a*b**2*d**3*g**3*n*x*log(c)/(2*e**3) - 9*a*b**2*d**2*f**2*g*n**2*log(d + e
*x)**2/(2*e**2) + 27*a*b**2*d**2*f**2*g*n**2*log(d + e*x)/(2*e**2) - 9*a*b*
*2*d**2*f**2*g*n*log(c)*log(d + e*x)/e**2 - 6*a*b**2*d**2*f*g**2*n**2*x*log
(d + e*x)/e**2 + 11*a*b**2*d**2*f*g**2*n**2*x/e**2 - 6*a*b**2*d**2*f*g**2*n
*x*log(c)/e**2 - 3*a*b**2*d**2*g**3*n**2*x**2*log(d + e*x)/(4*e**2) + 13*a*
b**2*d**2*g**3*n**2*x**2/(16*e**2) - 3*a*b**2*d**2*g**3*n*x**2*log(c)/(4*e*
*2) + 3*a*b**2*d*f**3*n**2*log(d + e*x)**2/e - 6*a*b**2*d*f**3*n**2*log(d +
```

```
e*x)/e + 6*a*b**2*d*f**3*n*log(c)*log(d + e*x)/e + 9*a*b**2*d*f**2*g*n**2*
x*log(d + e*x)/e - 27*a*b**2*d*f**2*g*n**2*x/(2*e) + 9*a*b**2*d*f**2*g*n*x*
log(c)/e + 3*a*b**2*d*f*g**2*n**2*x**2*log(d + e*x)/e - 5*a*b**2*d*f*g**2*n
**2*x**2/(2*e) + 3*a*b**2*d*f*g**2*n*x**2*log(c)/e + a*b**2*d*g**3*n**2*x**
3*log(d + e*x)/(2*e) - 7*a*b**2*d*g**3*n**2*x**3/(24*e) + a*b**2*d*g**3*n*x
**3*log(c)/(2*e) + 3*a*b**2*f**3*n**2*x*log(d + e*x)**2 - 6*a*b**2*f**3*n**
2*x*log(d + e*x) + 6*a*b**2*f**3*n**2*x + 6*a*b**2*f**3*n*x*log(c)*log(d +
e*x) - 6*a*b**2*f**3*n*x*log(c) + 3*a*b**2*f**3*x*log(c)**2 + 9*a*b**2*f**2
*g*n**2*x**2*log(d + e*x)**2/2 - 9*a*b**2*f**2*g*n**2*x**2*log(d + e*x)/2 +
 9*a*b**2*f**2*g*n**2*x**2/4 + 9*a*b**2*f**2*g*n*x**2*log(c)*log(d + e*x) -
 9*a*b**2*f**2*g*n*x**2*log(c)/2 + 9*a*b**2*f**2*g*x**2*log(c)**2/2 + 3*a*b
**2*f*g**2*n**2*x**3*log(d + e*x)**2 - 2*a*b**2*f*g**2*n**2*x**3*log(d + e*
x) + 2*a*b**2*f*g**2*n**2*x**3/3 + 6*a*b**2*f*g**2*n*x**3*log(c)*log(d + e*
x) - 2*a*b**2*f*g**2*n*x**3*log(c) + 3*a*b**2*f*g**2*x**3*log(c)**2 + 3*a*b
**2*g**3*n**2*x**4*log(d + e*x)**2/4 - 3*a*b**2*g**3*n**2*x**4*log(d + e*x)
/8 + 3*a*b**2*g**3*n**2*x**4/32 + 3*a*b**2*g**3*n*x**4*log(c)*log(d + e*x)/
2 - 3*a*b**2*g**3*n*x**4*log(c)/8 + 3*a*b**2*g**3*x**4*log(c)**2/4 - b**3*d
**4*g**3*n**3*log(d + e*x)**3/(4*e**4) + 25*b**3*d**4*g**3*n**3*log(d + e*x
)**2/(16*e**4) - 415*b**3*d**4*g**3*n**3*log(d + e*x)/(96*e**4) - 3*b**3*d*
*4*g**3*n**2*log(c)*log(d + e*x)**2/(4*e**4) + 25*b**3*d**4*g**3*n**2*log(c
)*log(d + e*x)/(8*e**4) - 3*b**3*d**4*g**3*n*log(c)**2*log(d + e*x)/(4*e**4
) + b**3*d**3*f*g**2*n**3*log(d + e*x)**3/e**3 - 11*b**3*d**3*f*g**2*n**3*l
og(d + e*x)**2/(2*e**3) + 85*b**3*d**3*f*g**2*n**3*log(d + e*x)/(6*e**3) +
3*b**3*d**3*f*g**2*n**2*log(c)*log(d + e*x)**2/e**3 - 11*b**3*d**3*f*g**2*n
**2*log(c)*log(d + e*x)/e**3 + 3*b**3*d**3*f*g**2*n*log(c)**2*log(d + e*x)/
e**3 + 3*b**3*d**3*g**3*n**3*x*log(d + e*x)**2/(4*e**3) - 25*b**3*d**3*g**3
*n**3*x*log(d + e*x)/(8*e**3) + 415*b**3*d**3*g**3*n**3*x/(96*e**3) + 3*b**
3*d**3*g**3*n**2*x*log(c)*log(d + e*x)/(2*e**3) - 25*b**3*d**3*g**3*n**2*x*
log(c)/(8*e**3) + 3*b**3*d**3*g**3*n*x*log(c)**2/(4*e**3) - 3*b**3*d**2*f**
2*g*n**3*log(d + e*x)**3/(2*e**2) + 27*b**3*d**2*f**2*g*n**3*log(d + e*x)**
2/(4*e**2) - 63*b**3*d**2*f**2*g*n**3*log(d + e*x)/(4*e**2) - 9*b**3*d**2*f
**2*g*n**2*log(c)*log(d + e*x)**2/(2*e**2) + 27*b**3*d**2*f**2*g*n**2*log(c
)*log(d + e*x)/(2*e**2) - 9*b**3*d**2*f**2*g*n*log(c)**2*log(d + e*x)/(2*e*
*2) - 3*b**3*d**2*f*g**2*n**3*x*log(d + e*x)**2/e**2 + 11*b**3*d**2*f*g**2*
n**3*x*log(d + e*x)/e**2 - 85*b**3*d**2*f*g**2*n**3*x/(6*e**2) - 6*b**3*d**
2*f*g**2*n**2*x*log(c)*log(d + e*x)/e**2 + 11*b**3*d**2*f*g**2*n**2*x*log(c
)/e**2 - 3*b**3*d**2*f*g**2*n*x*log(c)**2/e**2 - 3*b**3*d**2*g**3*n**3*x**2
*log(d + e*x)**2/(8*e**2) + 13*b**3*d**2*g**3*n**3*x**2*log(d + e*x)/(16*e*
*2) - 115*b**3*d**2*g**3*n**3*x**2/(192*e**2) - 3*b**3*d**2*g**3*n**2*x**2*
log(c)*log(d + e*x)/(4*e**2) + 13*b**3*d**2*g**3*n**2*x**2*log(c)/(16*e**2)
 - 3*b**3*d**2*g**3*n*x**2*log(c)**2/(8*e**2) + b**3*d*f**3*n**3*log(d + e*
x)**3/e - 3*b**3*d*f**3*n**3*log(d + e*x)**2/e + 6*b**3*d*f**3*n**3*log(d +
 e*x)/e + 3*b**3*d*f**3*n**2*log(c)*log(d + e*x)**2/e - 6*b**3*d*f**3*n**2*
log(c)*log(d + e*x)/e + 3*b**3*d*f**3*n*log(c)**2*log(d + e*x)/e + 9*b**3*d
*f**2*g*n**3*x*log(d + e*x)**2/(2*e) - 27*b**3*d*f**2*g*n**3*x*log(d + e*x)
/(2*e) + 63*b**3*d*f**2*g*n**3*x/(4*e) + 9*b**3*d*f**2*g*n**2*x*log(c)*log(
d + e*x)/e - 27*b**3*d*f**2*g*n**2*x*log(c)/(2*e) + 9*b**3*d*f**2*g*n*x*log
(c)**2/(2*e) + 3*b**3*d*f*g**2*n**3*x**2*log(d + e*x)**2/(2*e) - 5*b**3*d*f
*g**2*n**3*x**2*log(d + e*x)/(2*e) + 19*b**3*d*f*g**2*n**3*x**2/(12*e) + 3*
b**3*d*f*g**2*n**2*x**2*log(c)*log(d + e*x)/e - 5*b**3*d*f*g**2*n**2*x**2*l
og(c)/(2*e) + 3*b**3*d*f*g**2*n*x**2*log(c)**2/(2*e) + b**3*d*g**3*n**3*x**
3*log(d + e*x)**2/(4*e) - 7*b**3*d*g**3*n**3*x**3*log(d + e*x)/(24*e) + 37*
b**3*d*g**3*n**3*x**3/(288*e) + b**3*d*g**3*n**2*x**3*log(c)*log(d + e*x)/(
2*e) - 7*b**3*d*g**3*n**2*x**3*log(c)/(24*e) + b**3*d*g**3*n*x**3*log(c)**2
/(4*e) + b**3*f**3*n**3*x*log(d + e*x)**3 - 3*b**3*f**3*n**3*x*log(d + e*x)
**2 + 6*b**3*f**3*n**3*x*log(d + e*x) - 6*b**3*f**3*n**3*x + 3*b**3*f**3*n*
*2*x*log(c)*log(d + e*x)**2 - 6*b**3*f**3*n**2*x*log(c)*log(d + e*x) + 6*b*
*3*f**3*n**2*x*log(c) + 3*b**3*f**3*n*x*log(c)**2*log(d + e*x) - 3*b**3*f**
3*n*x*log(c)**2 + b**3*f**3*x*log(c)**3 + 3*b**3*f**2*g*n**3*x**2*log(d + e
```

```
*x)**3/2 - 9*b**3*f**2*g*n**3*x**2*log(d + e*x)**2/4 + 9*b**3*f**2*g*n**3*x
**2*log(d + e*x)/4 - 9*b**3*f**2*g*n**3*x**2/8 + 9*b**3*f**2*g*n**2*x**2*lo
g(c)*log(d + e*x)**2/2 - 9*b**3*f**2*g*n**2*x**2*log(c)*log(d + e*x)/2 + 9*
b**3*f**2*g*n**2*x**2*log(c)/4 + 9*b**3*f**2*g*n*x**2*log(c)**2*log(d + e*x
)/2 - 9*b**3*f**2*g*n*x**2*log(c)**2/4 + 3*b**3*f**2*g*x**2*log(c)**3/2 + b
**3*f*g**2*n**3*x**3*log(d + e*x)**3 - b**3*f*g**2*n**3*x**3*log(d + e*x)**
2 + 2*b**3*f*g**2*n**3*x**3*log(d + e*x)/3 - 2*b**3*f*g**2*n**3*x**3/9 + 3*
b**3*f*g**2*n**2*x**3*log(c)*log(d + e*x)**2 - 2*b**3*f*g**2*n**2*x**3*log(
c)*log(d + e*x) + 2*b**3*f*g**2*n**2*x**3*log(c)/3 + 3*b**3*f*g**2*n*x**3*l
og(c)**2*log(d + e*x) - b**3*f*g**2*n*x**3*log(c)**2 + b**3*f*g**2*x**3*log
(c)**3 + b**3*g**3*n**3*x**4*log(d + e*x)**3/4 - 3*b**3*g**3*n**3*x**4*log(
d + e*x)**2/16 + 3*b**3*g**3*n**3*x**4*log(d + e*x)/32 - 3*b**3*g**3*n**3*x
**4/128 + 3*b**3*g**3*n**2*x**4*log(c)*log(d + e*x)**2/4 - 3*b**3*g**3*n**2
*x**4*log(c)*log(d + e*x)/8 + 3*b**3*g**3*n**2*x**4*log(c)/32 + 3*b**3*g**3
*n*x**4*log(c)**2*log(d + e*x)/4 - 3*b**3*g**3*n*x**4*log(c)**2/16 + b**3*g
**3*x**4*log(c)**3/4, Ne(e, 0)), ((a + b*log(c*d**n))**3*(f**3*x + 3*f**2*g
*x**2/2 + f*g**2*x**3 + g**3*x**4/4), True))
```

3.53 $\int (f+gx)^2 \left(a+b\log\left(c(d+ex)^n\right)\right)^3 dx$

Optimal. Leaf size=432

$$\frac{3b^2gn^2(d+ex)^2(ef-dg)\left(a+b\log\left(c(d+ex)^n\right)\right)}{2e^3}+\frac{2b^2g^2n^2(d+ex)^3\left(a+b\log\left(c(d+ex)^n\right)\right)}{9e^3}+\frac{6ab^2n^2x(ef-dg}{e^2}$$

```
[Out] 6*a*b^2*(-d*g+e*f)^2*n^2*x/e^2-6*b^3*(-d*g+e*f)^2*n^3*x/e^2-3/4*b^3*g*(-d*g
+e*f)*n^3*(e*x+d)^2/e^3-2/27*b^3*g^2*n^3*(e*x+d)^3/e^3+6*b^3*(-d*g+e*f)^2*n
^2*(e*x+d)*ln(c*(e*x+d)^n)/e^3+3/2*b^2*g*(-d*g+e*f)*n^2*(e*x+d)^2*(a+b*ln(c
*(e*x+d)^n))/e^3+2/9*b^2*g^2*n^2*(e*x+d)^3*(a+b*ln(c*(e*x+d)^n))/e^3-3*b*(-
d*g+e*f)^2*n*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^2/e^3-3/2*b*g*(-d*g+e*f)*n*(e*x+
d)^2*(a+b*ln(c*(e*x+d)^n))^2/e^3-1/3*b*g^2*n*(e*x+d)^3*(a+b*ln(c*(e*x+d)^n)
)^2/e^3+(-d*g+e*f)^2*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^3/e^3+g*(-d*g+e*f)*(e*x+
d)^2*(a+b*ln(c*(e*x+d)^n))^3/e^3+1/3*g^2*(e*x+d)^3*(a+b*ln(c*(e*x+d)^n))^3/
e^3
```

Rubi [A] time = 0.38, antiderivative size = 432, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.292, Rules used = {2401, 2389, 2296, 2295, 2390, 2305, 2304}

$$\frac{3b^2gn^2(d+ex)^2(ef-dg)\left(a+b\log\left(c(d+ex)^n\right)\right)}{2e^3}+\frac{2b^2g^2n^2(d+ex)^3\left(a+b\log\left(c(d+ex)^n\right)\right)}{9e^3}+\frac{6ab^2n^2x(ef-dg}{e^2}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^2*(a + b*Log[c*(d + e*x)^n])^3,x]
```

```
[Out] (6*a*b^2*(e*f - d*g)^2*n^2*x)/e^2 - (6*b^3*(e*f - d*g)^2*n^3*x)/e^2 - (3*b^
3*g*(e*f - d*g)*n^3*(d + e*x)^2)/(4*e^3) - (2*b^3*g^2*n^3*(d + e*x)^3)/(27*
e^3) + (6*b^3*(e*f - d*g)^2*n^2*(d + e*x)*Log[c*(d + e*x)^n])/e^3 + (3*b^2*
g*(e*f - d*g)*n^2*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n]))/(2*e^3) + (2*b^2*
g^2*n^2*(d + e*x)^3*(a + b*Log[c*(d + e*x)^n]))/(9*e^3) - (3*b*(e*f - d*g)^
2*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/e^3 - (3*b*g*(e*f - d*g)*n*(d +
 e*x)^2*(a + b*Log[c*(d + e*x)^n])^2)/(2*e^3) - (b*g^2*n*(d + e*x)^3*(a + b
*Log[c*(d + e*x)^n])^2)/(3*e^3) + ((e*f - d*g)^2*(d + e*x)*(a + b*Log[c*(d
+ e*x)^n])^3)/e^3 + (g*(e*f - d*g)*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n])^3
)/e^3 + (g^2*(d + e*x)^3*(a + b*Log[c*(d + e*x)^n])^3)/(3*e^3)
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
```

```
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2390

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

Rule 2401

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

Rubi steps

$$\int (f+gx)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^3\,dx=\int\left(\frac{(ef-dg)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{e^2}+\frac{2g(ef-dg)(d+ex)\left(a+b\,\mathrm{lo}\right.}{e^2}\right.$$

$$=\frac{g^2\int(d+ex)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^3\,dx}{e^2}+\frac{(2g(ef-dg))\int(d+ex)\left(\right.}{e}$$

$$=\frac{g^2\,\mathrm{Subst}\left(\int x^2\left(a+b\log\left(cx^n\right)\right)^3\,dx,x,d+ex\right)}{e^3}+\frac{(2g(ef-dg))\,\mathrm{Subst}}{}$$

$$=\frac{(ef-dg)^2(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{e^3}+\frac{g(ef-dg)(d+ex)^2\left(a+\right.}{e^3}$$

$$=-\frac{3b(ef-dg)^2n(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{e^3}-\frac{3bg(ef-dg)n(d+}{}$$

$$=\frac{6ab^2(ef-dg)^2n^2x}{e^2}-\frac{3b^3g(ef-dg)n^3(d+ex)^2}{4e^3}-\frac{2b^3g^2n^3(d+ex)^3}{27e^3}+$$

$$=\frac{6ab^2(ef-dg)^2n^2x}{e^2}-\frac{6b^3(ef-dg)^2n^3x}{e^2}-\frac{3b^3g(ef-dg)n^3(d+ex)^2}{4e^3}-$$

Mathematica [A] time = 0.23, size = 333, normalized size = 0.77

$$\frac{-4bg^2n\left(2bn\left(benx\left(3d^2+3dex+e^2x^2\right)-3(d+ex)^3\left(a+b\log\left(c(d+ex)^n\right)\right)\right)+9(d+ex)^3\left(a+b\log\left(c(d+ex)^n\right)\right)\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^2*(a + b*Log[c*(d + e*x)^n])^3,x]
```

```
[Out] (108*(e*f - d*g)^2*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^3 + 108*g*(e*f - d*
g)*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n])^3 + 36*g^2*(d + e*x)^3*(a + b*Log
```

```
[c*(d + e*x)^n])^3 - 324*b*(e*f - d*g)^2*n*((d + e*x)*(a + b*Log[c*(d + e*x
)^n])^2 - 2*b*n*(e*(a - b*n)*x + b*(d + e*x)*Log[c*(d + e*x)^n])) - 81*b*g*
(e*f - d*g)*n*(2*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n])^2 + b*n*(b*e*n*x*(2
*d + e*x) - 2*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n]))) - 4*b*g^2*n*(9*(d +
e*x)^3*(a + b*Log[c*(d + e*x)^n])^2 + 2*b*n*(b*e*n*x*(3*d^2 + 3*d*e*x + e^2
*x^2) - 3*(d + e*x)^3*(a + b*Log[c*(d + e*x)^n]))))/(108*e^3)
```

fricas [B] time = 0.47, size = 1771, normalized size = 4.10

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*log(c*(e*x+d)^n))^3,x, algorithm="fricas")
```

```
[Out] -1/108*(4*(2*b^3*e^3*g^2*n^3 - 6*a*b^2*e^3*g^2*n^2 + 9*a^2*b*e^3*g^2*n - 9*
a^3*e^3*g^2)*x^3 - 36*(b^3*e^3*g^2*n^3*x^3 + 3*b^3*e^3*f*g*n^3*x^2 + 3*b^3*
e^3*f^2*n^3*x + (3*b^3*d*e^2*f^2 - 3*b^3*d^2*e*f*g + b^3*d^3*g^2)*n^3)*log(
e*x + d)^3 - 36*(b^3*e^3*g^2*x^3 + 3*b^3*e^3*f*g*x^2 + 3*b^3*e^3*f^2*x)*log
(c)^3 - 3*(36*a^3*e^3*f*g - (27*b^3*e^3*f*g - 19*b^3*d*e^2*g^2)*n^3 + 6*(9*
a*b^2*e^3*f*g - 5*a*b^2*d*e^2*g^2)*n^2 - 18*(3*a^2*b*e^3*f*g - a^2*b*d*e^2*
g^2)*n)*x^2 + 18*((18*b^3*d*e^2*f^2 - 27*b^3*d^2*e*f*g + 11*b^3*d^3*g^2)*n^
3 + 2*(b^3*e^3*g^2*n^3 - 3*a*b^2*e^3*g^2*n^2)*x^3 - 6*(3*a*b^2*d*e^2*f^2 -
3*a*b^2*d^2*e*f*g + a*b^2*d^3*g^2)*n^2 - 3*(6*a*b^2*e^3*f*g*n^2 - (3*b^3*e^
3*f*g - b^3*d*e^2*g^2)*n^3)*x^2 - 6*(3*a*b^2*e^3*f^2*n^2 - (3*b^3*e^3*f^2 -
 3*b^3*d*e^2*f*g + b^3*d^2*e*g^2)*n^3)*x - 6*(b^3*e^3*g^2*n^2*x^3 + 3*b^3*e
^3*f*g*n^2*x^2 + 3*b^3*e^3*f^2*n^2*x + (3*b^3*d*e^2*f^2 - 3*b^3*d^2*e*f*g +
 b^3*d^3*g^2)*n^2)*log(c))*log(e*x + d)^2 + 18*(2*(b^3*e^3*g^2*n - 3*a*b^2*
e^3*g^2)*x^3 - 3*(6*a*b^2*e^3*f*g - (3*b^3*e^3*f*g - b^3*d*e^2*g^2)*n)*x^2
- 6*(3*a*b^2*e^3*f^2 - (3*b^3*e^3*f^2 - 3*b^3*d*e^2*f*g + b^3*d^2*e*g^2)*n)
*x)*log(c)^2 - 6*(18*a^3*e^3*f^2 - (108*b^3*e^3*f^2 - 189*b^3*d*e^2*f*g + 8
5*b^3*d^2*e*g^2)*n^3 + 6*(18*a*b^2*e^3*f^2 - 27*a*b^2*d*e^2*f*g + 11*a*b^2*
d^2*e*g^2)*n^2 - 18*(3*a^2*b*e^3*f^2 - 3*a^2*b*d*e^2*f*g + a^2*b*d^2*e*g^2)
*n)*x - 6*((108*b^3*d*e^2*f^2 - 189*b^3*d^2*e*f*g + 85*b^3*d^3*g^2)*n^3 + 2
*(2*b^3*e^3*g^2*n^3 - 6*a*b^2*e^3*g^2*n^2 + 9*a^2*b*e^3*g^2*n)*x^3 - 6*(18*
a*b^2*d*e^2*f^2 - 27*a*b^2*d^2*e*f*g + 11*a*b^2*d^3*g^2)*n^2 + 3*(18*a^2*b*
e^3*f*g*n + (9*b^3*e^3*f*g - 5*b^3*d*e^2*g^2)*n^3 - 6*(3*a*b^2*e^3*f*g - a*
b^2*d*e^2*g^2)*n^2)*x^2 + 18*(b^3*e^3*g^2*n*x^3 + 3*b^3*e^3*f*g*n*x^2 + 3*b
^3*e^3*f^2*n*x + (3*b^3*d*e^2*f^2 - 3*b^3*d^2*e*f*g + b^3*d^3*g^2)*n)*log(c
)^2 + 18*(3*a^2*b*d*e^2*f^2 - 3*a^2*b*d^2*e*f*g + a^2*b*d^3*g^2)*n + 6*(9*a
^2*b*e^3*f^2*n + (18*b^3*e^3*f^2 - 27*b^3*d*e^2*f*g + 11*b^3*d^2*e*g^2)*n^3
 - 6*(3*a*b^2*e^3*f^2 - 3*a*b^2*d*e^2*f*g + a*b^2*d^2*e*g^2)*n^2)*x - 6*(2*
(b^3*e^3*g^2*n^2 - 3*a*b^2*e^3*g^2*n)*x^3 + (18*b^3*d*e^2*f^2 - 27*b^3*d^2*
e*f*g + 11*b^3*d^3*g^2)*n^2 - 3*(6*a*b^2*e^3*f*g*n - (3*b^3*e^3*f*g - b^3*d
*e^2*g^2)*n^2)*x^2 - 6*(3*a*b^2*d*e^2*f^2 - 3*a*b^2*d^2*e*f*g + a*b^2*d^3*g
^2)*n - 6*(3*a*b^2*e^3*f^2*n - (3*b^3*e^3*f^2 - 3*b^3*d*e^2*f*g + b^3*d^2*e
*g^2)*n^2)*x)*log(c))*log(e*x + d) - 6*(2*(2*b^3*e^3*g^2*n^2 - 6*a*b^2*e^3*
g^2*n + 9*a^2*b*e^3*g^2)*x^3 + 3*(18*a^2*b*e^3*f*g + (9*b^3*e^3*f*g - 5*b^3
*d*e^2*g^2)*n^2 - 6*(3*a*b^2*e^3*f*g - a*b^2*d*e^2*g^2)*n)*x^2 + 6*(9*a^2*b
*e^3*f^2 + (18*b^3*e^3*f^2 - 27*b^3*d*e^2*f*g + 11*b^3*d^2*e*g^2)*n^2 - 6*(
3*a*b^2*e^3*f^2 - 3*a*b^2*d*e^2*f*g + a*b^2*d^2*e*g^2)*n)*x)*log(c))/e^3
```

giac [B] time = 0.44, size = 2992, normalized size = 6.93

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*log(c*(e*x+d)^n))^3,x, algorithm="giac")
```

```
[Out] 1/3*(x*e + d)^3*b^3*g^2*n^3*e^(-3)*log(x*e + d)^3 - (x*e + d)^2*b^3*d*g^2*n
^3*e^(-3)*log(x*e + d)^3 + (x*e + d)*b^3*d^2*g^2*n^3*e^(-3)*log(x*e + d)^3
```

```
- 1/3*(x*e + d)^3*b^3*g^2*n^3*e^(-3)*log(x*e + d)^2 + 3/2*(x*e + d)^2*b^3*d
*g^2*n^3*e^(-3)*log(x*e + d)^2 - 3*(x*e + d)*b^3*d^2*g^2*n^3*e^(-3)*log(x*e
 + d)^2 + (x*e + d)^2*b^3*f*g*n^3*e^(-2)*log(x*e + d)^3 - 2*(x*e + d)*b^3*d
*f*g*n^3*e^(-2)*log(x*e + d)^3 + (x*e + d)^3*b^3*g^2*n^2*e^(-3)*log(x*e + d
)^2*log(c) - 3*(x*e + d)^2*b^3*d*g^2*n^2*e^(-3)*log(x*e + d)^2*log(c) + 3*(
x*e + d)*b^3*d^2*g^2*n^2*e^(-3)*log(x*e + d)^2*log(c) + 2/9*(x*e + d)^3*b^3
*g^2*n^3*e^(-3)*log(x*e + d) - 3/2*(x*e + d)^2*b^3*d*g^2*n^3*e^(-3)*log(x*e
 + d) + 6*(x*e + d)*b^3*d^2*g^2*n^3*e^(-3)*log(x*e + d) - 3/2*(x*e + d)^2*b
^3*f*g*n^3*e^(-2)*log(x*e + d)^2 + 6*(x*e + d)*b^3*d*f*g*n^3*e^(-2)*log(x*e
 + d)^2 + (x*e + d)^3*a*b^2*g^2*n^2*e^(-3)*log(x*e + d)^2 - 3*(x*e + d)^2*a
*b^2*d*g^2*n^2*e^(-3)*log(x*e + d)^2 + 3*(x*e + d)*a*b^2*d^2*g^2*n^2*e^(-3)
*log(x*e + d)^2 + (x*e + d)*b^3*f^2*n^3*e^(-1)*log(x*e + d)^3 - 2/3*(x*e +
d)^3*b^3*g^2*n^2*e^(-3)*log(x*e + d)*log(c) + 3*(x*e + d)^2*b^3*d*g^2*n^2*e
^(-3)*log(x*e + d)*log(c) - 6*(x*e + d)*b^3*d^2*g^2*n^2*e^(-3)*log(x*e + d)
*log(c) + 3*(x*e + d)^2*b^3*f*g*n^2*e^(-2)*log(x*e + d)^2*log(c) - 6*(x*e +
 d)*b^3*d*f*g*n^2*e^(-2)*log(x*e + d)^2*log(c) + (x*e + d)^3*b^3*g^2*n*e^(-
3)*log(x*e + d)*log(c)^2 - 3*(x*e + d)^2*b^3*d*g^2*n*e^(-3)*log(x*e + d)*lo
g(c)^2 + 3*(x*e + d)*b^3*d^2*g^2*n*e^(-3)*log(x*e + d)*log(c)^2 - 2/27*(x*e
 + d)^3*b^3*g^2*n^3*e^(-3) + 3/4*(x*e + d)^2*b^3*d*g^2*n^3*e^(-3) - 6*(x*e
+ d)*b^3*d^2*g^2*n^3*e^(-3) + 3/2*(x*e + d)^2*b^3*f*g*n^3*e^(-2)*log(x*e +
d) - 12*(x*e + d)*b^3*d*f*g*n^3*e^(-2)*log(x*e + d) - 2/3*(x*e + d)^3*a*b^2
*g^2*n^2*e^(-3)*log(x*e + d) + 3*(x*e + d)^2*a*b^2*d*g^2*n^2*e^(-3)*log(x*e
 + d) - 6*(x*e + d)*a*b^2*d^2*g^2*n^2*e^(-3)*log(x*e + d) - 3*(x*e + d)*b^3
*f^2*n^3*e^(-1)*log(x*e + d)^2 + 3*(x*e + d)^2*a*b^2*f*g*n^2*e^(-2)*log(x*e
 + d)^2 - 6*(x*e + d)*a*b^2*d*f*g*n^2*e^(-2)*log(x*e + d)^2 + 2/9*(x*e + d)
^3*b^3*g^2*n^2*e^(-3)*log(c) - 3/2*(x*e + d)^2*b^3*d*g^2*n^2*e^(-3)*log(c)
+ 6*(x*e + d)*b^3*d^2*g^2*n^2*e^(-3)*log(c) - 3*(x*e + d)^2*b^3*f*g*n^2*e^(
-2)*log(x*e + d)*log(c) + 12*(x*e + d)*b^3*d*f*g*n^2*e^(-2)*log(x*e + d)*lo
g(c) + 2*(x*e + d)^3*a*b^2*g^2*n*e^(-3)*log(x*e + d)*log(c) - 6*(x*e + d)^2
*a*b^2*d*g^2*n*e^(-3)*log(x*e + d)*log(c) + 6*(x*e + d)*a*b^2*d^2*g^2*n*e^(
-3)*log(x*e + d)*log(c) + 3*(x*e + d)*b^3*f^2*n^2*e^(-1)*log(x*e + d)^2*log
(c) - 1/3*(x*e + d)^3*b^3*g^2*n*e^(-3)*log(c)^2 + 3/2*(x*e + d)^2*b^3*d*g^2
*n*e^(-3)*log(c)^2 - 3*(x*e + d)*b^3*d^2*g^2*n*e^(-3)*log(c)^2 + 3*(x*e + d
)^2*b^3*f*g*n*e^(-2)*log(x*e + d)*log(c)^2 - 6*(x*e + d)*b^3*d*f*g*n*e^(-2)
*log(x*e + d)*log(c)^2 + 1/3*(x*e + d)^3*b^3*g^2*e^(-3)*log(c)^3 - (x*e + d
)^2*b^3*d*g^2*e^(-3)*log(c)^3 + (x*e + d)*b^3*d^2*g^2*e^(-3)*log(c)^3 - 3/4
*(x*e + d)^2*b^3*f*g*n^3*e^(-2) + 12*(x*e + d)*b^3*d*f*g*n^3*e^(-2) + 2/9*(
x*e + d)^3*a*b^2*g^2*n^2*e^(-3) - 3/2*(x*e + d)^2*a*b^2*d*g^2*n^2*e^(-3) +
6*(x*e + d)*a*b^2*d^2*g^2*n^2*e^(-3) + 6*(x*e + d)*b^3*f^2*n^3*e^(-1)*log(x
*e + d) - 3*(x*e + d)^2*a*b^2*f*g*n^2*e^(-2)*log(x*e + d) + 12*(x*e + d)*a*
b^2*d*f*g*n^2*e^(-2)*log(x*e + d) + (x*e + d)^3*a^2*b*g^2*n*e^(-3)*log(x*e
+ d) - 3*(x*e + d)^2*a^2*b*d*g^2*n*e^(-3)*log(x*e + d) + 3*(x*e + d)*a^2*b*
d^2*g^2*n*e^(-3)*log(x*e + d) + 3*(x*e + d)*a*b^2*f^2*n^2*e^(-1)*log(x*e +
d)^2 + 3/2*(x*e + d)^2*b^3*f*g*n^2*e^(-2)*log(c) - 12*(x*e + d)*b^3*d*f*g*n
^2*e^(-2)*log(c) - 2/3*(x*e + d)^3*a*b^2*g^2*n*e^(-3)*log(c) + 3*(x*e + d)^
2*a*b^2*d*g^2*n*e^(-3)*log(c) - 6*(x*e + d)*a*b^2*d^2*g^2*n*e^(-3)*log(c) -
 6*(x*e + d)*b^3*f^2*n^2*e^(-1)*log(x*e + d)*log(c) + 6*(x*e + d)^2*a*b^2*f
*g*n*e^(-2)*log(x*e + d)*log(c) - 12*(x*e + d)*a*b^2*d*f*g*n*e^(-2)*log(x*e
 + d)*log(c) - 3/2*(x*e + d)^2*b^3*f*g*n*e^(-2)*log(c)^2 + 6*(x*e + d)*b^3*
d*f*g*n*e^(-2)*log(c)^2 + (x*e + d)^3*a*b^2*g^2*e^(-3)*log(c)^2 - 3*(x*e +
d)^2*a*b^2*d*g^2*e^(-3)*log(c)^2 + 3*(x*e + d)*a*b^2*d^2*g^2*e^(-3)*log(c)^
2 + 3*(x*e + d)*b^3*f^2*n*e^(-1)*log(x*e + d)*log(c)^2 + (x*e + d)^2*b^3*f*
g*e^(-2)*log(c)^3 - 2*(x*e + d)*b^3*d*f*g*e^(-2)*log(c)^3 - 6*(x*e + d)*b^3
*f^2*n^3*e^(-1) + 3/2*(x*e + d)^2*a*b^2*f*g*n^2*e^(-2) - 12*(x*e + d)*a*b^2
*d*f*g*n^2*e^(-2) - 1/3*(x*e + d)^3*a^2*b*g^2*n*e^(-3) + 3/2*(x*e + d)^2*a^
2*b*d*g^2*n*e^(-3) - 3*(x*e + d)*a^2*b*d^2*g^2*n*e^(-3) - 6*(x*e + d)*a*b^2
*f^2*n^2*e^(-1)*log(x*e + d) + 3*(x*e + d)^2*a^2*b*f*g*n*e^(-2)*log(x*e + d
) - 6*(x*e + d)*a^2*b*d*f*g*n*e^(-2)*log(x*e + d) + 6*(x*e + d)*b^3*f^2*n^2
*e^(-1)*log(c) - 3*(x*e + d)^2*a*b^2*f*g*n*e^(-2)*log(c) + 12*(x*e + d)*a*b
```

```
^2*d*f*g*n*e^(-2)*log(c) + (x*e + d)^3*a^2*b*g^2*e^(-3)*log(c) - 3*(x*e + d
)^2*a^2*b*d*g^2*e^(-3)*log(c) + 3*(x*e + d)*a^2*b*d^2*g^2*e^(-3)*log(c) + 6
*(x*e + d)*a*b^2*f^2*n*e^(-1)*log(x*e + d)*log(c) - 3*(x*e + d)*b^3*f^2*n*e
^(-1)*log(c)^2 + 3*(x*e + d)^2*a*b^2*f*g*e^(-2)*log(c)^2 - 6*(x*e + d)*a*b^
2*d*f*g*e^(-2)*log(c)^2 + (x*e + d)*b^3*f^2*e^(-1)*log(c)^3 + 6*(x*e + d)*a
*b^2*f^2*n^2*e^(-1) - 3/2*(x*e + d)^2*a^2*b*f*g*n*e^(-2) + 6*(x*e + d)*a^2*
b*d*f*g*n*e^(-2) + 1/3*(x*e + d)^3*a^3*g^2*e^(-3) - (x*e + d)^2*a^3*d*g^2*e
^(-3) + (x*e + d)*a^3*d^2*g^2*e^(-3) + 3*(x*e + d)*a^2*b*f^2*n*e^(-1)*log(x
*e + d) - 6*(x*e + d)*a*b^2*f^2*n*e^(-1)*log(c) + 3*(x*e + d)^2*a^2*b*f*g*e
^(-2)*log(c) - 6*(x*e + d)*a^2*b*d*f*g*e^(-2)*log(c) + 3*(x*e + d)*a*b^2*f^
2*e^(-1)*log(c)^2 - 3*(x*e + d)*a^2*b*f^2*n*e^(-1) + (x*e + d)^2*a^3*f*g*e^
(-2) - 2*(x*e + d)*a^3*d*f*g*e^(-2) + 3*(x*e + d)*a^2*b*f^2*e^(-1)*log(c) +
 (x*e + d)*a^3*f^2*e^(-1)
```

maple [C] time = 2.29, size = 20417, normalized size = 47.26

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

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

maxima [B] time = 1.55, size = 1140, normalized size = 2.64

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*log(c*(e*x+d)^n))^3,x, algorithm="maxima")
```

```
[Out] 1/3*b^3*g^2*x^3*log((e*x + d)^n*c)^3 + a*b^2*g^2*x^3*log((e*x + d)^n*c)^2 +
 b^3*f*g*x^2*log((e*x + d)^n*c)^3 + a^2*b*g^2*x^3*log((e*x + d)^n*c) + 3*a*
b^2*f*g*x^2*log((e*x + d)^n*c)^2 + b^3*f^2*x*log((e*x + d)^n*c)^3 + 1/3*a^3
*g^2*x^3 - 3*a^2*b*e*f^2*n*(x/e - d*log(e*x + d)/e^2) + 1/6*a^2*b*e*g^2*n*(
6*d^3*log(e*x + d)/e^4 - (2*e^2*x^3 - 3*d*e*x^2 + 6*d^2*x)/e^3) - 3/2*a^2*b
*e*f*g*n*(2*d^2*log(e*x + d)/e^3 + (e*x^2 - 2*d*x)/e^2) + 3*a^2*b*f*g*x^2*l
og((e*x + d)^n*c) + 3*a*b^2*f^2*x*log((e*x + d)^n*c)^2 + a^3*f*g*x^2 + 3*a^
2*b*f^2*x*log((e*x + d)^n*c) - 3*(2*e*n*(x/e - d*log(e*x + d)/e^2)*log((e*x
 + d)^n*c) + (d*log(e*x + d)^2 - 2*e*x + 2*d*log(e*x + d))*n^2/e)*a*b^2*f^2
 - (3*e*n*(x/e - d*log(e*x + d)/e^2)*log((e*x + d)^n*c)^2 - e*n*((d*log(e*x
 + d)^3 + 3*d*log(e*x + d)^2 - 6*e*x + 6*d*log(e*x + d))*n^2/e^2 - 3*(d*log
(e*x + d)^2 - 2*e*x + 2*d*log(e*x + d))*n*log((e*x + d)^n*c)/e^2))*b^3*f^2
 - 3/2*(2*e*n*(2*d^2*log(e*x + d)/e^3 + (e*x^2 - 2*d*x)/e^2)*log((e*x + d)^n
*c) - (e^2*x^2 + 2*d^2*log(e*x + d)^2 - 6*d*e*x + 6*d^2*log(e*x + d))*n^2/e
^2)*a*b^2*f*g - 1/4*(6*e*n*(2*d^2*log(e*x + d)/e^3 + (e*x^2 - 2*d*x)/e^2)*l
og((e*x + d)^n*c)^2 + e*n*((4*d^2*log(e*x + d)^3 + 3*e^2*x^2 + 18*d^2*log(e
*x + d)^2 - 42*d*e*x + 42*d^2*log(e*x + d))*n^2/e^3 - 6*(e^2*x^2 + 2*d^2*lo
g(e*x + d)^2 - 6*d*e*x + 6*d^2*log(e*x + d))*n*log((e*x + d)^n*c)/e^3))*b^3
*f*g + 1/18*(6*e*n*(6*d^3*log(e*x + d)/e^4 - (2*e^2*x^3 - 3*d*e*x^2 + 6*d^2
*x)/e^3)*log((e*x + d)^n*c) + (4*e^3*x^3 - 15*d*e^2*x^2 - 18*d^3*log(e*x +
d)^2 + 66*d^2*e*x - 66*d^3*log(e*x + d))*n^2/e^3)*a*b^2*g^2 + 1/108*(18*e*n
*(6*d^3*log(e*x + d)/e^4 - (2*e^2*x^3 - 3*d*e*x^2 + 6*d^2*x)/e^3)*log((e*x
+ d)^n*c)^2 - e*n*((8*e^3*x^3 - 36*d^3*log(e*x + d)^3 - 57*d*e^2*x^2 - 198*
d^3*log(e*x + d)^2 + 510*d^2*e*x - 510*d^3*log(e*x + d))*n^2/e^4 - 6*(4*e^3
*x^3 - 15*d*e^2*x^2 - 18*d^3*log(e*x + d)^2 + 66*d^2*e*x - 66*d^3*log(e*x +
 d))*n*log((e*x + d)^n*c)/e^4))*b^3*g^2 + a^3*f^2*x
```

mupad [B] time = 0.86, size = 1157, normalized size = 2.68

$$\ln\left(c\,(d+e\,x)^n\right)^2\left(x^2\left(\frac{3\,b^2\,g\,\left(a\,d\,g+2\,a\,e\,f-b\,e\,f\,n\right)}{2\,e}-\frac{b^2\,d\,g^2\,(3\,a-b\,n)}{2\,e}\right)-x\left(\frac{d\left(\frac{3\,b^2\,g\left(a\,d\,g+2\,a\,e\,f-b\,e\,f\,n\right)}{e}-\frac{b^2\,d\,g^2}{}\right.}{e}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] log(c*(d + e*x)^n)^2*(x^2*((3*b^2*g*(a*d*g + 2*a*e*f - b*e*f*n))/(2*e) - (b
^2*d*g^2*(3*a - b*n))/(2*e)) - x*((d*((3*b^2*g*(a*d*g + 2*a*e*f - b*e*f*n))
/e - (b^2*d*g^2*(3*a - b*n))/e))/e - (3*b^2*f*(2*a*d*g + a*e*f - b*e*f*n))/
e) + (d*(6*a*b^2*d^2*g^2 + 18*a*b^2*e^2*f^2 - 11*b^3*d^2*g^2*n - 18*b^3*e^2
*f^2*n - 18*a*b^2*d*e*f*g + 27*b^3*d*e*f*g*n))/(6*e^3) + (b^2*g^2*x^3*(3*a
- b*n))/3) + x*((18*a^3*e^2*f^2 - 66*b^3*d^2*g^2*n^3 - 108*b^3*e^2*f^2*n^3
- 54*a^2*b*e^2*f^2*n + 36*a^3*d*e*f*g + 36*a*b^2*d^2*g^2*n^2 + 108*a*b^2*e^
2*f^2*n^2 + 162*b^3*d*e*f*g*n^3 - 108*a*b^2*d*e*f*g*n^2)/(18*e^2) - (d*((g*
(6*a^3*d*g + 12*a^3*e*f + 5*b^3*d*g*n^3 - 9*b^3*e*f*n^3 - 6*a*b^2*d*g*n^2 +
 18*a*b^2*e*f*n^2 - 18*a^2*b*e*f*n))/(6*e) - (d*g^2*(9*a^3 - 2*b^3*n^3 + 6*
a*b^2*n^2 - 9*a^2*b*n))/(9*e)))/e) + x^2*((g*(6*a^3*d*g + 12*a^3*e*f + 5*b^
3*d*g*n^3 - 9*b^3*e*f*n^3 - 6*a*b^2*d*g*n^2 + 18*a*b^2*e*f*n^2 - 18*a^2*b*e
*f*n))/(12*e) - (d*g^2*(9*a^3 - 2*b^3*n^3 + 6*a*b^2*n^2 - 9*a^2*b*n))/(18*e
)) + log(c*(d + e*x)^n)^3*(b^3*f^2*x + (b^3*g^2*x^3)/3 + (d*(b^3*d^2*g^2 +
3*b^3*e^2*f^2 - 3*b^3*d*e*f*g))/(3*e^3) + b^3*f*g*x^2) + (g^2*x^3*(9*a^3 -
2*b^3*n^3 + 6*a*b^2*n^2 - 9*a^2*b*n))/27 + (log(d + e*x)*(85*b^3*d^3*g^2*n^
3 + 18*a^2*b*d^3*g^2*n - 66*a*b^2*d^3*g^2*n^2 + 108*b^3*d*e^2*f^2*n^3 - 108
*a*b^2*d*e^2*f^2*n^2 + 54*a^2*b*d*e^2*f^2*n - 189*b^3*d^2*e*f*g*n^3 + 162*a
*b^2*d^2*e*f*g*n^2 - 54*a^2*b*d^2*e*f*g*n))/(18*e^3) + (log(c*(d + e*x)^n)*
((x^2*(9*b*e*g*(3*a^2*d*g + 6*a^2*e*f - b^2*d*g*n^2 + 3*b^2*e*f*n^2 - 6*a*b
*e*f*n) - 3*b*d*e*g^2*(9*a^2 + 2*b^2*n^2 - 6*a*b*n)))/(6*e) + (x*((27*a^2*b
*e^3*f^2 + 54*b^3*e^3*f^2*n^2 - 54*a*b^2*e^3*f^2*n + 18*b^3*d^2*e*g^2*n^2 +
 54*a^2*b*d*e^2*f*g - 54*b^3*d*e^2*f*g*n^2)/e - (d*(9*b*e*g*(3*a^2*d*g + 6*
a^2*e*f - b^2*d*g*n^2 + 3*b^2*e*f*n^2 - 6*a*b*e*f*n) - 3*b*d*e*g^2*(9*a^2 +
 2*b^2*n^2 - 6*a*b*n)))/e))/(3*e) + (b*e*g^2*x^3*(9*a^2 + 2*b^2*n^2 - 6*a*b
*n))/3))/(3*e)
```

sympy [A] time = 23.77, size = 2746, normalized size = 6.36

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**2*(a+b*ln(c*(e*x+d)**n))**3,x)
```

```
[Out] Piecewise((a**3*f**2*x + a**3*f*g*x**2 + a**3*g**2*x**3/3 + a**2*b*d**3*g**
2*n*log(d + e*x)/e**3 - 3*a**2*b*d**2*f*g*n*log(d + e*x)/e**2 - a**2*b*d**2
*g**2*n*x/e**2 + 3*a**2*b*d*f**2*n*log(d + e*x)/e + 3*a**2*b*d*f*g*n*x/e +
a**2*b*d*g**2*n*x**2/(2*e) + 3*a**2*b*f**2*n*x*log(d + e*x) - 3*a**2*b*f**2
*n*x + 3*a**2*b*f**2*x*log(c) + 3*a**2*b*f*g*n*x**2*log(d + e*x) - 3*a**2*b
*f*g*n*x**2/2 + 3*a**2*b*f*g*x**2*log(c) + a**2*b*g**2*n*x**3*log(d + e*x)
- a**2*b*g**2*n*x**3/3 + a**2*b*g**2*x**3*log(c) + a*b**2*d**3*g**2*n**2*lo
g(d + e*x)**2/e**3 - 11*a*b**2*d**3*g**2*n**2*log(d + e*x)/(3*e**3) + 2*a*b
**2*d**3*g**2*n*log(c)*log(d + e*x)/e**3 - 3*a*b**2*d**2*f*g*n**2*log(d + e
*x)**2/e**2 + 9*a*b**2*d**2*f*g*n**2*log(d + e*x)/e**2 - 6*a*b**2*d**2*f*g*
n*log(c)*log(d + e*x)/e**2 - 2*a*b**2*d**2*g**2*n**2*x*log(d + e*x)/e**2 +
11*a*b**2*d**2*g**2*n**2*x/(3*e**2) - 2*a*b**2*d**2*g**2*n*x*log(c)/e**2 +
3*a*b**2*d*f**2*n**2*log(d + e*x)**2/e - 6*a*b**2*d*f**2*n**2*log(d + e*x)/
```

```
e + 6*a*b**2*d*f**2*n*log(c)*log(d + e*x)/e + 6*a*b**2*d*f*g*n**2*x*log(d +
 e*x)/e - 9*a*b**2*d*f*g*n**2*x/e + 6*a*b**2*d*f*g*n*x*log(c)/e + a*b**2*d*
g**2*n**2*x**2*log(d + e*x)/e - 5*a*b**2*d*g**2*n**2*x**2/(6*e) + a*b**2*d*
g**2*n*x**2*log(c)/e + 3*a*b**2*f**2*n**2*x*log(d + e*x)**2 - 6*a*b**2*f**2
*n**2*x*log(d + e*x) + 6*a*b**2*f**2*n**2*x + 6*a*b**2*f**2*n*x*log(c)*log(
d + e*x) - 6*a*b**2*f**2*n*x*log(c) + 3*a*b**2*f**2*x*log(c)**2 + 3*a*b**2*
f*g*n**2*x**2*log(d + e*x)**2 - 3*a*b**2*f*g*n**2*x**2*log(d + e*x) + 3*a*b
**2*f*g*n**2*x**2/2 + 6*a*b**2*f*g*n*x**2*log(c)*log(d + e*x) - 3*a*b**2*f*
g*n*x**2*log(c) + 3*a*b**2*f*g*x**2*log(c)**2 + a*b**2*g**2*n**2*x**3*log(d
 + e*x)**2 - 2*a*b**2*g**2*n**2*x**3*log(d + e*x)/3 + 2*a*b**2*g**2*n**2*x*
*3/9 + 2*a*b**2*g**2*n*x**3*log(c)*log(d + e*x) - 2*a*b**2*g**2*n*x**3*log(
c)/3 + a*b**2*g**2*x**3*log(c)**2 + b**3*d**3*g**2*n**3*log(d + e*x)**3/(3*
e**3) - 11*b**3*d**3*g**2*n**3*log(d + e*x)**2/(6*e**3) + 85*b**3*d**3*g**2
*n**3*log(d + e*x)/(18*e**3) + b**3*d**3*g**2*n**2*log(c)*log(d + e*x)**2/e
**3 - 11*b**3*d**3*g**2*n**2*log(c)*log(d + e*x)/(3*e**3) + b**3*d**3*g**2*
n*log(c)**2*log(d + e*x)/e**3 - b**3*d**2*f*g*n**3*log(d + e*x)**3/e**2 + 9
*b**3*d**2*f*g*n**3*log(d + e*x)**2/(2*e**2) - 21*b**3*d**2*f*g*n**3*log(d
+ e*x)/(2*e**2) - 3*b**3*d**2*f*g*n**2*log(c)*log(d + e*x)**2/e**2 + 9*b**3
*d**2*f*g*n**2*log(c)*log(d + e*x)/e**2 - 3*b**3*d**2*f*g*n*log(c)**2*log(d
 + e*x)/e**2 - b**3*d**2*g**2*n**3*x*log(d + e*x)**2/e**2 + 11*b**3*d**2*g*
*2*n**3*x*log(d + e*x)/(3*e**2) - 85*b**3*d**2*g**2*n**3*x/(18*e**2) - 2*b*
*3*d**2*g**2*n**2*x*log(c)*log(d + e*x)/e**2 + 11*b**3*d**2*g**2*n**2*x*log
(c)/(3*e**2) - b**3*d**2*g**2*n*x*log(c)**2/e**2 + b**3*d*f**2*n**3*log(d +
 e*x)**3/e - 3*b**3*d*f**2*n**3*log(d + e*x)**2/e + 6*b**3*d*f**2*n**3*log(
d + e*x)/e + 3*b**3*d*f**2*n**2*log(c)*log(d + e*x)**2/e - 6*b**3*d*f**2*n*
*2*log(c)*log(d + e*x)/e + 3*b**3*d*f**2*n*log(c)**2*log(d + e*x)/e + 3*b**
3*d*f*g*n**3*x*log(d + e*x)**2/e - 9*b**3*d*f*g*n**3*x*log(d + e*x)/e + 21*
b**3*d*f*g*n**3*x/(2*e) + 6*b**3*d*f*g*n**2*x*log(c)*log(d + e*x)/e - 9*b**
3*d*f*g*n**2*x*log(c)/e + 3*b**3*d*f*g*n*x*log(c)**2/e + b**3*d*g**2*n**3*x
**2*log(d + e*x)**2/(2*e) - 5*b**3*d*g**2*n**3*x**2*log(d + e*x)/(6*e) + 19
*b**3*d*g**2*n**3*x**2/(36*e) + b**3*d*g**2*n**2*x**2*log(c)*log(d + e*x)/e
 - 5*b**3*d*g**2*n**2*x**2*log(c)/(6*e) + b**3*d*g**2*n*x**2*log(c)**2/(2*e
) + b**3*f**2*n**3*x*log(d + e*x)**3 - 3*b**3*f**2*n**3*x*log(d + e*x)**2 +
 6*b**3*f**2*n**3*x*log(d + e*x) - 6*b**3*f**2*n**3*x + 3*b**3*f**2*n**2*x*
log(c)*log(d + e*x)**2 - 6*b**3*f**2*n**2*x*log(c)*log(d + e*x) + 6*b**3*f*
*2*n**2*x*log(c) + 3*b**3*f**2*n*x*log(c)**2*log(d + e*x) - 3*b**3*f**2*n*x
*log(c)**2 + b**3*f**2*x*log(c)**3 + b**3*f*g*n**3*x**2*log(d + e*x)**3 - 3
*b**3*f*g*n**3*x**2*log(d + e*x)**2/2 + 3*b**3*f*g*n**3*x**2*log(d + e*x)/2
 - 3*b**3*f*g*n**3*x**2/4 + 3*b**3*f*g*n**2*x**2*log(c)*log(d + e*x)**2 - 3
*b**3*f*g*n**2*x**2*log(c)*log(d + e*x) + 3*b**3*f*g*n**2*x**2*log(c)/2 + 3
*b**3*f*g*n*x**2*log(c)**2*log(d + e*x) - 3*b**3*f*g*n*x**2*log(c)**2/2 + b
**3*f*g*x**2*log(c)**3 + b**3*g**2*n**3*x**3*log(d + e*x)**3/3 - b**3*g**2*
n**3*x**3*log(d + e*x)**2/3 + 2*b**3*g**2*n**3*x**3*log(d + e*x)/9 - 2*b**3
*g**2*n**3*x**3/27 + b**3*g**2*n**2*x**3*log(c)*log(d + e*x)**2 - 2*b**3*g*
*2*n**2*x**3*log(c)*log(d + e*x)/3 + 2*b**3*g**2*n**2*x**3*log(c)/9 + b**3*
g**2*n*x**3*log(c)**2*log(d + e*x) - b**3*g**2*n*x**3*log(c)**2/3 + b**3*g*
*2*x**3*log(c)**3/3, Ne(e, 0)), ((a + b*log(c*d**n))**3*(f**2*x + f*g*x**2
+ g**2*x**3/3), True))
```

3.54 $\int (f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^3\,dx$

Optimal. Leaf size=265

$$\frac{3b^2gn^2(d+ex)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{4e^2}+\frac{6ab^2n^2x(ef-dg)}{e}-\frac{3bn(d+ex)(ef-dg)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{e^2}+\frac{(d+$$

```
[Out] 6*a*b^2*(-d*g+e*f)*n^2*x/e-6*b^3*(-d*g+e*f)*n^3*x/e-3/8*b^3*g*n^3*(e*x+d)^2
/e^2+6*b^3*(-d*g+e*f)*n^2*(e*x+d)*ln(c*(e*x+d)^n)/e^2+3/4*b^2*g*n^2*(e*x+d)
^2*(a+b*ln(c*(e*x+d)^n))/e^2-3*b*(-d*g+e*f)*n*(e*x+d)*(a+b*ln(c*(e*x+d)^n))
^2/e^2-3/4*b*g*n*(e*x+d)^2*(a+b*ln(c*(e*x+d)^n))^2/e^2+(-d*g+e*f)*(e*x+d)*(
a+b*ln(c*(e*x+d)^n))^3/e^2+1/2*g*(e*x+d)^2*(a+b*ln(c*(e*x+d)^n))^3/e^2
```

Rubi [A] time = 0.22, antiderivative size = 265, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 7, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.318, Rules used = {2401, 2389, 2296, 2295, 2390, 2305, 2304}

$$\frac{3b^2gn^2(d+ex)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{4e^2}+\frac{6ab^2n^2x(ef-dg)}{e}-\frac{3bn(d+ex)(ef-dg)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{e^2}+\frac{(d+$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)*(a + b*Log[c*(d + e*x)^n])^3,x]
```

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

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
```

```
, b, c, d, e, n, p}, x]
```

Rule 2390

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

Rule 2401

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

Rubi steps

$$\int (f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^3\,dx=\int\left(\frac{(ef-dg)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{e}+\frac{g(d+ex)\left(a+b\log\left(c(d+\right.\right.}{e}\right.$$

$$=\frac{g\int(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^3\,dx}{e}+\frac{(ef-dg)\int\left(a+b\log\left(c(\right.\right.}{e}$$

$$=\frac{g\,\mathrm{Subst}\left(\int x\left(a+b\log\left(cx^n\right)\right)^3\,dx,x,d+ex\right)}{e^2}+\frac{(ef-dg)\,\mathrm{Subst}\left(\int\left(\right.\right.}{}$$

$$=\frac{(ef-dg)(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{e^2}+\frac{g(d+ex)^2\left(a+b\log\left(c\right.\right.}{2e^2}$$

$$=-\frac{3b(ef-dg)n(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{e^2}-\frac{3bgn(d+ex)^2\left(a\right.}{}$$

$$=\frac{6ab^2(ef-dg)n^2x}{e}-\frac{3b^3gn^3(d+ex)^2}{8e^2}+\frac{3b^2gn^2(d+ex)^2\left(a+b\log\left(\right.\right.}{4e^2}$$

$$=\frac{6ab^2(ef-dg)n^2x}{e}-\frac{6b^3(ef-dg)n^3x}{e}-\frac{3b^3gn^3(d+ex)^2}{8e^2}+\frac{6b^3(ef-}{}$$

Mathematica [A] time = 0.14, size = 201, normalized size = 0.76

$$\frac{8(d+ex)(ef-dg)\left(a+b\log\left(c(d+ex)^n\right)\right)^3-24bn(ef-dg)\left((d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2-2bn\left(ex(a-b\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)*(a + b*Log[c*(d + e*x)^n])^3,x]
```

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

fricas [B] time = 0.51, size = 923, normalized size = 3.48

$$\frac{4\left(b^3e^2gn^3x^2+2\,b^3e^2fn^3x+\left(2\,b^3def-b^3d^2g\right)n^3\right)\log\left(ex+d\right)^3+4\left(b^3e^2gx^2+2\,b^3e^2fx\right)\log(c)^3-\left(3\,b^3e^2gn^3\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/8*(4*(b^3*e^2*g*n^3*x^2 + 2*b^3*e^2*f*n^3*x + (2*b^3*d*e*f - b^3*d^2*g)*n
^3)*log(e*x + d)^3 + 4*(b^3*e^2*g*x^2 + 2*b^3*e^2*f*x)*log(c)^3 - (3*b^3*e^
2*g*n^3 - 6*a*b^2*e^2*g*n^2 + 6*a^2*b*e^2*g*n - 4*a^3*e^2*g)*x^2 - 6*((4*b^
3*d*e*f - 3*b^3*d^2*g)*n^3 - 2*(2*a*b^2*d*e*f - a*b^2*d^2*g)*n^2 + (b^3*e^2
*g*n^3 - 2*a*b^2*e^2*g*n^2)*x^2 - 2*(2*a*b^2*e^2*f*n^2 - (2*b^3*e^2*f - b^3
*d*e*g)*n^3)*x - 2*(b^3*e^2*g*n^2*x^2 + 2*b^3*e^2*f*n^2*x + (2*b^3*d*e*f -
b^3*d^2*g)*n^2)*log(c))*log(e*x + d)^2 - 6*((b^3*e^2*g*n - 2*a*b^2*e^2*g)*x
^2 - 2*(2*a*b^2*e^2*f - (2*b^3*e^2*f - b^3*d*e*g)*n)*x)*log(c)^2 + 2*(4*a^3
*e^2*f - 3*(8*b^3*e^2*f - 7*b^3*d*e*g)*n^3 + 6*(4*a*b^2*e^2*f - 3*a*b^2*d*e
*g)*n^2 - 6*(2*a^2*b*e^2*f - a^2*b*d*e*g)*n)*x + 6*((8*b^3*d*e*f - 7*b^3*d^
2*g)*n^3 - 2*(4*a*b^2*d*e*f - 3*a*b^2*d^2*g)*n^2 + (b^3*e^2*g*n^3 - 2*a*b^2
*e^2*g*n^2 + 2*a^2*b*e^2*g*n)*x^2 + 2*(b^3*e^2*g*n*x^2 + 2*b^3*e^2*f*n*x +
(2*b^3*d*e*f - b^3*d^2*g)*n)*log(c)^2 + 2*(2*a^2*b*d*e*f - a^2*b*d^2*g)*n +
 2*(2*a^2*b*e^2*f*n + (4*b^3*e^2*f - 3*b^3*d*e*g)*n^3 - 2*(2*a*b^2*e^2*f -
a*b^2*d*e*g)*n^2)*x - 2*((4*b^3*d*e*f - 3*b^3*d^2*g)*n^2 + (b^3*e^2*g*n^2 -
 2*a*b^2*e^2*g*n)*x^2 - 2*(2*a*b^2*d*e*f - a*b^2*d^2*g)*n - 2*(2*a*b^2*e^2*
f*n - (2*b^3*e^2*f - b^3*d*e*g)*n^2)*x)*log(c))*log(e*x + d) + 6*((b^3*e^2*
g*n^2 - 2*a*b^2*e^2*g*n + 2*a^2*b*e^2*g)*x^2 + 2*(2*a^2*b*e^2*f + (4*b^3*e^
2*f - 3*b^3*d*e*g)*n^2 - 2*(2*a*b^2*e^2*f - a*b^2*d*e*g)*n)*x)*log(c))/e^2
```

giac [B] time = 0.31, size = 1351, normalized size = 5.10

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*(x*e + d)^2*b^3*g*n^3*e^(-2)*log(x*e + d)^3 - (x*e + d)*b^3*d*g*n^3*e^(
-2)*log(x*e + d)^3 - 3/4*(x*e + d)^2*b^3*g*n^3*e^(-2)*log(x*e + d)^2 + 3*(x
*e + d)*b^3*d*g*n^3*e^(-2)*log(x*e + d)^2 + (x*e + d)*b^3*f*n^3*e^(-1)*log(
x*e + d)^3 + 3/2*(x*e + d)^2*b^3*g*n^2*e^(-2)*log(x*e + d)^2*log(c) - 3*(x*
e + d)*b^3*d*g*n^2*e^(-2)*log(x*e + d)^2*log(c) + 3/4*(x*e + d)^2*b^3*g*n^3
*e^(-2)*log(x*e + d) - 6*(x*e + d)*b^3*d*g*n^3*e^(-2)*log(x*e + d) - 3*(x*e
 + d)*b^3*f*n^3*e^(-1)*log(x*e + d)^2 + 3/2*(x*e + d)^2*a*b^2*g*n^2*e^(-2)*
log(x*e + d)^2 - 3*(x*e + d)*a*b^2*d*g*n^2*e^(-2)*log(x*e + d)^2 - 3/2*(x*e
 + d)^2*b^3*g*n^2*e^(-2)*log(x*e + d)*log(c) + 6*(x*e + d)*b^3*d*g*n^2*e^(-
2)*log(x*e + d)*log(c) + 3*(x*e + d)*b^3*f*n^2*e^(-1)*log(x*e + d)^2*log(c)
 + 3/2*(x*e + d)^2*b^3*g*n*e^(-2)*log(x*e + d)*log(c)^2 - 3*(x*e + d)*b^3*d
*g*n*e^(-2)*log(x*e + d)*log(c)^2 - 3/8*(x*e + d)^2*b^3*g*n^3*e^(-2) + 6*(x
*e + d)*b^3*d*g*n^3*e^(-2) + 6*(x*e + d)*b^3*f*n^3*e^(-1)*log(x*e + d) - 3/
2*(x*e + d)^2*a*b^2*g*n^2*e^(-2)*log(x*e + d) + 6*(x*e + d)*a*b^2*d*g*n^2*e
^(-2)*log(x*e + d) + 3*(x*e + d)*a*b^2*f*n^2*e^(-1)*log(x*e + d)^2 + 3/4*(x
*e + d)^2*b^3*g*n^2*e^(-2)*log(c) - 6*(x*e + d)*b^3*d*g*n^2*e^(-2)*log(c) -
 6*(x*e + d)*b^3*f*n^2*e^(-1)*log(x*e + d)*log(c) + 3*(x*e + d)^2*a*b^2*g*n
*e^(-2)*log(x*e + d)*log(c) - 6*(x*e + d)*a*b^2*d*g*n*e^(-2)*log(x*e + d)*l
og(c) - 3/4*(x*e + d)^2*b^3*g*n*e^(-2)*log(c)^2 + 3*(x*e + d)*b^3*d*g*n*e^(
-2)*log(c)^2 + 3*(x*e + d)*b^3*f*n*e^(-1)*log(x*e + d)*log(c)^2 + 1/2*(x*e
+ d)^2*b^3*g*e^(-2)*log(c)^3 - (x*e + d)*b^3*d*g*e^(-2)*log(c)^3 - 6*(x*e +
 d)*b^3*f*n^3*e^(-1) + 3/4*(x*e + d)^2*a*b^2*g*n^2*e^(-2) - 6*(x*e + d)*a*b
^2*d*g*n^2*e^(-2) - 6*(x*e + d)*a*b^2*f*n^2*e^(-1)*log(x*e + d) + 3/2*(x*e
+ d)^2*a^2*b*g*n*e^(-2)*log(x*e + d) - 3*(x*e + d)*a^2*b*d*g*n*e^(-2)*log(x
*e + d) + 6*(x*e + d)*b^3*f*n^2*e^(-1)*log(c) - 3/2*(x*e + d)^2*a*b^2*g*n*e
^(-2)*log(c) + 6*(x*e + d)*a*b^2*d*g*n*e^(-2)*log(c) + 6*(x*e + d)*a*b^2*f*
n*e^(-1)*log(x*e + d)*log(c) - 3*(x*e + d)*b^3*f*n*e^(-1)*log(c)^2 + 3/2*(x
*e + d)^2*a*b^2*g*e^(-2)*log(c)^2 - 3*(x*e + d)*a*b^2*d*g*e^(-2)*log(c)^2 +
 (x*e + d)*b^3*f*e^(-1)*log(c)^3 + 6*(x*e + d)*a*b^2*f*n^2*e^(-1) - 3/4*(x*
```

```
e + d)^2*a^2*b*g*n*e^(-2) + 3*(x*e + d)*a^2*b*d*g*n*e^(-2) + 3*(x*e + d)*a^
2*b*f*n*e^(-1)*log(x*e + d) - 6*(x*e + d)*a*b^2*f*n*e^(-1)*log(c) + 3/2*(x*
e + d)^2*a^2*b*g*e^(-2)*log(c) - 3*(x*e + d)*a^2*b*d*g*e^(-2)*log(c) + 3*(x
*e + d)*a*b^2*f*e^(-1)*log(c)^2 - 3*(x*e + d)*a^2*b*f*n*e^(-1) + 1/2*(x*e +
 d)^2*a^3*g*e^(-2) - (x*e + d)*a^3*d*g*e^(-2) + 3*(x*e + d)*a^2*b*f*e^(-1)*
log(c) + (x*e + d)*a^3*f*e^(-1)
```

maple [C] time = 1.36, size = 11547, normalized size = 43.57

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(b*ln(c*(e*x+d)^n)+a)^3,x)
```

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

maxima [B] time = 1.28, size = 662, normalized size = 2.50

$$\frac{1}{2}b^3gx^2\log\left((ex+d)^nc\right)^3+\frac{3}{2}ab^2gx^2\log\left((ex+d)^nc\right)^2+b^3fx\log\left((ex+d)^nc\right)^3-3a^2befn\left(\frac{x}{e}-\frac{d\log(ex+d)}{e^2}\right)-$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*b^3*g*x^2*log((e*x + d)^n*c)^3 + 3/2*a*b^2*g*x^2*log((e*x + d)^n*c)^2 +
 b^3*f*x*log((e*x + d)^n*c)^3 - 3*a^2*b*e*f*n*(x/e - d*log(e*x + d)/e^2) -
3/4*a^2*b*e*g*n*(2*d^2*log(e*x + d)/e^3 + (e*x^2 - 2*d*x)/e^2) + 3/2*a^2*b*
g*x^2*log((e*x + d)^n*c) + 3*a*b^2*f*x*log((e*x + d)^n*c)^2 + 1/2*a^3*g*x^2
 + 3*a^2*b*f*x*log((e*x + d)^n*c) - 3*(2*e*n*(x/e - d*log(e*x + d)/e^2)*log
((e*x + d)^n*c) + (d*log(e*x + d)^2 - 2*e*x + 2*d*log(e*x + d))*n^2/e)*a*b^
2*f - (3*e*n*(x/e - d*log(e*x + d)/e^2)*log((e*x + d)^n*c)^2 - e*n*((d*log(
e*x + d)^3 + 3*d*log(e*x + d)^2 - 6*e*x + 6*d*log(e*x + d))*n^2/e^2 - 3*(d*
log(e*x + d)^2 - 2*e*x + 2*d*log(e*x + d))*n*log((e*x + d)^n*c)/e^2))*b^3*f
 - 3/4*(2*e*n*(2*d^2*log(e*x + d)/e^3 + (e*x^2 - 2*d*x)/e^2)*log((e*x + d)^
n*c) - (e^2*x^2 + 2*d^2*log(e*x + d)^2 - 6*d*e*x + 6*d^2*log(e*x + d))*n^2/
e^2)*a*b^2*g - 1/8*(6*e*n*(2*d^2*log(e*x + d)/e^3 + (e*x^2 - 2*d*x)/e^2)*lo
g((e*x + d)^n*c)^2 + e*n*((4*d^2*log(e*x + d)^3 + 3*e^2*x^2 + 18*d^2*log(e*
x + d)^2 - 42*d*e*x + 42*d^2*log(e*x + d))*n^2/e^3 - 6*(e^2*x^2 + 2*d^2*log
(e*x + d)^2 - 6*d*e*x + 6*d^2*log(e*x + d))*n*log((e*x + d)^n*c)/e^3))*b^3*
g + a^3*f*x
```

mupad [B] time = 0.57, size = 511, normalized size = 1.93

$$\ln\left(c\,(d+e\,x)^n\right)^3\,\left(\frac{b^3\,g\,x^2}{2}-\frac{d\,\left(b^3\,d\,g-2\,b^3\,e\,f\right)}{2\,e^2}+b^3\,f\,x\right)+\ln\left(c\,(d+e\,x)^n\right)\,\left(\frac{x\,\left(\frac{12\,a^2\,b\,d\,g+12\,a^2\,b\,e\,f-12\,b^3\,d\,g\,n^2+24\,b^3}{2\,e}\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(a + b*log(c*(d + e*x)^n))^3,x)
```

```
[Out] log(c*(d + e*x)^n)^3*((b^3*g*x^2)/2 - (d*(b^3*d*g - 2*b^3*e*f))/(2*e^2) + b
^3*f*x) + log(c*(d + e*x)^n)*((x*((12*a^2*b*d*g + 12*a^2*b*e*f - 12*b^3*d*g
*n^2 + 24*b^3*e*f*n^2 - 24*a*b^2*e*f*n)/(2*e) - (3*b*d*g*(2*a^2 + b^2*n^2 -
 2*a*b*n))/e))/2 + (3*b*g*x^2*(2*a^2 + b^2*n^2 - 2*a*b*n))/4) + log(c*(d +
e*x)^n)^2*((x*((6*b^2*(a*d*g + a*e*f - b*e*f*n))/e - (3*b^2*d*g*(2*a - b*n)
)/e))/2 - (3*d*(2*a*b^2*d*g - 4*a*b^2*e*f - 3*b^3*d*g*n + 4*b^3*e*f*n))/(4*
e^2) + (3*b^2*g*x^2*(2*a - b*n))/4) + x*((4*a^3*d*g + 4*a^3*e*f + 18*b^3*d*
```

```
g*n^3 - 24*b^3*e*f*n^3 - 12*a*b^2*d*g*n^2 + 24*a*b^2*e*f*n^2 - 12*a^2*b*e*f
*n)/(4*e) - (d*g*(4*a^3 - 3*b^3*n^3 + 6*a*b^2*n^2 - 6*a^2*b*n))/(4*e)) + (g
*x^2*(4*a^3 - 3*b^3*n^3 + 6*a*b^2*n^2 - 6*a^2*b*n))/8 - (log(d + e*x)*(21*b
^3*d^2*g*n^3 + 6*a^2*b*d^2*g*n - 24*b^3*d*e*f*n^3 - 18*a*b^2*d^2*g*n^2 - 12
*a^2*b*d*e*f*n + 24*a*b^2*d*e*f*n^2))/(4*e^2)
```

sympy [A] time = 10.38, size = 1479, normalized size = 5.58

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*ln(c*(e*x+d)**n))**3,x)
```

```
[Out] Piecewise((a**3*f*x + a**3*g*x**2/2 - 3*a**2*b*d**2*g*n*log(d + e*x)/(2*e**
2) + 3*a**2*b*d*f*n*log(d + e*x)/e + 3*a**2*b*d*g*n*x/(2*e) + 3*a**2*b*f*n*
x*log(d + e*x) - 3*a**2*b*f*n*x + 3*a**2*b*f*x*log(c) + 3*a**2*b*g*n*x**2*l
og(d + e*x)/2 - 3*a**2*b*g*n*x**2/4 + 3*a**2*b*g*x**2*log(c)/2 - 3*a*b**2*d
**2*g*n**2*log(d + e*x)**2/(2*e**2) + 9*a*b**2*d**2*g*n**2*log(d + e*x)/(2*
e**2) - 3*a*b**2*d**2*g*n*log(c)*log(d + e*x)/e**2 + 3*a*b**2*d*f*n**2*log(
d + e*x)**2/e - 6*a*b**2*d*f*n**2*log(d + e*x)/e + 6*a*b**2*d*f*n*log(c)*lo
g(d + e*x)/e + 3*a*b**2*d*g*n**2*x*log(d + e*x)/e - 9*a*b**2*d*g*n**2*x/(2*
e) + 3*a*b**2*d*g*n*x*log(c)/e + 3*a*b**2*f*n**2*x*log(d + e*x)**2 - 6*a*b*
*2*f*n**2*x*log(d + e*x) + 6*a*b**2*f*n**2*x + 6*a*b**2*f*n*x*log(c)*log(d
+ e*x) - 6*a*b**2*f*n*x*log(c) + 3*a*b**2*f*x*log(c)**2 + 3*a*b**2*g*n**2*x
**2*log(d + e*x)**2/2 - 3*a*b**2*g*n**2*x**2*log(d + e*x)/2 + 3*a*b**2*g*n*
*2*x**2/4 + 3*a*b**2*g*n*x**2*log(c)*log(d + e*x) - 3*a*b**2*g*n*x**2*log(c
)/2 + 3*a*b**2*g*x**2*log(c)**2/2 - b**3*d**2*g*n**3*log(d + e*x)**3/(2*e**
2) + 9*b**3*d**2*g*n**3*log(d + e*x)**2/(4*e**2) - 21*b**3*d**2*g*n**3*log(
d + e*x)/(4*e**2) - 3*b**3*d**2*g*n**2*log(c)*log(d + e*x)**2/(2*e**2) + 9*
b**3*d**2*g*n**2*log(c)*log(d + e*x)/(2*e**2) - 3*b**3*d**2*g*n*log(c)**2*l
og(d + e*x)/(2*e**2) + b**3*d*f*n**3*log(d + e*x)**3/e - 3*b**3*d*f*n**3*lo
g(d + e*x)**2/e + 6*b**3*d*f*n**3*log(d + e*x)/e + 3*b**3*d*f*n**2*log(c)*l
og(d + e*x)**2/e - 6*b**3*d*f*n**2*log(c)*log(d + e*x)/e + 3*b**3*d*f*n*log
(c)**2*log(d + e*x)/e + 3*b**3*d*g*n**3*x*log(d + e*x)**2/(2*e) - 9*b**3*d*
g*n**3*x*log(d + e*x)/(2*e) + 21*b**3*d*g*n**3*x/(4*e) + 3*b**3*d*g*n**2*x*
log(c)*log(d + e*x)/e - 9*b**3*d*g*n**2*x*log(c)/(2*e) + 3*b**3*d*g*n*x*log
(c)**2/(2*e) + b**3*f*n**3*x*log(d + e*x)**3 - 3*b**3*f*n**3*x*log(d + e*x)
**2 + 6*b**3*f*n**3*x*log(d + e*x) - 6*b**3*f*n**3*x + 3*b**3*f*n**2*x*log(
c)*log(d + e*x)**2 - 6*b**3*f*n**2*x*log(c)*log(d + e*x) + 6*b**3*f*n**2*x*
log(c) + 3*b**3*f*n*x*log(c)**2*log(d + e*x) - 3*b**3*f*n*x*log(c)**2 + b**
3*f*x*log(c)**3 + b**3*g*n**3*x**2*log(d + e*x)**3/2 - 3*b**3*g*n**3*x**2*l
og(d + e*x)**2/4 + 3*b**3*g*n**3*x**2*log(d + e*x)/4 - 3*b**3*g*n**3*x**2/8
 + 3*b**3*g*n**2*x**2*log(c)*log(d + e*x)**2/2 - 3*b**3*g*n**2*x**2*log(c)*
log(d + e*x)/2 + 3*b**3*g*n**2*x**2*log(c)/4 + 3*b**3*g*n*x**2*log(c)**2*lo
g(d + e*x)/2 - 3*b**3*g*n*x**2*log(c)**2/4 + b**3*g*x**2*log(c)**3/2, Ne(e,
 0)), ((a + b*log(c*d**n))**3*(f*x + g*x**2/2), True))
```

3.55 $\int \left(a+b\log\left(c(d+ex)^n\right)\right)^3\,dx$

Optimal. Leaf size=99

$$6ab^2n^2x-\frac{3bn(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{e}+\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{e}+\frac{6b^3n^2(d+ex)\log\left(c(d+ex\right.}{e}$$

```
[Out] 6*a*b^2*n^2*x-6*b^3*n^3*x+6*b^3*n^2*(e*x+d)*ln(c*(e*x+d)^n)/e-3*b*n*(e*x+d)
*(a+b*ln(c*(e*x+d)^n))^2/e+(e*x+d)*(a+b*ln(c*(e*x+d)^n))^3/e
```

Rubi [A] time = 0.05, antiderivative size = 99, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188, Rules used = {2389, 2296, 2295}

$$6ab^2n^2x-\frac{3bn(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{e}+\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{e}+\frac{6b^3n^2(d+ex)\log\left(c(d+ex\right.}{e}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^3,x]
```

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

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rubi steps

$$\begin{aligned}
\int \left(a+b\log\left(c(d+ex)^n\right)\right)^3\,dx &= \frac{\text{Subst}\left(\int \left(a+b\log\left(cx^n\right)\right)^3\,dx,x,d+ex\right)}{e}\\
&= \frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{e}-\frac{(3bn)\,\text{Subst}\left(\int \left(a+b\log\left(cx^n\right)\right)^2\,dx,x,d\right.}{e}\\
&= -\frac{3bn(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{e}+\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{e}+\\
&= 6ab^2n^2x-\frac{3bn(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{e}+\frac{(d+ex)\left(a+b\log\left(c(d+\right.\right.}{e}\\
&= 6ab^2n^2x-6b^3n^3x+\frac{6b^3n^2(d+ex)\log\left(c(d+ex)^n\right)}{e}-\frac{3bn(d+ex)\left(a+b\log\right.}{e}
\end{aligned}$$

Mathematica [A] time = 0.02, size = 85, normalized size = 0.86

$$\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^3-3bn\left((d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2-2bn\left(ex(a-bn)+b(d+ex)\log\left(c(d+\right.\right.\right.}{e}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^3,x]
```

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

fricas [B] time = 0.50, size = 324, normalized size = 3.27

$$b^3ex\log(c)^3+\left(b^3en^3x+b^3dn^3\right)\log\left(ex+d\right)^3-3\left(b^3en-ab^2e\right)x\log(c)^2-3\left(b^3dn^3-ab^2dn^2+\left(b^3en^3-ab^2en^2\right)\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] (b^3*e*x*log(c)^3 + (b^3*e*n^3*x + b^3*d*n^3)*log(e*x + d)^3 - 3*(b^3*e*n -
 a*b^2*e)*x*log(c)^2 - 3*(b^3*d*n^3 - a*b^2*d*n^2 + (b^3*e*n^3 - a*b^2*e*n^
2)*x - (b^3*e*n^2*x + b^3*d*n^2)*log(c))*log(e*x + d)^2 + 3*(2*b^3*e*n^2 -
2*a*b^2*e*n + a^2*b*e)*x*log(c) - (6*b^3*e*n^3 - 6*a*b^2*e*n^2 + 3*a^2*b*e*
n - a^3*e)*x + 3*(2*b^3*d*n^3 - 2*a*b^2*d*n^2 + a^2*b*d*n + (b^3*e*n*x + b^
3*d*n)*log(c)^2 + (2*b^3*e*n^3 - 2*a*b^2*e*n^2 + a^2*b*e*n)*x - 2*(b^3*d*n^
2 - a*b^2*d*n + (b^3*e*n^2 - a*b^2*e*n)*x)*log(c))*log(e*x + d))/e
```

giac [B] time = 0.21, size = 409, normalized size = 4.13

$$(xe+d)b^3n^3e^{(-1)}\log\left(xe+d\right)^3-3\left(xe+d\right)b^3n^3e^{(-1)}\log\left(xe+d\right)^2+3\left(xe+d\right)b^3n^2e^{(-1)}\log\left(xe+d\right)^2\log(c)+6\left(xe+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] (x*e + d)*b^3*n^3*e^(-1)*log(x*e + d)^3 - 3*(x*e + d)*b^3*n^3*e^(-1)*log(x*
e + d)^2 + 3*(x*e + d)*b^3*n^2*e^(-1)*log(x*e + d)^2*log(c) + 6*(x*e + d)*b
^3*n^3*e^(-1)*log(x*e + d) + 3*(x*e + d)*a*b^2*n^2*e^(-1)*log(x*e + d)^2 -
6*(x*e + d)*b^3*n^2*e^(-1)*log(x*e + d)*log(c) + 3*(x*e + d)*b^3*n*e^(-1)*l
og(x*e + d)*log(c)^2 - 6*(x*e + d)*b^3*n^3*e^(-1) - 6*(x*e + d)*a*b^2*n^2*e
^(-1)*log(x*e + d) + 6*(x*e + d)*b^3*n^2*e^(-1)*log(c) + 6*(x*e + d)*a*b^2*
n*e^(-1)*log(x*e + d)*log(c) - 3*(x*e + d)*b^3*n*e^(-1)*log(c)^2 + (x*e + d
)*b^3*e^(-1)*log(c)^3 + 6*(x*e + d)*a*b^2*n^2*e^(-1) + 3*(x*e + d)*a^2*b*n*
e^(-1)*log(x*e + d) - 6*(x*e + d)*a*b^2*n*e^(-1)*log(c) + 3*(x*e + d)*a*b^2
*e^(-1)*log(c)^2 - 3*(x*e + d)*a^2*b*n*e^(-1) + 3*(x*e + d)*a^2*b*e^(-1)*lo
g(c) + (x*e + d)*a^3*e^(-1)
```

maple [C] time = 0.18, size = 4872, normalized size = 49.21

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)^3,x)
```

```
[Out] x*b^3*ln((e*x+d)^n)^3+3/4*b*(4*I*Pi*ln(e*x+d)*b^2*d*n*csgn(I*c)*csgn(I*c*(e
*x+d)^n)^2+4*I*Pi*a*b*e*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+4*I*Pi*a*
b*e*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-4*I*Pi*b^2*e*n*x*csgn(I*(e*x+d)^n)*cs
gn(I*c*(e*x+d)^n)^2-4*I*Pi*b^2*e*n*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+4*I*ln
(c)*Pi*b^2*e*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+4*I*ln(c)*Pi*b^2*e*x
```

```
*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+4*I*Pi*ln(e*x+d)*b^2*d*n*csgn(I*(e*x+d)^n)
*csgn(I*c*(e*x+d)^n)^2-4*I*ln(c)*Pi*b^2*e*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csg
n(I*c*(e*x+d)^n)+8*ln(e*x+d)*a*b*d*n+2*Pi^2*b^2*e*x*csgn(I*c)^2*csgn(I*(e*x
+d)^n)*csgn(I*c*(e*x+d)^n)^3-4*I*Pi*a*b*e*x*csgn(I*c*(e*x+d)^n)^3-4*I*Pi*ln
(e*x+d)*b^2*d*n*csgn(I*c*(e*x+d)^n)^3+4*I*Pi*b^2*e*n*x*csgn(I*c*(e*x+d)^n)^
3-4*I*ln(c)*Pi*b^2*e*x*csgn(I*c*(e*x+d)^n)^3-4*b^2*d*n^2*ln(e*x+d)^2+4*b^2*
e*x*ln(c)^2-Pi^2*b^2*e*x*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^4+2*Pi^2*b
^2*e*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^5-Pi^2*b^2*e*x*csgn(I*c)^2*csg
n(I*c*(e*x+d)^n)^4+2*Pi^2*b^2*e*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^5-4*I*Pi*ln
(e*x+d)*b^2*d*n*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+2*Pi^2*b^2*
e*x*csgn(I*c)*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^3-Pi^2*b^2*e*x*csgn(I
*c)^2*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^2+4*I*Pi*b^2*e*n*x*csgn(I*c)*
csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-4*I*Pi*a*b*e*x*csgn(I*c)*csgn(I*(e*x+
d)^n)*csgn(I*c*(e*x+d)^n)-4*Pi^2*b^2*e*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I
*c*(e*x+d)^n)^4-Pi^2*b^2*e*x*csgn(I*c*(e*x+d)^n)^6-8*ln(e*x+d)*b^2*d*n^2+4*
a^2*e*x+8*ln(c)*ln(e*x+d)*b^2*d*n+8*b^2*e*n^2*x-8*b^2*e*n*x*ln(c)+8*a*b*e*x
*ln(c)-8*a*b*e*n*x)/e*ln((e*x+d)^n)+3/2*b^2*(-I*Pi*b*e*x*csgn(I*c)*csgn(I*(
e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*Pi*b*e*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*
Pi*b*e*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*Pi*b*e*x*csgn(I*c*(e*x+d
)^n)^3+2*b*e*x*ln(c)+2*b*d*n*ln(e*x+d)-2*b*e*n*x+2*a*e*x)/e*ln((e*x+d)^n)^2
+a^3*x+ln(c)^3*b^3*x-6*b^3*n^3*x-3*ln(c)^2*b^3*n*x+6*ln(c)*b^3*n^2*x+3*ln(c
)^2*a*b^2*x+3*ln(c)*a^2*b*x+6*a*b^2*n^2*x-3*I/e*ln(c)*Pi*ln(e*x+d)*b^3*d*n*
csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-3*I/e*Pi*ln(e*x+d)*a*b^2*d*
n*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-3/4*ln(c)*Pi^2*b^3*x*csgn
(I*c)^2*csgn(I*c*(e*x+d)^n)^4+3/2*ln(c)*Pi^2*b^3*x*csgn(I*c)*csgn(I*c*(e*x+
d)^n)^5-3/4*ln(c)*Pi^2*b^3*x*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^4+3/2*
ln(c)*Pi^2*b^3*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^5+3/4*Pi^2*b^3*n*x*c
sgn(I*c)^2*csgn(I*c*(e*x+d)^n)^4-3/2*Pi^2*b^3*n*x*csgn(I*c)*csgn(I*c*(e*x+d
)^n)^5+3/4*Pi^2*b^3*n*x*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^4-3/2*Pi^2*
b^3*n*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^5-3/4*Pi^2*a*b^2*x*csgn(I*c)^
2*csgn(I*c*(e*x+d)^n)^4+3/2*Pi^2*a*b^2*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^5-3/
4*Pi^2*a*b^2*x*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^4+3/2*Pi^2*a*b^2*x*c
sgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^5-1/8*I*Pi^3*b^3*x*csgn(I*c)^3*csgn(I*
c*(e*x+d)^n)^6+3/8*I*Pi^3*b^3*x*csgn(I*c)^2*csgn(I*c*(e*x+d)^n)^7-3/8*I*Pi^
3*b^3*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^8-1/8*I*Pi^3*b^3*x*csgn(I*(e*x+d)^n)^
3*csgn(I*c*(e*x+d)^n)^6+3/8*I*Pi^3*b^3*x*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+
d)^n)^7-3/8*I*Pi^3*b^3*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^8-3/2*I*ln(c
)^2*Pi*b^3*x*csgn(I*c*(e*x+d)^n)^3-3/e*ln(c)*b^3*d*n^2*ln(e*x+d)^2+3/e*ln(c
)^2*ln(e*x+d)*b^3*d*n-6/e*ln(c)*b^3*d*n^2*ln(e*x+d)-3/e*a*b^2*d*n^2*ln(e*x+
d)^2-6/e*ln(e*x+d)*a*b^2*d*n^2+3/e*ln(e*x+d)*a^2*b*d*n-3*a^2*b*n*x-3/4*ln(c
)*Pi^2*b^3*x*csgn(I*c*(e*x+d)^n)^6+3/4*Pi^2*b^3*n*x*csgn(I*c*(e*x+d)^n)^6-3
/4*Pi^2*a*b^2*x*csgn(I*c*(e*x+d)^n)^6-6*ln(c)*a*b^2*n*x+1/e*b^3*d*n^3*ln(e*
x+d)^3+3/e*b^3*d*n^3*ln(e*x+d)^2+6/e*ln(e*x+d)*b^3*d*n^3+1/8*I*Pi^3*b^3*x*c
sgn(I*c*(e*x+d)^n)^9-3*I*Pi*b^3*n^2*x*csgn(I*c*(e*x+d)^n)^3-3/2*I*Pi*a^2*b*
x*csgn(I*c*(e*x+d)^n)^3+6/e*ln(c)*ln(e*x+d)*a*b^2*d*n+1/8*I*Pi^3*b^3*x*csgn
(I*c)^3*csgn(I*(e*x+d)^n)^3*csgn(I*c*(e*x+d)^n)^3-3/8*I*Pi^3*b^3*x*csgn(I*c
)^3*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^4+3/8*I*Pi^3*b^3*x*csgn(I*c)^3*
csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^5-3/8*I*Pi^3*b^3*x*csgn(I*c)^2*csgn(I
*(e*x+d)^n)^3*csgn(I*c*(e*x+d)^n)^4+9/8*I*Pi^3*b^3*x*csgn(I*c)^2*csgn(I*(e*
x+d)^n)^2*csgn(I*c*(e*x+d)^n)^5-9/8*I*Pi^3*b^3*x*csgn(I*c)^2*csgn(I*(e*x+d)
^n)*csgn(I*c*(e*x+d)^n)^6+3/8*I*Pi^3*b^3*x*csgn(I*c)*csgn(I*(e*x+d)^n)^3*cs
gn(I*c*(e*x+d)^n)^5-9/8*I*Pi^3*b^3*x*csgn(I*c)*csgn(I*(e*x+d)^n)^2*csgn(I*c
*(e*x+d)^n)^6+9/8*I*Pi^3*b^3*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)
^n)^7+3/2*I*ln(c)^2*Pi*b^3*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+3/2*I*ln(c)^2*
Pi*b^3*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+3*I*ln(c)*Pi*b^3*n*x*csgn(
I*c*(e*x+d)^n)^3+3*I*Pi*b^3*n^2*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+3*I*Pi*b^
3*n^2*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-3*I*ln(c)*Pi*a*b^2*x*csgn(I
*c*(e*x+d)^n)^3+3*I*Pi*a*b^2*n*x*csgn(I*c*(e*x+d)^n)^3+3/2*I*Pi*a^2*b*x*csg
n(I*c)*csgn(I*c*(e*x+d)^n)^2+3/2*I*Pi*a^2*b*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e
```

```
*x+d)^n)^2+3/2/e*Pi^2*ln(e*x+d)*b^3*d*n*csgn(I*c)*csgn(I*(e*x+d)^n)^2*csgn(
I*c*(e*x+d)^n)^3-3/e*Pi^2*ln(e*x+d)*b^3*d*n*csgn(I*c)*csgn(I*(e*x+d)^n)*csg
n(I*c*(e*x+d)^n)^4-3*I/e*Pi*ln(e*x+d)*a*b^2*d*n*csgn(I*c*(e*x+d)^n)^3+3*I*l
n(c)*Pi*b^3*n*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-3*I*ln(c)*P
i*a*b^2*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+3*I*Pi*a*b^2*n*x*
csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-3/2*I/e*Pi*b^3*d*n^2*csgn(I
*c)*csgn(I*c*(e*x+d)^n)^2*ln(e*x+d)^2-3/2*I/e*Pi*b^3*d*n^2*csgn(I*(e*x+d)^n
)*csgn(I*c*(e*x+d)^n)^2*ln(e*x+d)^2+3/2*I/e*Pi*b^3*d*n^2*csgn(I*c)*csgn(I*(
e*x+d)^n)*csgn(I*c*(e*x+d)^n)*ln(e*x+d)^2+3*I/e*ln(c)*Pi*ln(e*x+d)*b^3*d*n*
csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+3*I/e*ln(c)*Pi*ln(e*x+d)*b^3*d*n*csgn(I*(e*
x+d)^n)*csgn(I*c*(e*x+d)^n)^2+3*I/e*Pi*b^3*d*n^2*csgn(I*c)*csgn(I*(e*x+d)^n
)*csgn(I*c*(e*x+d)^n)*ln(e*x+d)+3*I/e*Pi*ln(e*x+d)*a*b^2*d*n*csgn(I*c)*csgn
(I*c*(e*x+d)^n)^2+3*I/e*Pi*ln(e*x+d)*a*b^2*d*n*csgn(I*(e*x+d)^n)*csgn(I*c*(
e*x+d)^n)^2-3*I/e*ln(c)*Pi*ln(e*x+d)*b^3*d*n*csgn(I*c*(e*x+d)^n)^3-3*I/e*Pi
*b^3*d*n^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*ln(e*x+d)-3*I/e*Pi*b^3*d*n^2*csg
n(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*ln(e*x+d)-3/4/e*Pi^2*ln(e*x+d)*b^3*d*n
*csgn(I*c)^2*csgn(I*c*(e*x+d)^n)^4-3/4*ln(c)*Pi^2*b^3*x*csgn(I*c)^2*csgn(I*
(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^2+3/2*ln(c)*Pi^2*b^3*x*csgn(I*c)^2*csgn(I*
(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^3-3/4/e*Pi^2*ln(e*x+d)*b^3*d*n*csgn(I*c*(e*x
+d)^n)^6+3/2*ln(c)*Pi^2*b^3*x*csgn(I*c)*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d
)^n)^3-3*ln(c)*Pi^2*b^3*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^4
+3/4*Pi^2*b^3*n*x*csgn(I*c)^2*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^2-3/2
*Pi^2*b^3*n*x*csgn(I*c)^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^3-3/2*Pi^2*
b^3*n*x*csgn(I*c)*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^3+3*Pi^2*b^3*n*x*
csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^4-3/4*Pi^2*a*b^2*x*csgn(I*c
)^2*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^2+3/2*Pi^2*a*b^2*x*csgn(I*c)^2*
csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^3+3/2*Pi^2*a*b^2*x*csgn(I*c)*csgn(I*(
e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^3-3*Pi^2*a*b^2*x*csgn(I*c)*csgn(I*(e*x+d)^n
)*csgn(I*c*(e*x+d)^n)^4+3/2/e*Pi^2*ln(e*x+d)*b^3*d*n*csgn(I*c)*csgn(I*c*(e*
x+d)^n)^5-3/4/e*Pi^2*ln(e*x+d)*b^3*d*n*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)
^n)^4+3/2/e*Pi^2*ln(e*x+d)*b^3*d*n*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^5+
3*I*ln(c)*Pi*a*b^2*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+3*I*ln(c)*Pi*a*b^2*x*c
sgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-3*I*Pi*a*b^2*n*x*csgn(I*c)*csgn(I*c*
(e*x+d)^n)^2-3*I*Pi*a*b^2*n*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-3/2*I
*Pi*a^2*b*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-3/2*I*ln(c)^2*P
i*b^3*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-3*I*ln(c)*Pi*b^3*n*
x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-3*I*ln(c)*Pi*b^3*n*x*csgn(I*(e*x+d)^n)*cs
gn(I*c*(e*x+d)^n)^2-3*I*Pi*b^3*n^2*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(
e*x+d)^n)+3/2*I/e*Pi*b^3*d*n^2*csgn(I*c*(e*x+d)^n)^3*ln(e*x+d)^2+3*I/e*Pi*b
^3*d*n^2*csgn(I*c*(e*x+d)^n)^3*ln(e*x+d)-3/4/e*Pi^2*ln(e*x+d)*b^3*d*n*csgn(
I*c)^2*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^2+3/2/e*Pi^2*ln(e*x+d)*b^3*d
*n*csgn(I*c)^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^3
```

maxima [B] time = 1.15, size = 282, normalized size = 2.85

$$b^3x\log\left((ex+d)^n c\right)^3 - 3\,a^2ben\left(\frac{x}{e} - \frac{d\log(ex+d)}{e^2}\right) + 3\,ab^2x\log\left((ex+d)^n c\right)^2 + 3\,a^2bx\log\left((ex+d)^n c\right) - 3\left(2\,en\left(\frac{x}{e} -\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] b^3*x*log((e*x + d)^n*c)^3 - 3*a^2*b*e*n*(x/e - d*log(e*x + d)/e^2) + 3*a*b
^2*x*log((e*x + d)^n*c)^2 + 3*a^2*b*x*log((e*x + d)^n*c) - 3*(2*e*n*(x/e -
d*log(e*x + d)/e^2)*log((e*x + d)^n*c) + (d*log(e*x + d)^2 - 2*e*x + 2*d*lo
g(e*x + d))*n^2/e)*a*b^2 - (3*e*n*(x/e - d*log(e*x + d)/e^2)*log((e*x + d)^
n*c)^2 - e*n*((d*log(e*x + d)^3 + 3*d*log(e*x + d)^2 - 6*e*x + 6*d*log(e*x
+ d))*n^2/e^2 - 3*(d*log(e*x + d)^2 - 2*e*x + 2*d*log(e*x + d))*n*log((e*x
+ d)^n*c)/e^2))*b^3 + a^3*x
```

mupad [B] time = 0.00, size = 172, normalized size = 1.74

$$x\left(a^3-3a^2bn+6ab^2n^2-6b^3n^3\right)+\ln\left(c\,(d+e\,x)^n\right)^3\left(b^3x+\frac{b^3d}{e}\right)+\ln\left(c\,(d+e\,x)^n\right)^2\left(\frac{3\left(a\,b^2d-b^3d\,n\right)}{e}+3\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^3,x)
```

```
[Out] x*(a^3 - 6*b^3*n^3 + 6*a*b^2*n^2 - 3*a^2*b*n) + log(c*(d + e*x)^n)^3*(b^3*x
 + (b^3*d)/e) + log(c*(d + e*x)^n)^2*((3*(a*b^2*d - b^3*d*n))/e + 3*b^2*x*(
a - b*n)) + (log(d + e*x)*(6*b^3*d*n^3 + 3*a^2*b*d*n - 6*a*b^2*d*n^2))/e +
3*b*x*log(c*(d + e*x)^n)*(a^2 + 2*b^2*n^2 - 2*a*b*n)
```

sympy [A] time = 3.29, size = 527, normalized size = 5.32

$$\begin{cases} a^3x+\frac{3a^2bdn\log(d+ex)}{e}+3a^2bnx\log(d+ex)-3a^2bnx+3a^2bx\log(c)+\frac{3ab^2dn^2\log(d+ex)^2}{e}-\frac{6ab^2dn^2\log(d+ex)}{e}+\frac{6a}{} \\ x\left(a+b\log(cd^n)\right)^3 \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**3,x)
```

```
[Out] Piecewise((a**3*x + 3*a**2*b*d*n*log(d + e*x)/e + 3*a**2*b*n*x*log(d + e*x)
 - 3*a**2*b*n*x + 3*a**2*b*x*log(c) + 3*a*b**2*d*n**2*log(d + e*x)**2/e - 6
*a*b**2*d*n**2*log(d + e*x)/e + 6*a*b**2*d*n*log(c)*log(d + e*x)/e + 3*a*b*
*2*n**2*x*log(d + e*x)**2 - 6*a*b**2*n**2*x*log(d + e*x) + 6*a*b**2*n**2*x
+ 6*a*b**2*n*x*log(c)*log(d + e*x) - 6*a*b**2*n*x*log(c) + 3*a*b**2*x*log(c
)**2 + b**3*d*n**3*log(d + e*x)**3/e - 3*b**3*d*n**3*log(d + e*x)**2/e + 6*
b**3*d*n**3*log(d + e*x)/e + 3*b**3*d*n**2*log(c)*log(d + e*x)**2/e - 6*b**
3*d*n**2*log(c)*log(d + e*x)/e + 3*b**3*d*n*log(c)**2*log(d + e*x)/e + b**3
*n**3*x*log(d + e*x)**3 - 3*b**3*n**3*x*log(d + e*x)**2 + 6*b**3*n**3*x*log
(d + e*x) - 6*b**3*n**3*x + 3*b**3*n**2*x*log(c)*log(d + e*x)**2 - 6*b**3*n
**2*x*log(c)*log(d + e*x) + 6*b**3*n**2*x*log(c) + 3*b**3*n*x*log(c)**2*log
(d + e*x) - 3*b**3*n*x*log(c)**2 + b**3*x*log(c)**3, Ne(e, 0)), (x*(a + b*l
og(c*d**n))**3, True))
```

3.56 $\int \frac{(a+b\log(c(d+ex)^n))^3}{f+gx}\,dx$

Optimal. Leaf size=158

$$-\frac{6b^2n^2\text{Li}_3\left(-\frac{g(d+ex)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g}+\frac{3bn\text{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{g}+\frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\right.}{g}$$

```
[Out] (a+b*ln(c*(e*x+d)^n))^3*ln(e*(g*x+f)/(-d*g+e*f))/g+3*b*n*(a+b*ln(c*(e*x+d)^
n))^2*polylog(2,-g*(e*x+d)/(-d*g+e*f))/g-6*b^2*n^2*(a+b*ln(c*(e*x+d)^n))*po
lylog(3,-g*(e*x+d)/(-d*g+e*f))/g+6*b^3*n^3*polylog(4,-g*(e*x+d)/(-d*g+e*f))
/g
```

Rubi [A] time = 0.18, antiderivative size = 158, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.208$, Rules used = {2396, 2433, 2374, 2383, 6589}

$$-\frac{6b^2n^2\text{PolyLog}\left(3,-\frac{g(d+ex)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g}+\frac{3bn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{g}+\frac{6b^3n^3}{}$$

Antiderivative was successfully verified.

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

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

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2383

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^p)/q
, x] - Dist[(b*n*p)/q, Int[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^(p - 1
))/x, x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rule 2396

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

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
```

```
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{f+gx}\,dx = \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^3\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} - \frac{(3ben)\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2\log\left(\frac{e(f+gx)}{ef-dg}\right)}{d+ex}}{g}$$

$$= \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^3\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} - \frac{(3bn)\,\mathrm{Subst}\left(\int \frac{\left(a+b\log\left(cx^n\right)\right)^2\log\left(\frac{e\left(\frac{ef-d}{e}\right.}{ef-}\right.}{x}\right.}{g}$$

$$= \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^3\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} + \frac{3bn\left(a+b\log\left(c(d+ex)^n\right)\right)^2\mathrm{Li}_2\left(-\right.}{g}$$

$$= \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^3\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} + \frac{3bn\left(a+b\log\left(c(d+ex)^n\right)\right)^2\mathrm{Li}_2\left(-\right.}{g}$$

$$= \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^3\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} + \frac{3bn\left(a+b\log\left(c(d+ex)^n\right)\right)^2\mathrm{Li}_2\left(-\right.}{g}$$

Mathematica [B] time = 0.25, size = 335, normalized size = 2.12

$$6b^2n^2\left(-\mathrm{Li}_3\left(\frac{g(d+ex)}{dg-ef}\right)+\log(d+ex)\mathrm{Li}_2\left(\frac{g(d+ex)}{dg-ef}\right)+\frac{1}{2}\log^2(d+ex)\log\left(\frac{e(f+gx)}{ef-dg}\right)\right)\left(a+b\log\left(c(d+ex)^n\right)-bn\log\right.$$

Antiderivative was successfully verified.

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

```
[Out] ((a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^3*Log[f + g*x] + 3*b*n*(a -
b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2*(Log[d + e*x]*Log[(e*(f + g*x))/
(e*f - d*g)] + PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)]) + 6*b^2*n^2*(a - b
*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*((Log[d + e*x]^2*Log[(e*(f + g*x))/
(e*f - d*g)])/2 + Log[d + e*x]*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - P
olyLog[3, (g*(d + e*x))/(-(e*f) + d*g)]) + b^3*n^3*(Log[d + e*x]^3*Log[(e*(
f + g*x))/(e*f - d*g)] + 3*Log[d + e*x]^2*PolyLog[2, (g*(d + e*x))/(-(e*f)
+ d*g)] - 6*Log[d + e*x]*PolyLog[3, (g*(d + e*x))/(-(e*f) + d*g)] + 6*PolyL
og[4, (g*(d + e*x))/(-(e*f) + d*g)]))/g
```

fricas [F] time = 0.41, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{b^3\log\left((ex+d)^n c\right)^3+3\,ab^2\log\left((ex+d)^n c\right)^2+3\,a^2b\log\left((ex+d)^n c\right)+a^3}{gx+f},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)^3}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^3/(g*x + f), x)
```

maple [C] time = 0.78, size = 9538, normalized size = 60.37

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\frac{a^3\log\left(gx+f\right)}{g}+\int\frac{b^3\log\left((ex+d)^n\right)^3+b^3\log(c)^3+3\,ab^2\log(c)^2+3\,a^2b\log(c)+3\left(b^3\log(c)+ab^2\right)\log\left((ex+\right.}{gx+f}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\int \frac{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)^3}{f+g\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int((a + b*log(c*(d + e*x)^n))^3/(f + g*x), x)
```

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

$$\int \frac{\left(a+b\log\left(c\left(d+ex\right)^n\right)\right)^3}{f+gx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.57 $\int \frac{(a+b\log(c(d+ex)^n))^3}{(f+gx)^2}\,dx$

Optimal. Leaf size=190

$$-\frac{6b^2en^2\mathrm{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g(ef-dg)}-\frac{3ben\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{g(ef-dg)}+\frac{(d+ex)\left(a+b\log\right.}{(f+gx)(e}$$

```
[Out] (e*x+d)*(a+b*ln(c*(e*x+d)^n))^3/(-d*g+e*f)/(g*x+f)-3*b*e*n*(a+b*ln(c*(e*x+d
)^n))^2*ln(e*(g*x+f)/(-d*g+e*f))/g/(-d*g+e*f)-6*b^2*e*n^2*(a+b*ln(c*(e*x+d)
^n))*polylog(2,-g*(e*x+d)/(-d*g+e*f))/g/(-d*g+e*f)+6*b^3*e*n^3*polylog(3,-g
*(e*x+d)/(-d*g+e*f))/g/(-d*g+e*f)
```

Rubi [A] time = 0.15, antiderivative size = 190, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {2397, 2396, 2433, 2374, 6589}

$$-\frac{6b^2en^2\mathrm{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g(ef-dg)}+\frac{6b^3en^3\mathrm{PolyLog}\left(3,-\frac{g(d+ex)}{ef-dg}\right)}{g(ef-dg)}-\frac{3ben\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+\right.}{g(ef-}$$

Antiderivative was successfully verified.

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

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

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2396

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

Rule 2397

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_))^2, x_Symbol] :> Simp[((d + e*x)*(a + b*Log[c*(d + e*x)^n])^p)/((e*f
 - d*g)*(f + g*x)), x] - Dist[(b*e*n*p)/(e*f - d*g), Int[(a + b*Log[c*(d +
e*x)^n])^(p - 1)/(f + g*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] &&
 NeQ[e*f - d*g, 0] && GtQ[p, 0]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
```

```
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{(f+gx)^2}dx = \frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{(ef-dg)(f+gx)} - \frac{(3ben)\int \frac{\left(a+b\log(c(d+ex)^n)\right)^2}{f+gx}dx}{ef-dg}$$

$$= \frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{(ef-dg)(f+gx)} - \frac{3ben\left(a+b\log\left(c(d+ex)^n\right)\right)^2\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g(ef-dg)}$$

$$= \frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{(ef-dg)(f+gx)} - \frac{3ben\left(a+b\log\left(c(d+ex)^n\right)\right)^2\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g(ef-dg)}$$

$$= \frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{(ef-dg)(f+gx)} - \frac{3ben\left(a+b\log\left(c(d+ex)^n\right)\right)^2\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g(ef-dg)}$$

$$= \frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{(ef-dg)(f+gx)} - \frac{3ben\left(a+b\log\left(c(d+ex)^n\right)\right)^2\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g(ef-dg)}$$

Mathematica [B] time = 0.39, size = 410, normalized size = 2.16

$$3b^2n^2\left(\log(d+ex)\left(g(d+ex)\log(d+ex)-2e(f+gx)\log\left(\frac{e(f+gx)}{ef-dg}\right)\right)-2e(f+gx)\text{Li}_2\left(\frac{g(d+ex)}{dg-ef}\right)\right)\left(a+b\log(c(d+\right.$$

Antiderivative was successfully verified.

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

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

fricas [F] time = 0.48, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b^3\log\left((ex+d)^nc\right)^3+3\,ab^2\log\left((ex+d)^nc\right)^2+3\,a^2b\log\left((ex+d)^nc\right)+a^3}{g^2x^2+2\,fgx+f^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3/(g*x+f)^2,x, algorithm="fricas")
```

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

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

$$\int \frac{\left(b \log \left((ex+d)^n c\right)+a\right)^3}{(gx+f)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3/(g*x+f)^2,x, algorithm="giac")
```

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

maple [C] time = 0.86, size = 5626, normalized size = 29.61

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$3\,a^2ben\left(\frac{\log(ex+d)}{efg-dg^2}-\frac{\log\left(gx+f\right)}{efg-dg^2}\right)-\frac{b^3\log\left((ex+d)^n\right)^3}{g^2x+fg}-\frac{3\,a^2b\log\left((ex+d)^nc\right)}{g^2x+fg}-\frac{a^3}{g^2x+fg}+\int\frac{b^3dg\log(c)^3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3/(g*x+f)^2,x, algorithm="maxima")
```

```
[Out] 3*a^2*b*e*n*(log(e*x + d)/(e*f*g - d*g^2) - log(g*x + f)/(e*f*g - d*g^2)) -
 b^3*log((e*x + d)^n)^3/(g^2*x + f*g) - 3*a^2*b*log((e*x + d)^n*c)/(g^2*x +
 f*g) - a^3/(g^2*x + f*g) + integrate((b^3*d*g*log(c)^3 + 3*a*b^2*d*g*log(c
)^2 + 3*(a*b^2*d*g + (e*f*n + d*g*log(c))*b^3 + (a*b^2*e*g + (e*g*n + e*g*l
og(c))*b^3)*x)*log((e*x + d)^n)^2 + (b^3*e*g*log(c)^3 + 3*a*b^2*e*g*log(c)^
2)*x + 3*(b^3*d*g*log(c)^2 + 2*a*b^2*d*g*log(c) + (b^3*e*g*log(c)^2 + 2*a*b
^2*e*g*log(c))*x)*log((e*x + d)^n))/(e*g^3*x^3 + d*f^2*g + (2*e*f*g^2 + d*g
^3)*x^2 + (e*f^2*g + 2*d*f*g^2)*x), x)
```

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

$$\int \frac{\left(a+b\,\ln\left(c\,(d+e\,x)^n\right)\right)^3}{(f+g\,x)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\int \frac{\left(a+b\log\left(c\,(d+ex)^n\right)\right)^3}{(f+gx)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.58 $\int \frac{\left(a+b\log(c(d+ex)^n)\right)^3}{(f+gx)^3}\,dx$

Optimal. Leaf size=342

$$\frac{3b^2e^2n^2\text{Li}_2\left(-\frac{ef-dg}{g(d+ex)}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g(ef-dg)^2}+\frac{3b^2e^2n^2\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g(ef-dg)^2}-\frac{3be^2n\log\left(\frac{ef-dg}{g(d+ex)}\right.}{}$$

```
[Out] -3/2*b*e*n*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^2/(-d*g+e*f)^2/(g*x+f)-1/2*(a+b*ln
(c*(e*x+d)^n))^3/g/(g*x+f)^2+3*b^2*e^2*n^2*(a+b*ln(c*(e*x+d)^n))*ln(e*(g*x+
f)/(-d*g+e*f))/g/(-d*g+e*f)^2-3/2*b*e^2*n*(a+b*ln(c*(e*x+d)^n))^2*ln(1+(-d*
g+e*f)/g/(e*x+d))/g/(-d*g+e*f)^2+3*b^2*e^2*n^2*(a+b*ln(c*(e*x+d)^n))*polylo
g(2,(d*g-e*f)/g/(e*x+d))/g/(-d*g+e*f)^2+3*b^3*e^2*n^3*polylog(2,-g*(e*x+d)/
(-d*g+e*f))/g/(-d*g+e*f)^2+3*b^3*e^2*n^3*polylog(3,(d*g-e*f)/g/(e*x+d))/g/(
-d*g+e*f)^2
```

Rubi [A] time = 0.62, antiderivative size = 370, normalized size of antiderivative = 1.08, number of steps used = 12, number of rules used = 11, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.458, Rules used = {2398, 2411, 2347, 2344, 2302, 30, 2317, 2374, 6589, 2318, 2391}

$$-\frac{3b^2e^2n^2\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g(ef-dg)^2}+\frac{3b^3e^2n^3\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g(ef-dg)^2}+\frac{3b^3e^2n^3\text{PolyLog}\left(3,-\right.}{g(ef-dg)^2}$$

Antiderivative was successfully verified.

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

```
[Out] (-3*b*e*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(2*(e*f - d*g)^2*(f + g*x
)) + (e^2*(a + b*Log[c*(d + e*x)^n])^3)/(2*g*(e*f - d*g)^2) - (a + b*Log[c*
(d + e*x)^n])^3/(2*g*(f + g*x)^2) + (3*b^2*e^2*n^2*(a + b*Log[c*(d + e*x)^n
])*Log[(e*(f + g*x))/(e*f - d*g)])/(g*(e*f - d*g)^2) - (3*b*e^2*n*(a + b*Lo
g[c*(d + e*x)^n])^2*Log[(e*(f + g*x))/(e*f - d*g)])/(2*g*(e*f - d*g)^2) + (
3*b^3*e^2*n^3*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/(g*(e*f - d*g)^2) -
 (3*b^2*e^2*n^2*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((g*(d + e*x))/(e*f
- d*g))])/(g*(e*f - d*g)^2) + (3*b^3*e^2*n^3*PolyLog[3, -((g*(d + e*x))/(e*
f - d*g))])/(g*(e*f - d*g)^2)
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2317

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

Rule 2318

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_))^2, x_Sy
mbol] :> Simp[(x*(a + b*Log[c*x^n])^p)/(d*(d + e*x)), x] - Dist[(b*n*p)/d,
Int[(a + b*Log[c*x^n])^(p - 1)/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n
, p}, x] && GtQ[p, 0]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2347

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/x
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2391

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

Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\log \left(c(d+ex)^n\right)\right)^3}{(f+gx)^3}\,dx = -\frac{\left(a+b\log \left(c(d+ex)^n\right)\right)^3}{2g(f+gx)^2} + \frac{(3ben)\int \frac{\left(a+b\log(c(d+ex)^n)\right)^2}{(d+ex)(f+gx)^2}dx}{2g}$$

$$= -\frac{\left(a+b\log \left(c(d+ex)^n\right)\right)^3}{2g(f+gx)^2} + \frac{(3bn)\,\text{Subst}\left(\int \frac{\left(a+b\log(cx^n)\right)^2}{x\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^2}dx, x, d+ex\right)}{2g}$$

$$= -\frac{\left(a+b\log \left(c(d+ex)^n\right)\right)^3}{2g(f+gx)^2} - \frac{(3bn)\,\text{Subst}\left(\int \frac{\left(a+b\log(cx^n)\right)^2}{\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^2}dx, x, d+ex\right)}{2(ef-dg)} + \text{(3}$$

$$= -\frac{3ben(d+ex)\left(a+b\log \left(c(d+ex)^n\right)\right)^2}{2(ef-dg)^2(f+gx)} - \frac{\left(a+b\log \left(c(d+ex)^n\right)\right)^3}{2g(f+gx)^2} - \frac{(3ben)}{}$$

$$= -\frac{3ben(d+ex)\left(a+b\log \left(c(d+ex)^n\right)\right)^2}{2(ef-dg)^2(f+gx)} - \frac{\left(a+b\log \left(c(d+ex)^n\right)\right)^3}{2g(f+gx)^2} + \frac{3b^2e^2n}{}$$

$$= -\frac{3ben(d+ex)\left(a+b\log \left(c(d+ex)^n\right)\right)^2}{2(ef-dg)^2(f+gx)} + \frac{e^2\left(a+b\log \left(c(d+ex)^n\right)\right)^3}{2g(ef-dg)^2} - \frac{(a+}{}$$

$$= -\frac{3ben(d+ex)\left(a+b\log \left(c(d+ex)^n\right)\right)^2}{2(ef-dg)^2(f+gx)} + \frac{e^2\left(a+b\log \left(c(d+ex)^n\right)\right)^3}{2g(ef-dg)^2} - \frac{(a+}{}$$

Mathematica [A] time = 0.75, size = 620, normalized size = 1.81

$$-\frac{3b^2n^2\left(2e^2(f+gx)^2\text{Li}_2\left(\frac{g(d+ex)}{dg-ef}\right)-2e^2(f+gx)^2\log\left(\frac{e(f+gx)}{ef-dg}\right)+g(d+ex)\log^2(d+ex)(dg-e(2f+gx))+2e(}{}$$

Antiderivative was successfully verified.

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

```
[Out] -1/2*(-3*b*e*(e*f - d*g)*n*(f + g*x)*(a - b*n*Log[d + e*x] + b*Log[c*(d + e
*x)^n])^2 + 3*b*(e*f - d*g)^2*n*Log[d + e*x]*(a - b*n*Log[d + e*x] + b*Log[
c*(d + e*x)^n])^2 - 3*b*e^2*n*(f + g*x)^2*Log[d + e*x]*(a - b*n*Log[d + e*x
] + b*Log[c*(d + e*x)^n])^2 + (e*f - d*g)^2*(a - b*n*Log[d + e*x] + b*Log[c
*(d + e*x)^n])^3 + 3*b*e^2*n*(f + g*x)^2*(a - b*n*Log[d + e*x] + b*Log[c*(d
 + e*x)^n])^2*Log[f + g*x] + 3*b^2*n^2*(a - b*n*Log[d + e*x] + b*Log[c*(d +
 e*x)^n])*(g*(d + e*x)*(d*g - e*(2*f + g*x))*Log[d + e*x]^2 - 2*e^2*(f + g*
x)^2*Log[(e*(f + g*x))/(e*f - d*g)] + 2*e*(f + g*x)*Log[d + e*x]*(g*(d + e*
x) + e*(f + g*x)*Log[(e*(f + g*x))/(e*f - d*g)]) + 2*e^2*(f + g*x)^2*PolyLo
g[2, (g*(d + e*x))/(-(e*f) + d*g)]) + b^3*n^3*(g*(d + e*x)*(d*g - e*(2*f +
g*x))*Log[d + e*x]^3 + 3*e*(f + g*x)*Log[d + e*x]^2*(g*(d + e*x) + e*(f + g
*x)*Log[(e*(f + g*x))/(e*f - d*g)]) - 6*e^2*(f + g*x)^2*Log[d + e*x]*(Log[(
e*(f + g*x))/(e*f - d*g)] - PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)]) - 6*e
^2*(f + g*x)^2*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - 6*e^2*(f + g*x)^2
*PolyLog[3, (g*(d + e*x))/(-(e*f) + d*g)]))/(g*(e*f - d*g)^2*(f + g*x)^2)
```

fricas [F] time = 0.48, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b^3\log\left((ex+d)^n c\right)^3+3\,ab^2\log\left((ex+d)^n c\right)^2+3\,a^2b\log\left((ex+d)^n c\right)+a^3}{g^3x^3+3\,fg^2x^2+3\,f^2gx+f^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)^3}{\left(gx+f\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^3/(g*x + f)^3, x)
```

maple [F] time = 2.13, size = 0, normalized size = 0.00

$$\int \frac{\left(b\ln\left(c\,(ex+d)^n\right)+a\right)^3}{\left(gx+f\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int((b*ln(c*(e*x+d)^n)+a)^3/(g*x+f)^3,x)
```

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

$$\frac{3}{2}\,a^2ben\left(\frac{e\log(ex+d)}{e^2f^2g-2\,defg^2+d^2g^3}-\frac{e\log\left(gx+f\right)}{e^2f^2g-2\,defg^2+d^2g^3}+\frac{1}{ef^2g-dfg^2+\left(efg^2-dg^3\right)x}\right)-\frac{b^3\log\left((ex+d)^n\right.}{2\left(g^3x^2+2\,fg^2x+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\int \frac{\left(a+b\,\ln\left(c\,(d+e\,x)^n\right)\right)^3}{\left(f+g\,x\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int((a + b*log(c*(d + e*x)^n))^3/(f + g*x)^3, x)
```

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

$$\int \frac{\left(a + b\log\left(c\left(d + ex\right)^{n}\right)\right)^{3}}{\left(f + gx\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**3/(g*x+f)**3,x)
[Out] Integral((a + b*log(c*(d + e*x)**n))**3/(f + g*x)**3, x)
```

3.59 $\int \frac{(a+b\log(c(d+ex)^n))^3}{(f+gx)^4}\,dx$

Optimal. Leaf size=564

$$\frac{2b^2e^3n^2\text{Li}_2\left(-\frac{ef-dg}{g(d+ex)}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g(ef-dg)^3}+\frac{2b^2e^3n^2\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g(ef-dg)^3}+\frac{b^2e^3n^2\log\left(\frac{ef-dg}{g(d+ex)}\right.}{g}$$

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

Rubi [A] time = 1.14, antiderivative size = 525, normalized size of antiderivative = 0.93, number of steps used = 21, number of rules used = 15, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.625, Rules used = {2398, 2411, 2347, 2344, 2302, 30, 2317, 2374, 6589, 2318, 2391, 2319, 2301, 2314, 31}

$$-\frac{2b^2e^3n^2\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g(ef-dg)^3}+\frac{3b^3e^3n^3\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g(ef-dg)^3}+\frac{2b^3e^3n^3\text{PolyLog}\left(3,-\frac{g(}{e}\right.}{g(ef-dg)^3}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^3/(f + g*x)^4,x]
```

```
[Out] (b^2*e^2*n^2*(d + e*x)*(a + b*Log[c*(d + e*x)^n]))/((e*f - d*g)^3*(f + g*x)
) - (b*e^3*n*(a + b*Log[c*(d + e*x)^n])^2)/(2*g*(e*f - d*g)^3) + (b*e*n*(a
+ b*Log[c*(d + e*x)^n])^2)/(2*g*(e*f - d*g)*(f + g*x)^2) - (b*e^2*n*(d + e*
x)*(a + b*Log[c*(d + e*x)^n])^2)/((e*f - d*g)^3*(f + g*x)) + (e^3*(a + b*Lo
g[c*(d + e*x)^n])^3)/(3*g*(e*f - d*g)^3) - (a + b*Log[c*(d + e*x)^n])^3/(3*
g*(f + g*x)^3) - (b^3*e^3*n^3*Log[f + g*x])/(g*(e*f - d*g)^3) + (3*b^2*e^3*
n^2*(a + b*Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/(g*(e*f - d*
g)^3) - (b*e^3*n*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(f + g*x))/(e*f - d*g)
])/(g*(e*f - d*g)^3) + (3*b^3*e^3*n^3*PolyLog[2, -((g*(d + e*x))/(e*f - d*g
))])/(g*(e*f - d*g)^3) - (2*b^2*e^3*n^2*(a + b*Log[c*(d + e*x)^n])*PolyLog[
2, -((g*(d + e*x))/(e*f - d*g))])/(g*(e*f - d*g)^3) + (2*b^3*e^3*n^3*PolyLo
g[3, -((g*(d + e*x))/(e*f - d*g))])/(g*(e*f - d*g)^3)
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 31

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

Rule 2301

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

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2314

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_), x
_Symbol] :> Simp[(x*(d + e*x^r)^(q + 1)*(a + b*Log[c*x^n]))/d, x] - Dist[(b
*n)/d, Int[(d + e*x^r)^(q + 1), x], x] /; FreeQ[{a, b, c, d, e, n, q, r}, x
] && EqQ[r*(q + 1) + 1, 0]
```

Rule 2317

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

Rule 2318

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_))^2, x_Sy
mbol] :> Simp[(x*(a + b*Log[c*x^n])^p)/(d*(d + e*x)), x] - Dist[(b*n*p)/d,
Int[(a + b*Log[c*x^n])^(p - 1)/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n
, p}, x] && GtQ[p, 0]
```

Rule 2319

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/(e*(q + 1)), x]
- Dist[(b*n*p)/(e*(q + 1)), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2347

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/x
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2391

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

Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{(f+gx)^4}\,dx = -\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{3g(f+gx)^3} + \frac{(ben)\int \frac{\left(a+b\log(c(d+ex)^n)\right)^2}{(d+ex)(f+gx)^3}\,dx}{g}$$

$$= -\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{3g(f+gx)^3} + \frac{(bn)\,\text{Subst}\left(\int \frac{\left(a+b\log(cx^n)\right)^2}{x\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^3}\,dx, x, d+ex\right)}{g}$$

$$= -\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{3g(f+gx)^3} - \frac{(bn)\,\text{Subst}\left(\int \frac{\left(a+b\log(cx^n)\right)^2}{\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^3}\,dx, x, d+ex\right)}{ef-dg} + \frac{(ben}{}$$

$$= \frac{ben\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2g(ef-dg)(f+gx)^2} - \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{3g(f+gx)^3} - \frac{(ben)\,\text{Subst}\left(\int \frac{(a}{(}\right.}{(e}$$

$$= \frac{ben\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2g(ef-dg)(f+gx)^2} - \frac{be^2n(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{(ef-dg)^3(f+gx)} - \frac{(a+}{}$$

$$= \frac{b^2e^2n^2(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)}{(ef-dg)^3(f+gx)} + \frac{ben\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2g(ef-dg)(f+gx)^2} - \frac{be^2n}{}$$

$$= \frac{b^2e^2n^2(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)}{(ef-dg)^3(f+gx)} - \frac{be^3n\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2g(ef-dg)^3} + \frac{ben}{}$$

$$= \frac{b^2e^2n^2(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)}{(ef-dg)^3(f+gx)} - \frac{be^3n\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2g(ef-dg)^3} + \frac{ben}{}$$

Mathematica [A] time = 1.13, size = 843, normalized size = 1.49

$$\frac{-2\left(a-bn\log(d+ex)+b\log\left(c(d+ex)^n\right)\right)^3(ef-dg)^3 - 6bn\log(d+ex)\left(a-bn\log(d+ex)+b\log\left(c(d+ex\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^3/(f + g*x)^4,x]
```

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

```
d*g)] + 3*e*(f + g*x)*Log[d + e*x]^2*(g^2*(d + e*x)^2 - 4*e*g*(d + e*x)*(f
+ g*x) - 2*e^2*(f + g*x)^2*Log[(e*(f + g*x))/(e*f - d*g)]) + 18*e^3*(f + g*
x)^3*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] + 6*e^2*(f + g*x)^2*Log[d + e
*x]*(g*(d + e*x) + 3*e*(f + g*x)*Log[(e*(f + g*x))/(e*f - d*g)] - 2*e*(f +
g*x)*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)]) + 12*e^3*(f + g*x)^3*PolyLog
[3, (g*(d + e*x))/(-(e*f) + d*g)]))/(6*g*(e*f - d*g)^3*(f + g*x)^3)
```

fricas [F] time = 0.51, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b^3 \log\left((ex+d)^n c\right)^3 + 3\,ab^2 \log\left((ex+d)^n c\right)^2 + 3\,a^2 b \log\left((ex+d)^n c\right) + a^3}{g^4x^4 + 4\,fg^3x^3 + 6\,f^2g^2x^2 + 4\,f^3gx + f^4}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3/(g*x+f)^4,x, algorithm="fricas")
```

```
[Out] integral((b^3*log((e*x + d)^n*c)^3 + 3*a*b^2*log((e*x + d)^n*c)^2 + 3*a^2*b
*log((e*x + d)^n*c) + a^3)/(g^4*x^4 + 4*f*g^3*x^3 + 6*f^2*g^2*x^2 + 4*f^3*g
*x + f^4), x)
```

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

$$\int \frac{\left(b\log\left((ex+d)^n c\right) + a\right)^3}{\left(gx+f\right)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3/(g*x+f)^4,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^3/(g*x + f)^4, x)
```

maple [F] time = 2.80, size = 0, normalized size = 0.00

$$\int \frac{\left(b\ln\left(c\,(ex+d)^n\right) + a\right)^3}{\left(gx+f\right)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)^3/(g*x+f)^4,x)
```

```
[Out] int((b*ln(c*(e*x+d)^n)+a)^3/(g*x+f)^4,x)
```

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

$$\frac{1}{2}\left(\frac{2\,e^2\log(ex+d)}{e^3f^3g - 3\,de^2f^2g^2 + 3\,d^2efg^3 - d^3g^4} - \frac{2\,e^2\log\left(gx+f\right)}{e^3f^3g - 3\,de^2f^2g^2 + 3\,d^2efg^3 - d^3g^4} + \frac{}{e^2f^4g - 2\,def^3g^2 + d^2f^2g^3 + (}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3/(g*x+f)^4,x, algorithm="maxima")
```

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

```
+ (e*f*n + 3*d*g*log(c))*b^3 + (3*a*b^2*e*g + (e*g*n + 3*e*g*log(c))*b^3)*x
)*log((e*x + d)^n)^2 + (b^3*e*g*log(c)^3 + 3*a*b^2*e*g*log(c)^2)*x + 3*(b^3
*d*g*log(c)^2 + 2*a*b^2*d*g*log(c) + (b^3*e*g*log(c)^2 + 2*a*b^2*e*g*log(c)
)*x)*log((e*x + d)^n))/(e*g^5*x^5 + d*f^4*g + (4*e*f*g^4 + d*g^5)*x^4 + 2*(
3*e*f^2*g^3 + 2*d*f*g^4)*x^3 + 2*(2*e*f^3*g^2 + 3*d*f^2*g^3)*x^2 + (e*f^4*g
 + 4*d*f^3*g^2)*x), x)
```

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

$$\int \frac{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)^3}{{\left(f+g\,x\right)}^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^3/(f + g*x)^4,x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))^3/(f + g*x)^4, x)
```

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

$$\int \frac{\left(a + b \log{\left(c \left(d + e x\right)^{n} \right)}\right)^{3}}{\left(f + g x\right)^{4}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**3/(g*x+f)**4,x)
```

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

3.60 $\int (f+gx) \left(a+b\log \left(c(d+ex)^n\right)\right)^4 \, dx$

Optimal. Leaf size=340

$$-\frac{3b^3gn^3(d+ex)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2e^2}-\frac{24ab^3n^3x(ef-dg)}{e}+\frac{12b^2n^2(d+ex)(ef-dg)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{e^2}$$

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

Rubi [A] time = 0.28, antiderivative size = 340, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 7, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.318, Rules used = {2401, 2389, 2296, 2295, 2390, 2305, 2304}

$$\frac{12b^2n^2(d+ex)(ef-dg)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{e^2}-\frac{3b^3gn^3(d+ex)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2e^2}+\frac{3b^2gn^2(d+ex)^2\left(a+\right.}{2e}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)*(a + b*Log[c*(d + e*x)^n])^4,x]
```

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

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2390

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

Rule 2401

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

Rubi steps

$$\int (f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^4\,dx=\int\left(\frac{(ef-dg)\left(a+b\log\left(c(d+ex)^n\right)\right)^4}{e}+\frac{g(d+ex)\left(a+b\log\left(c(d+\right.\right.}{e}\right.$$

$$=\frac{g\int(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^4\,dx}{e}+\frac{(ef-dg)\int\left(a+b\log\left(c(\right.\right.}{e}$$

$$=\frac{g\,\mathrm{Subst}\left(\int x\left(a+b\log\left(cx^n\right)\right)^4\,dx,x,d+ex\right)}{e^2}+\frac{(ef-dg)\,\mathrm{Subst}\left(\int\left(\right.\right.}{}$$

$$=\frac{(ef-dg)(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^4}{e^2}+\frac{g(d+ex)^2\left(a+b\log\left(c\right.\right.}{2e^2}$$

$$=-\frac{4b(ef-dg)n(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{e^2}-\frac{bgn(d+ex)^2\left(a+\right.}{}$$

$$=\frac{12b^2(ef-dg)n^2(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{e^2}+\frac{3b^2gn^2(d+ex)^2}{}$$

$$=-\frac{24ab^3(ef-dg)n^3x}{e}+\frac{3b^4gn^4(d+ex)^2}{4e^2}-\frac{3b^3gn^3(d+ex)^2\left(a+b\log\right.}{2e^2}$$

$$=-\frac{24ab^3(ef-dg)n^3x}{e}+\frac{24b^4(ef-dg)n^4x}{e}+\frac{3b^4gn^4(d+ex)^2}{4e^2}-\frac{24b^4}{}$$

Mathematica [A] time = 0.22, size = 258, normalized size = 0.76

$$\frac{4(d+ex)(ef-dg)\left(a+b\log\left(c(d+ex)^n\right)\right)^4-16bn(ef-dg)\left((d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^3-3bn\left((d+ex)\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)*(a + b*Log[c*(d + e*x)^n])^4,x]
```

```
[Out] (4*(e*f - d*g)*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^4 + 2*g*(d + e*x)^2*(a
+ b*Log[c*(d + e*x)^n])^4 - 16*b*(e*f - d*g)*n*((d + e*x)*(a + b*Log[c*(d +
```

```
e*x)^n])^3 - 3*b*n*((d + e*x)*(a + b*Log[c*(d + e*x)^n])^2 - 2*b*n*(e*(a -
 b*n)*x + b*(d + e*x)*Log[c*(d + e*x)^n]))) - b*g*n*(4*(d + e*x)^2*(a + b*L
og[c*(d + e*x)^n])^3 - 3*b*n*(2*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n])^2 +
b*n*(b*e*n*x*(2*d + e*x) - 2*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n])))))/(4*
e^2)
```

fricas [B] time = 0.60, size = 1756, normalized size = 5.16

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*log(c*(e*x+d)^n))^4,x, algorithm="fricas")
```

```
[Out] 1/4*(2*(b^4*e^2*g*n^4*x^2 + 2*b^4*e^2*f*n^4*x + (2*b^4*d*e*f - b^4*d^2*g)*n
^4)*log(e*x + d)^4 + 2*(b^4*e^2*g*x^2 + 2*b^4*e^2*f*x)*log(c)^4 - 4*((4*b^4
*d*e*f - 3*b^4*d^2*g)*n^4 - 2*(2*a*b^3*d*e*f - a*b^3*d^2*g)*n^3 + (b^4*e^2*
g*n^4 - 2*a*b^3*e^2*g*n^3)*x^2 - 2*(2*a*b^3*e^2*f*n^3 - (2*b^4*e^2*f - b^4*
d*e*g)*n^4)*x - 2*(b^4*e^2*g*n^3*x^2 + 2*b^4*e^2*f*n^3*x + (2*b^4*d*e*f - b
^4*d^2*g)*n^3)*log(c))*log(e*x + d)^3 - 4*((b^4*e^2*g*n - 2*a*b^3*e^2*g)*x^
2 - 2*(2*a*b^3*e^2*f - (2*b^4*e^2*f - b^4*d*e*g)*n)*x)*log(c)^3 + (3*b^4*e^
2*g*n^4 - 6*a*b^3*e^2*g*n^3 + 6*a^2*b^2*e^2*g*n^2 - 4*a^3*b*e^2*g*n + 2*a^4
*e^2*g)*x^2 + 6*((8*b^4*d*e*f - 7*b^4*d^2*g)*n^4 - 2*(4*a*b^3*d*e*f - 3*a*b
^3*d^2*g)*n^3 + 2*(2*a^2*b^2*d*e*f - a^2*b^2*d^2*g)*n^2 + (b^4*e^2*g*n^4 -
2*a*b^3*e^2*g*n^3 + 2*a^2*b^2*e^2*g*n^2)*x^2 + 2*(b^4*e^2*g*n^2*x^2 + 2*b^4
*e^2*f*n^2*x + (2*b^4*d*e*f - b^4*d^2*g)*n^2)*log(c)^2 + 2*(2*a^2*b^2*e^2*f
*n^2 + (4*b^4*e^2*f - 3*b^4*d*e*g)*n^4 - 2*(2*a*b^3*e^2*f - a*b^3*d*e*g)*n^
3)*x - 2*((4*b^4*d*e*f - 3*b^4*d^2*g)*n^3 - 2*(2*a*b^3*d*e*f - a*b^3*d^2*g)
*n^2 + (b^4*e^2*g*n^3 - 2*a*b^3*e^2*g*n^2)*x^2 - 2*(2*a*b^3*e^2*f*n^2 - (2*
b^4*e^2*f - b^4*d*e*g)*n^3)*x)*log(c))*log(e*x + d)^2 + 6*((b^4*e^2*g*n^2 -
 2*a*b^3*e^2*g*n + 2*a^2*b^2*e^2*g)*x^2 + 2*(2*a^2*b^2*e^2*f + (4*b^4*e^2*f
 - 3*b^4*d*e*g)*n^2 - 2*(2*a*b^3*e^2*f - a*b^3*d*e*g)*n)*x)*log(c)^2 + 2*(2
*a^4*e^2*f + 3*(16*b^4*e^2*f - 15*b^4*d*e*g)*n^4 - 6*(8*a*b^3*e^2*f - 7*a*b
^3*d*e*g)*n^3 + 6*(4*a^2*b^2*e^2*f - 3*a^2*b^2*d*e*g)*n^2 - 4*(2*a^3*b*e^2*
f - a^3*b*d*e*g)*n)*x - 2*(3*(16*b^4*d*e*f - 15*b^4*d^2*g)*n^4 - 6*(8*a*b^3
*d*e*f - 7*a*b^3*d^2*g)*n^3 - 4*(b^4*e^2*g*n*x^2 + 2*b^4*e^2*f*n*x + (2*b^4
*d*e*f - b^4*d^2*g)*n)*log(c)^3 + 6*(4*a^2*b^2*d*e*f - 3*a^2*b^2*d^2*g)*n^2
 + (3*b^4*e^2*g*n^4 - 6*a*b^3*e^2*g*n^3 + 6*a^2*b^2*e^2*g*n^2 - 4*a^3*b*e^2
*g*n)*x^2 + 6*((4*b^4*d*e*f - 3*b^4*d^2*g)*n^2 + (b^4*e^2*g*n^2 - 2*a*b^3*e
^2*g*n)*x^2 - 2*(2*a*b^3*d*e*f - a*b^3*d^2*g)*n - 2*(2*a*b^3*e^2*f*n - (2*b
^4*e^2*f - b^4*d*e*g)*n^2)*x)*log(c)^2 - 4*(2*a^3*b*d*e*f - a^3*b*d^2*g)*n
- 2*(4*a^3*b*e^2*f*n - 3*(8*b^4*e^2*f - 7*b^4*d*e*g)*n^4 + 6*(4*a*b^3*e^2*f
 - 3*a*b^3*d*e*g)*n^3 - 6*(2*a^2*b^2*e^2*f - a^2*b^2*d*e*g)*n^2)*x - 6*((8*
b^4*d*e*f - 7*b^4*d^2*g)*n^3 - 2*(4*a*b^3*d*e*f - 3*a*b^3*d^2*g)*n^2 + (b^4
*e^2*g*n^3 - 2*a*b^3*e^2*g*n^2 + 2*a^2*b^2*e^2*g*n)*x^2 + 2*(2*a^2*b^2*d*e*
f - a^2*b^2*d^2*g)*n + 2*(2*a^2*b^2*e^2*f*n + (4*b^4*e^2*f - 3*b^4*d*e*g)*n
^3 - 2*(2*a*b^3*e^2*f - a*b^3*d*e*g)*n^2)*x)*log(c))*log(e*x + d) - 2*((3*b
^4*e^2*g*n^3 - 6*a*b^3*e^2*g*n^2 + 6*a^2*b^2*e^2*g*n - 4*a^3*b*e^2*g)*x^2 -
 2*(4*a^3*b*e^2*f - 3*(8*b^4*e^2*f - 7*b^4*d*e*g)*n^3 + 6*(4*a*b^3*e^2*f -
3*a*b^3*d*e*g)*n^2 - 6*(2*a^2*b^2*e^2*f - a^2*b^2*d*e*g)*n)*x)*log(c))/e^2
```

giac [B] time = 0.37, size = 2548, normalized size = 7.49

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*log(c*(e*x+d)^n))^4,x, algorithm="giac")
```

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

```
+ d)^4 + 2*(x*e + d)^2*b^4*g*n^3*e^(-2)*log(x*e + d)^3*log(c) - 4*(x*e + d)
*b^4*d*g*n^3*e^(-2)*log(x*e + d)^3*log(c) + 3/2*(x*e + d)^2*b^4*g*n^4*e^(-2
)*log(x*e + d)^2 - 12*(x*e + d)*b^4*d*g*n^4*e^(-2)*log(x*e + d)^2 - 4*(x*e
+ d)*b^4*f*n^4*e^(-1)*log(x*e + d)^3 + 2*(x*e + d)^2*a*b^3*g*n^3*e^(-2)*log
(x*e + d)^3 - 4*(x*e + d)*a*b^3*d*g*n^3*e^(-2)*log(x*e + d)^3 - 3*(x*e + d)
^2*b^4*g*n^3*e^(-2)*log(x*e + d)^2*log(c) + 12*(x*e + d)*b^4*d*g*n^3*e^(-2)
*log(x*e + d)^2*log(c) + 4*(x*e + d)*b^4*f*n^3*e^(-1)*log(x*e + d)^3*log(c)
 + 3*(x*e + d)^2*b^4*g*n^2*e^(-2)*log(x*e + d)^2*log(c)^2 - 6*(x*e + d)*b^4
*d*g*n^2*e^(-2)*log(x*e + d)^2*log(c)^2 - 3/2*(x*e + d)^2*b^4*g*n^4*e^(-2)*
log(x*e + d) + 24*(x*e + d)*b^4*d*g*n^4*e^(-2)*log(x*e + d) + 12*(x*e + d)*
b^4*f*n^4*e^(-1)*log(x*e + d)^2 - 3*(x*e + d)^2*a*b^3*g*n^3*e^(-2)*log(x*e
+ d)^2 + 12*(x*e + d)*a*b^3*d*g*n^3*e^(-2)*log(x*e + d)^2 + 4*(x*e + d)*a*b
^3*f*n^3*e^(-1)*log(x*e + d)^3 + 3*(x*e + d)^2*b^4*g*n^3*e^(-2)*log(x*e + d
)*log(c) - 24*(x*e + d)*b^4*d*g*n^3*e^(-2)*log(x*e + d)*log(c) - 12*(x*e +
d)*b^4*f*n^3*e^(-1)*log(x*e + d)^2*log(c) + 6*(x*e + d)^2*a*b^3*g*n^2*e^(-2
)*log(x*e + d)^2*log(c) - 12*(x*e + d)*a*b^3*d*g*n^2*e^(-2)*log(x*e + d)^2*
log(c) - 3*(x*e + d)^2*b^4*g*n^2*e^(-2)*log(x*e + d)*log(c)^2 + 12*(x*e + d
)*b^4*d*g*n^2*e^(-2)*log(x*e + d)*log(c)^2 + 6*(x*e + d)*b^4*f*n^2*e^(-1)*l
og(x*e + d)^2*log(c)^2 + 2*(x*e + d)^2*b^4*g*n*e^(-2)*log(x*e + d)*log(c)^3
 - 4*(x*e + d)*b^4*d*g*n*e^(-2)*log(x*e + d)*log(c)^3 + 3/4*(x*e + d)^2*b^4
*g*n^4*e^(-2) - 24*(x*e + d)*b^4*d*g*n^4*e^(-2) - 24*(x*e + d)*b^4*f*n^4*e^
(-1)*log(x*e + d) + 3*(x*e + d)^2*a*b^3*g*n^3*e^(-2)*log(x*e + d) - 24*(x*e
 + d)*a*b^3*d*g*n^3*e^(-2)*log(x*e + d) - 12*(x*e + d)*a*b^3*f*n^3*e^(-1)*l
og(x*e + d)^2 + 3*(x*e + d)^2*a^2*b^2*g*n^2*e^(-2)*log(x*e + d)^2 - 6*(x*e
+ d)*a^2*b^2*d*g*n^2*e^(-2)*log(x*e + d)^2 - 3/2*(x*e + d)^2*b^4*g*n^3*e^(-
2)*log(c) + 24*(x*e + d)*b^4*d*g*n^3*e^(-2)*log(c) + 24*(x*e + d)*b^4*f*n^3
*e^(-1)*log(x*e + d)*log(c) - 6*(x*e + d)^2*a*b^3*g*n^2*e^(-2)*log(x*e + d)
*log(c) + 24*(x*e + d)*a*b^3*d*g*n^2*e^(-2)*log(x*e + d)*log(c) + 12*(x*e +
 d)*a*b^3*f*n^2*e^(-1)*log(x*e + d)^2*log(c) + 3/2*(x*e + d)^2*b^4*g*n^2*e^
(-2)*log(c)^2 - 12*(x*e + d)*b^4*d*g*n^2*e^(-2)*log(c)^2 - 12*(x*e + d)*b^4
*f*n^2*e^(-1)*log(x*e + d)*log(c)^2 + 6*(x*e + d)^2*a*b^3*g*n*e^(-2)*log(x*
e + d)*log(c)^2 - 12*(x*e + d)*a*b^3*d*g*n*e^(-2)*log(x*e + d)*log(c)^2 - (
x*e + d)^2*b^4*g*n*e^(-2)*log(c)^3 + 4*(x*e + d)*b^4*d*g*n*e^(-2)*log(c)^3
+ 4*(x*e + d)*b^4*f*n*e^(-1)*log(x*e + d)*log(c)^3 + 1/2*(x*e + d)^2*b^4*g*
e^(-2)*log(c)^4 - (x*e + d)*b^4*d*g*e^(-2)*log(c)^4 + 24*(x*e + d)*b^4*f*n^
4*e^(-1) - 3/2*(x*e + d)^2*a*b^3*g*n^3*e^(-2) + 24*(x*e + d)*a*b^3*d*g*n^3*
e^(-2) + 24*(x*e + d)*a*b^3*f*n^3*e^(-1)*log(x*e + d) - 3*(x*e + d)^2*a^2*b
^2*g*n^2*e^(-2)*log(x*e + d) + 12*(x*e + d)*a^2*b^2*d*g*n^2*e^(-2)*log(x*e
+ d) + 6*(x*e + d)*a^2*b^2*f*n^2*e^(-1)*log(x*e + d)^2 - 24*(x*e + d)*b^4*f
*n^3*e^(-1)*log(c) + 3*(x*e + d)^2*a*b^3*g*n^2*e^(-2)*log(c) - 24*(x*e + d)
*a*b^3*d*g*n^2*e^(-2)*log(c) - 24*(x*e + d)*a*b^3*f*n^2*e^(-1)*log(x*e + d)
*log(c) + 6*(x*e + d)^2*a^2*b^2*g*n*e^(-2)*log(x*e + d)*log(c) - 12*(x*e +
d)*a^2*b^2*d*g*n*e^(-2)*log(x*e + d)*log(c) + 12*(x*e + d)*b^4*f*n^2*e^(-1)
*log(c)^2 - 3*(x*e + d)^2*a*b^3*g*n*e^(-2)*log(c)^2 + 12*(x*e + d)*a*b^3*d*
g*n*e^(-2)*log(c)^2 + 12*(x*e + d)*a*b^3*f*n*e^(-1)*log(x*e + d)*log(c)^2 -
 4*(x*e + d)*b^4*f*n*e^(-1)*log(c)^3 + 2*(x*e + d)^2*a*b^3*g*e^(-2)*log(c)^
3 - 4*(x*e + d)*a*b^3*d*g*e^(-2)*log(c)^3 + (x*e + d)*b^4*f*e^(-1)*log(c)^4
 - 24*(x*e + d)*a*b^3*f*n^3*e^(-1) + 3/2*(x*e + d)^2*a^2*b^2*g*n^2*e^(-2) -
 12*(x*e + d)*a^2*b^2*d*g*n^2*e^(-2) - 12*(x*e + d)*a^2*b^2*f*n^2*e^(-1)*lo
g(x*e + d) + 2*(x*e + d)^2*a^3*b*g*n*e^(-2)*log(x*e + d) - 4*(x*e + d)*a^3*
b*d*g*n*e^(-2)*log(x*e + d) + 24*(x*e + d)*a*b^3*f*n^2*e^(-1)*log(c) - 3*(x
*e + d)^2*a^2*b^2*g*n*e^(-2)*log(c) + 12*(x*e + d)*a^2*b^2*d*g*n*e^(-2)*log
(c) + 12*(x*e + d)*a^2*b^2*f*n*e^(-1)*log(x*e + d)*log(c) - 12*(x*e + d)*a*
b^3*f*n*e^(-1)*log(c)^2 + 3*(x*e + d)^2*a^2*b^2*g*e^(-2)*log(c)^2 - 6*(x*e
+ d)*a^2*b^2*d*g*e^(-2)*log(c)^2 + 4*(x*e + d)*a*b^3*f*e^(-1)*log(c)^3 + 12
*(x*e + d)*a^2*b^2*f*n^2*e^(-1) - (x*e + d)^2*a^3*b*g*n*e^(-2) + 4*(x*e + d
)*a^3*b*d*g*n*e^(-2) + 4*(x*e + d)*a^3*b*f*n*e^(-1)*log(x*e + d) - 12*(x*e
+ d)*a^2*b^2*f*n*e^(-1)*log(c) + 2*(x*e + d)^2*a^3*b*g*e^(-2)*log(c) - 4*(x
*e + d)*a^3*b*d*g*e^(-2)*log(c) + 6*(x*e + d)*a^2*b^2*f*e^(-1)*log(c)^2 - 4
```

```
*(x*e + d)*a^3*b*f*n*e^(-1) + 1/2*(x*e + d)^2*a^4*g*e^(-2) - (x*e + d)*a^4*
d*g*e^(-2) + 4*(x*e + d)*a^3*b*f*e^(-1)*log(c) + (x*e + d)*a^4*f*e^(-1)
```

maple [C] time = 3.40, size = 37938, normalized size = 111.58

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(b*ln(c*(e*x+d)^n)+a)^4,x)
```

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

maxima [B] time = 1.55, size = 1163, normalized size = 3.42

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*log(c*(e*x+d)^n))^4,x, algorithm="maxima")
```

```
[Out] 1/2*b^4*g*x^2*log((e*x + d)^n*c)^4 + 2*a*b^3*g*x^2*log((e*x + d)^n*c)^3 + b
^4*f*x*log((e*x + d)^n*c)^4 + 3*a^2*b^2*g*x^2*log((e*x + d)^n*c)^2 + 4*a*b^
3*f*x*log((e*x + d)^n*c)^3 - 4*a^3*b*e*f*n*(x/e - d*log(e*x + d)/e^2) - a^3
*b*e*g*n*(2*d^2*log(e*x + d)/e^3 + (e*x^2 - 2*d*x)/e^2) + 2*a^3*b*g*x^2*log
((e*x + d)^n*c) + 6*a^2*b^2*f*x*log((e*x + d)^n*c)^2 + 1/2*a^4*g*x^2 + 4*a^
3*b*f*x*log((e*x + d)^n*c) - 6*(2*e*n*(x/e - d*log(e*x + d)/e^2)*log((e*x +
 d)^n*c) + (d*log(e*x + d)^2 - 2*e*x + 2*d*log(e*x + d))*n^2/e)*a^2*b^2*f -
 4*(3*e*n*(x/e - d*log(e*x + d)/e^2)*log((e*x + d)^n*c)^2 - e*n*((d*log(e*x
 + d)^3 + 3*d*log(e*x + d)^2 - 6*e*x + 6*d*log(e*x + d))*n^2/e^2 - 3*(d*log
(e*x + d)^2 - 2*e*x + 2*d*log(e*x + d))*n*log((e*x + d)^n*c)/e^2))*a*b^3*f
- (4*e*n*(x/e - d*log(e*x + d)/e^2)*log((e*x + d)^n*c)^3 + (e*n*((d*log(e*x
 + d)^4 + 4*d*log(e*x + d)^3 + 12*d*log(e*x + d)^2 - 24*e*x + 24*d*log(e*x
+ d))*n^2/e^3 - 4*(d*log(e*x + d)^3 + 3*d*log(e*x + d)^2 - 6*e*x + 6*d*log(
e*x + d))*n*log((e*x + d)^n*c)/e^3) + 6*(d*log(e*x + d)^2 - 2*e*x + 2*d*log
(e*x + d))*n*log((e*x + d)^n*c)^2/e^2)*e*n)*b^4*f - 3/2*(2*e*n*(2*d^2*log(e
*x + d)/e^3 + (e*x^2 - 2*d*x)/e^2)*log((e*x + d)^n*c) - (e^2*x^2 + 2*d^2*lo
g(e*x + d)^2 - 6*d*e*x + 6*d^2*log(e*x + d))*n^2/e^2)*a^2*b^2*g - 1/2*(6*e*
n*(2*d^2*log(e*x + d)/e^3 + (e*x^2 - 2*d*x)/e^2)*log((e*x + d)^n*c)^2 + e*n
*((4*d^2*log(e*x + d)^3 + 3*e^2*x^2 + 18*d^2*log(e*x + d)^2 - 42*d*e*x + 42
*d^2*log(e*x + d))*n^2/e^3 - 6*(e^2*x^2 + 2*d^2*log(e*x + d)^2 - 6*d*e*x +
6*d^2*log(e*x + d))*n*log((e*x + d)^n*c)/e^3))*a*b^3*g - 1/4*(4*e*n*(2*d^2*
log(e*x + d)/e^3 + (e*x^2 - 2*d*x)/e^2)*log((e*x + d)^n*c)^3 - (e*n*((2*d^2
*log(e*x + d)^4 + 12*d^2*log(e*x + d)^3 + 3*e^2*x^2 + 42*d^2*log(e*x + d)^2
 - 90*d*e*x + 90*d^2*log(e*x + d))*n^2/e^4 - 2*(4*d^2*log(e*x + d)^3 + 3*e^
2*x^2 + 18*d^2*log(e*x + d)^2 - 42*d*e*x + 42*d^2*log(e*x + d))*n*log((e*x
+ d)^n*c)/e^4) + 6*(e^2*x^2 + 2*d^2*log(e*x + d)^2 - 6*d*e*x + 6*d^2*log(e*
x + d))*n*log((e*x + d)^n*c)^2/e^3)*e*n)*b^4*g + a^4*f*x
```

mupad [B] time = 0.80, size = 823, normalized size = 2.42

$$x\left(\frac{2\,a^4\,d\,g+2\,a^4\,e\,f-42\,b^4\,d\,g\,n^4+48\,b^4\,e\,f\,n^4+36\,a\,b^3\,d\,g\,n^3-48\,a\,b^3\,e\,f\,n^3-12\,a^2\,b^2\,d\,g\,n^2+24\,a^2\,b^2\,e\,f\,n^2 -}{2\,e}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(a + b*log(c*(d + e*x)^n))^4,x)
```

```
[Out] x*((2*a^4*d*g + 2*a^4*e*f - 42*b^4*d*g*n^4 + 48*b^4*e*f*n^4 + 36*a*b^3*d*g*
n^3 - 48*a*b^3*e*f*n^3 - 12*a^2*b^2*d*g*n^2 + 24*a^2*b^2*e*f*n^2 - 8*a^3*b*
e*f*n)/(2*e) - (d*g*(2*a^4 + 3*b^4*n^4 - 6*a*b^3*n^3 + 6*a^2*b^2*n^2 - 4*a^
3*b*n))/(2*e)) + log(c*(d + e*x)^n)^4*((b^4*g*x^2)/2 - (d*(b^4*d*g - 2*b^4*
```

```
e*f))/(2*e^2) + b^4*f*x) + log(c*(d + e*x)^n)*(x*((4*a^3*b*d*g + 4*a^3*b*e*
f + 18*b^4*d*g*n^3 - 24*b^4*e*f*n^3 - 12*a^2*b^2*e*f*n - 12*a*b^3*d*g*n^2 +
 24*a*b^3*e*f*n^2)/e - (b*d*g*(4*a^3 - 3*b^3*n^3 + 6*a*b^2*n^2 - 6*a^2*b*n)
)/e) + (b*g*x^2*(4*a^3 - 3*b^3*n^3 + 6*a*b^2*n^2 - 6*a^2*b*n))/2) + log(c*(
d + e*x)^n)^3*(x*((4*b^3*(a*d*g + a*e*f - b*e*f*n))/e - (2*b^3*d*g*(2*a - b
*n))/e) - (d*(2*a*b^3*d*g - 4*a*b^3*e*f - 3*b^4*d*g*n + 4*b^4*e*f*n))/e^2 +
 b^3*g*x^2*(2*a - b*n)) + log(c*(d + e*x)^n)^2*(x*((6*a^2*b^2*d*g + 6*a^2*b
^2*e*f - 6*b^4*d*g*n^2 + 12*b^4*e*f*n^2 - 12*a*b^3*e*f*n)/e - (3*b^2*d*g*(2
*a^2 + b^2*n^2 - 2*a*b*n))/e) - (3*d*(2*a^2*b^2*d*g - 4*a^2*b^2*e*f + 7*b^4
*d*g*n^2 - 8*b^4*e*f*n^2 - 6*a*b^3*d*g*n + 8*a*b^3*e*f*n))/(2*e^2) + (3*b^2
*g*x^2*(2*a^2 + b^2*n^2 - 2*a*b*n))/2) + (log(d + e*x)*(45*b^4*d^2*g*n^4 -
4*a^3*b*d^2*g*n - 48*b^4*d*e*f*n^4 - 42*a*b^3*d^2*g*n^3 + 18*a^2*b^2*d^2*g*
n^2 + 8*a^3*b*d*e*f*n + 48*a*b^3*d*e*f*n^3 - 24*a^2*b^2*d*e*f*n^2))/(2*e^2)
 + (g*x^2*(2*a^4 + 3*b^4*n^4 - 6*a*b^3*n^3 + 6*a^2*b^2*n^2 - 4*a^3*b*n))/4
```

sympy [A] time = 20.67, size = 2885, normalized size = 8.49

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*ln(c*(e*x+d)**n))**4,x)
```

```
[Out] Piecewise((a**4*f*x + a**4*g*x**2/2 - 2*a**3*b*d**2*g*n*log(d + e*x)/e**2 +
 4*a**3*b*d*f*n*log(d + e*x)/e + 2*a**3*b*d*g*n*x/e + 4*a**3*b*f*n*x*log(d
+ e*x) - 4*a**3*b*f*n*x + 4*a**3*b*f*x*log(c) + 2*a**3*b*g*n*x**2*log(d + e
*x) - a**3*b*g*n*x**2 + 2*a**3*b*g*x**2*log(c) - 3*a**2*b**2*d**2*g*n**2*lo
g(d + e*x)**2/e**2 + 9*a**2*b**2*d**2*g*n**2*log(d + e*x)/e**2 - 6*a**2*b**
2*d**2*g*n*log(c)*log(d + e*x)/e**2 + 6*a**2*b**2*d*f*n**2*log(d + e*x)**2/
e - 12*a**2*b**2*d*f*n**2*log(d + e*x)/e + 12*a**2*b**2*d*f*n*log(c)*log(d
+ e*x)/e + 6*a**2*b**2*d*g*n**2*x*log(d + e*x)/e - 9*a**2*b**2*d*g*n**2*x/e
 + 6*a**2*b**2*d*g*n*x*log(c)/e + 6*a**2*b**2*f*n**2*x*log(d + e*x)**2 - 12
*a**2*b**2*f*n**2*x*log(d + e*x) + 12*a**2*b**2*f*n**2*x + 12*a**2*b**2*f*n
*x*log(c)*log(d + e*x) - 12*a**2*b**2*f*n*x*log(c) + 6*a**2*b**2*f*x*log(c)
**2 + 3*a**2*b**2*g*n**2*x**2*log(d + e*x)**2 - 3*a**2*b**2*g*n**2*x**2*log
(d + e*x) + 3*a**2*b**2*g*n**2*x**2/2 + 6*a**2*b**2*g*n*x**2*log(c)*log(d +
 e*x) - 3*a**2*b**2*g*n*x**2*log(c) + 3*a**2*b**2*g*x**2*log(c)**2 - 2*a*b*
*3*d**2*g*n**3*log(d + e*x)**3/e**2 + 9*a*b**3*d**2*g*n**3*log(d + e*x)**2/
e**2 - 21*a*b**3*d**2*g*n**3*log(d + e*x)/e**2 - 6*a*b**3*d**2*g*n**2*log(c
)*log(d + e*x)**2/e**2 + 18*a*b**3*d**2*g*n**2*log(c)*log(d + e*x)/e**2 - 6
*a*b**3*d**2*g*n*log(c)**2*log(d + e*x)/e**2 + 4*a*b**3*d*f*n**3*log(d + e*
x)**3/e - 12*a*b**3*d*f*n**3*log(d + e*x)**2/e + 24*a*b**3*d*f*n**3*log(d +
 e*x)/e + 12*a*b**3*d*f*n**2*log(c)*log(d + e*x)**2/e - 24*a*b**3*d*f*n**2*
log(c)*log(d + e*x)/e + 12*a*b**3*d*f*n*log(c)**2*log(d + e*x)/e + 6*a*b**3
*d*g*n**3*x*log(d + e*x)**2/e - 18*a*b**3*d*g*n**3*x*log(d + e*x)/e + 21*a*
b**3*d*g*n**3*x/e + 12*a*b**3*d*g*n**2*x*log(c)*log(d + e*x)/e - 18*a*b**3*
d*g*n**2*x*log(c)/e + 6*a*b**3*d*g*n*x*log(c)**2/e + 4*a*b**3*f*n**3*x*log(
d + e*x)**3 - 12*a*b**3*f*n**3*x*log(d + e*x)**2 + 24*a*b**3*f*n**3*x*log(d
 + e*x) - 24*a*b**3*f*n**3*x + 12*a*b**3*f*n**2*x*log(c)*log(d + e*x)**2 -
24*a*b**3*f*n**2*x*log(c)*log(d + e*x) + 24*a*b**3*f*n**2*x*log(c) + 12*a*b
**3*f*n*x*log(c)**2*log(d + e*x) - 12*a*b**3*f*n*x*log(c)**2 + 4*a*b**3*f*x
*log(c)**3 + 2*a*b**3*g*n**3*x**2*log(d + e*x)**3 - 3*a*b**3*g*n**3*x**2*lo
g(d + e*x)**2 + 3*a*b**3*g*n**3*x**2*log(d + e*x) - 3*a*b**3*g*n**3*x**2/2
+ 6*a*b**3*g*n**2*x**2*log(c)*log(d + e*x)**2 - 6*a*b**3*g*n**2*x**2*log(c)
*log(d + e*x) + 3*a*b**3*g*n**2*x**2*log(c) + 6*a*b**3*g*n*x**2*log(c)**2*l
og(d + e*x) - 3*a*b**3*g*n*x**2*log(c)**2 + 2*a*b**3*g*x**2*log(c)**3 - b**
4*d**2*g*n**4*log(d + e*x)**4/(2*e**2) + 3*b**4*d**2*g*n**4*log(d + e*x)**3
/e**2 - 21*b**4*d**2*g*n**4*log(d + e*x)**2/(2*e**2) + 45*b**4*d**2*g*n**4*
log(d + e*x)/(2*e**2) - 2*b**4*d**2*g*n**3*log(c)*log(d + e*x)**3/e**2 + 9*
b**4*d**2*g*n**3*log(c)*log(d + e*x)**2/e**2 - 21*b**4*d**2*g*n**3*log(c)*l
og(d + e*x)/e**2 - 3*b**4*d**2*g*n**2*log(c)**2*log(d + e*x)**2/e**2 + 9*b*
```

```
*4*d**2*g*n**2*log(c)**2*log(d + e*x)/e**2 - 2*b**4*d**2*g*n*log(c)**3*log(
d + e*x)/e**2 + b**4*d*f*n**4*log(d + e*x)**4/e - 4*b**4*d*f*n**4*log(d + e
*x)**3/e + 12*b**4*d*f*n**4*log(d + e*x)**2/e - 24*b**4*d*f*n**4*log(d + e*
x)/e + 4*b**4*d*f*n**3*log(c)*log(d + e*x)**3/e - 12*b**4*d*f*n**3*log(c)*l
og(d + e*x)**2/e + 24*b**4*d*f*n**3*log(c)*log(d + e*x)/e + 6*b**4*d*f*n**2
*log(c)**2*log(d + e*x)**2/e - 12*b**4*d*f*n**2*log(c)**2*log(d + e*x)/e +
4*b**4*d*f*n*log(c)**3*log(d + e*x)/e + 2*b**4*d*g*n**4*x*log(d + e*x)**3/e
 - 9*b**4*d*g*n**4*x*log(d + e*x)**2/e + 21*b**4*d*g*n**4*x*log(d + e*x)/e
- 45*b**4*d*g*n**4*x/(2*e) + 6*b**4*d*g*n**3*x*log(c)*log(d + e*x)**2/e - 1
8*b**4*d*g*n**3*x*log(c)*log(d + e*x)/e + 21*b**4*d*g*n**3*x*log(c)/e + 6*b
**4*d*g*n**2*x*log(c)**2*log(d + e*x)/e - 9*b**4*d*g*n**2*x*log(c)**2/e + 2
*b**4*d*g*n*x*log(c)**3/e + b**4*f*n**4*x*log(d + e*x)**4 - 4*b**4*f*n**4*x
*log(d + e*x)**3 + 12*b**4*f*n**4*x*log(d + e*x)**2 - 24*b**4*f*n**4*x*log(
d + e*x) + 24*b**4*f*n**4*x + 4*b**4*f*n**3*x*log(c)*log(d + e*x)**3 - 12*b
**4*f*n**3*x*log(c)*log(d + e*x)**2 + 24*b**4*f*n**3*x*log(c)*log(d + e*x)
- 24*b**4*f*n**3*x*log(c) + 6*b**4*f*n**2*x*log(c)**2*log(d + e*x)**2 - 12*
b**4*f*n**2*x*log(c)**2*log(d + e*x) + 12*b**4*f*n**2*x*log(c)**2 + 4*b**4*
f*n*x*log(c)**3*log(d + e*x) - 4*b**4*f*n*x*log(c)**3 + b**4*f*x*log(c)**4
+ b**4*g*n**4*x**2*log(d + e*x)**4/2 - b**4*g*n**4*x**2*log(d + e*x)**3 + 3
*b**4*g*n**4*x**2*log(d + e*x)**2/2 - 3*b**4*g*n**4*x**2*log(d + e*x)/2 + 3
*b**4*g*n**4*x**2/4 + 2*b**4*g*n**3*x**2*log(c)*log(d + e*x)**3 - 3*b**4*g*
n**3*x**2*log(c)*log(d + e*x)**2 + 3*b**4*g*n**3*x**2*log(c)*log(d + e*x) -
 3*b**4*g*n**3*x**2*log(c)/2 + 3*b**4*g*n**2*x**2*log(c)**2*log(d + e*x)**2
 - 3*b**4*g*n**2*x**2*log(c)**2*log(d + e*x) + 3*b**4*g*n**2*x**2*log(c)**2
/2 + 2*b**4*g*n*x**2*log(c)**3*log(d + e*x) - b**4*g*n*x**2*log(c)**3 + b**
4*g*x**2*log(c)**4/2, Ne(e, 0)), ((a + b*log(c*d**n))**4*(f*x + g*x**2/2),
True))
```

3.61 $\int \left(a+b\log\left(c(d+ex)^n\right)\right)^4\,dx$

Optimal. Leaf size=131

$$-24ab^3n^3x+\frac{12b^2n^2(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{e}-\frac{4bn(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{e}+\frac{(d+ex)\left(a+b\log\right.}{e}$$

```
[Out] -24*a*b^3*n^3*x+24*b^4*n^4*x-24*b^4*n^3*(e*x+d)*ln(c*(e*x+d)^n)/e+12*b^2*n^
2*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^2/e-4*b*n*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^3/e
+(e*x+d)*(a+b*ln(c*(e*x+d)^n))^4/e
```

Rubi [A] time = 0.07, antiderivative size = 131, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188, Rules used = {2389, 2296, 2295}

$$\frac{12b^2n^2(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{e}-24ab^3n^3x-\frac{4bn(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{e}+\frac{(d+ex)\left(a+b\log\right.}{e}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^4,x]
```

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

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rubi steps

$$\int \left(a+b\log \left(c(d+ex)^n\right)\right)^4 dx = \frac{\text{Subst}\left(\int \left(a+b\log \left(cx^n\right)\right)^4 dx, x, d+ex\right)}{e}$$
$$= \frac{(d+ex)\left(a+b\log \left(c(d+ex)^n\right)\right)^4}{e} - \frac{(4bn)\,\text{Subst}\left(\int \left(a+b\log \left(cx^n\right)\right)^3 dx, x, d+$$
$$= -\frac{4bn(d+ex)\left(a+b\log \left(c(d+ex)^n\right)\right)^3}{e} + \frac{(d+ex)\left(a+b\log \left(c(d+ex)^n\right)\right)^4}{e} + \frac{(1$$
$$= \frac{12b^2n^2(d+ex)\left(a+b\log \left(c(d+ex)^n\right)\right)^2}{e} - \frac{4bn(d+ex)\left(a+b\log \left(c(d+ex)^n\right)\right)^3}$$
$$= -24ab^3n^3x + \frac{12b^2n^2(d+ex)\left(a+b\log \left(c(d+ex)^n\right)\right)^2}{e} - \frac{4bn(d+ex)\left(a+b\log\right.$$
$$= -24ab^3n^3x + 24b^4n^4x - \frac{24b^4n^3(d+ex)\log \left(c(d+ex)^n\right)}{e} + \frac{12b^2n^2(d+ex)\left(a+\right.$$

Mathematica [A] time = 0.03, size = 112, normalized size = 0.85

$$\frac{(d+ex)\left(a+b\log \left(c(d+ex)^n\right)\right)^4 - 4bn\left((d+ex)\left(a+b\log \left(c(d+ex)^n\right)\right)^3 - 3bn\left((d+ex)\left(a+b\log \left(c(d+ex)^n\right)\right)^2\right.\right.}{e}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^4,x]
```

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

fricas [B] time = 0.49, size = 614, normalized size = 4.69

$$\frac{b^4ex\log(c)^4 + \left(b^4en^4x + b^4dn^4\right)\log(ex+d)^4 - 4\left(b^4en - ab^3e\right)x\log(c)^3 - 4\left(b^4dn^4 - ab^3dn^3 + \left(b^4en^4 - ab^3en^3\right)\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^4,x, algorithm="fricas")
```

```
[Out] (b^4*e*x*log(c)^4 + (b^4*e*n^4*x + b^4*d*n^4)*log(e*x + d)^4 - 4*(b^4*e*n -
 a*b^3*e)*x*log(c)^3 - 4*(b^4*d*n^4 - a*b^3*d*n^3 + (b^4*e*n^4 - a*b^3*e*n^
3)*x - (b^4*e*n^3*x + b^4*d*n^3)*log(c))*log(e*x + d)^3 + 6*(2*b^4*e*n^2 -
2*a*b^3*e*n + a^2*b^2*e)*x*log(c)^2 + 6*(2*b^4*d*n^4 - 2*a*b^3*d*n^3 + a^2*
b^2*d*n^2 + (b^4*e*n^2*x + b^4*d*n^2)*log(c)^2 + (2*b^4*e*n^4 - 2*a*b^3*e*n
^3 + a^2*b^2*e*n^2)*x - 2*(b^4*d*n^3 - a*b^3*d*n^2 + (b^4*e*n^3 - a*b^3*e*n
^2)*x)*log(c))*log(e*x + d)^2 - 4*(6*b^4*e*n^3 - 6*a*b^3*e*n^2 + 3*a^2*b^2*
e*n - a^3*b*e)*x*log(c) + (24*b^4*e*n^4 - 24*a*b^3*e*n^3 + 12*a^2*b^2*e*n^2
 - 4*a^3*b*e*n + a^4*e)*x - 4*(6*b^4*d*n^4 - 6*a*b^3*d*n^3 + 3*a^2*b^2*d*n^
2 - a^3*b*d*n - (b^4*e*n*x + b^4*d*n)*log(c)^3 + 3*(b^4*d*n^2 - a*b^3*d*n +
 (b^4*e*n^2 - a*b^3*e*n)*x)*log(c)^2 + (6*b^4*e*n^4 - 6*a*b^3*e*n^3 + 3*a^2
*b^2*e*n^2 - a^3*b*e*n)*x - 3*(2*b^4*d*n^3 - 2*a*b^3*d*n^2 + a^2*b^2*d*n +
(2*b^4*e*n^3 - 2*a*b^3*e*n^2 + a^2*b^2*e*n)*x)*log(c))*log(e*x + d))/e
```

giac [B] time = 0.22, size = 778, normalized size = 5.94

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^4,x, algorithm="giac")
```

```
[Out] (x*e + d)*b^4*n^4*e^(-1)*log(x*e + d)^4 - 4*(x*e + d)*b^4*n^4*e^(-1)*log(x*
e + d)^3 + 4*(x*e + d)*b^4*n^3*e^(-1)*log(x*e + d)^3*log(c) + 12*(x*e + d)*
b^4*n^4*e^(-1)*log(x*e + d)^2 + 4*(x*e + d)*a*b^3*n^3*e^(-1)*log(x*e + d)^3
 - 12*(x*e + d)*b^4*n^3*e^(-1)*log(x*e + d)^2*log(c) + 6*(x*e + d)*b^4*n^2*
e^(-1)*log(x*e + d)^2*log(c)^2 - 24*(x*e + d)*b^4*n^4*e^(-1)*log(x*e + d) -
 12*(x*e + d)*a*b^3*n^3*e^(-1)*log(x*e + d)^2 + 24*(x*e + d)*b^4*n^3*e^(-1)
*log(x*e + d)*log(c) + 12*(x*e + d)*a*b^3*n^2*e^(-1)*log(x*e + d)^2*log(c)
- 12*(x*e + d)*b^4*n^2*e^(-1)*log(x*e + d)*log(c)^2 + 4*(x*e + d)*b^4*n*e^(
-1)*log(x*e + d)*log(c)^3 + 24*(x*e + d)*b^4*n^4*e^(-1) + 24*(x*e + d)*a*b^
3*n^3*e^(-1)*log(x*e + d) + 6*(x*e + d)*a^2*b^2*n^2*e^(-1)*log(x*e + d)^2 -
 24*(x*e + d)*b^4*n^3*e^(-1)*log(c) - 24*(x*e + d)*a*b^3*n^2*e^(-1)*log(x*e
 + d)*log(c) + 12*(x*e + d)*b^4*n^2*e^(-1)*log(c)^2 + 12*(x*e + d)*a*b^3*n*
e^(-1)*log(x*e + d)*log(c)^2 - 4*(x*e + d)*b^4*n*e^(-1)*log(c)^3 + (x*e + d
)*b^4*e^(-1)*log(c)^4 - 24*(x*e + d)*a*b^3*n^3*e^(-1) - 12*(x*e + d)*a^2*b^
2*n^2*e^(-1)*log(x*e + d) + 24*(x*e + d)*a*b^3*n^2*e^(-1)*log(c) + 12*(x*e
+ d)*a^2*b^2*n*e^(-1)*log(x*e + d)*log(c) - 12*(x*e + d)*a*b^3*n*e^(-1)*log
(c)^2 + 4*(x*e + d)*a*b^3*e^(-1)*log(c)^3 + 12*(x*e + d)*a^2*b^2*n^2*e^(-1)
 + 4*(x*e + d)*a^3*b*n*e^(-1)*log(x*e + d) - 12*(x*e + d)*a^2*b^2*n*e^(-1)*
log(c) + 6*(x*e + d)*a^2*b^2*e^(-1)*log(c)^2 - 4*(x*e + d)*a^3*b*n*e^(-1) +
 4*(x*e + d)*a^3*b*e^(-1)*log(c) + (x*e + d)*a^4*e^(-1)
```

maple [C] time = 0.42, size = 15871, normalized size = 121.15

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)^4,x)
```

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

maxima [B] time = 1.29, size = 500, normalized size = 3.82

$$b^4 x \log\left((ex+d)^n c\right)^4 + 4\,ab^3 x \log\left((ex+d)^n c\right)^3 - 4\,a^3 ben\left(\frac{x}{e} - \frac{d\log(ex+d)}{e^2}\right) + 6\,a^2b^2 x \log\left((ex+d)^n c\right)^2 + 4\,a^3 bx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^4,x, algorithm="maxima")
```

```
[Out] b^4*x*log((e*x + d)^n*c)^4 + 4*a*b^3*x*log((e*x + d)^n*c)^3 - 4*a^3*b*e*n*(
x/e - d*log(e*x + d)/e^2) + 6*a^2*b^2*x*log((e*x + d)^n*c)^2 + 4*a^3*b*x*lo
g((e*x + d)^n*c) - 6*(2*e*n*(x/e - d*log(e*x + d)/e^2)*log((e*x + d)^n*c) +
 (d*log(e*x + d)^2 - 2*e*x + 2*d*log(e*x + d))*n^2/e)*a^2*b^2 - 4*(3*e*n*(x
/e - d*log(e*x + d)/e^2)*log((e*x + d)^n*c)^2 - e*n*((d*log(e*x + d)^3 + 3*
d*log(e*x + d)^2 - 6*e*x + 6*d*log(e*x + d))*n^2/e^2 - 3*(d*log(e*x + d)^2
- 2*e*x + 2*d*log(e*x + d))*n*log((e*x + d)^n*c)/e^2))*a*b^3 - (4*e*n*(x/e
- d*log(e*x + d)/e^2)*log((e*x + d)^n*c)^3 + (e*n*((d*log(e*x + d)^4 + 4*d*
log(e*x + d)^3 + 12*d*log(e*x + d)^2 - 24*e*x + 24*d*log(e*x + d))*n^2/e^3
- 4*(d*log(e*x + d)^3 + 3*d*log(e*x + d)^2 - 6*e*x + 6*d*log(e*x + d))*n*lo
g((e*x + d)^n*c)/e^3) + 6*(d*log(e*x + d)^2 - 2*e*x + 2*d*log(e*x + d))*n*l
og((e*x + d)^n*c)^2/e^2)*e*n)*b^4 + a^4*x
```

mupad [B] time = 0.00, size = 275, normalized size = 2.10

$$\ln\left(c\,(d+e\,x)^n\right)^2\,\left(\frac{6\,\left(d\,a^2\,b^2 - 2\,d\,a\,b^3\,n + 2\,d\,b^4\,n^2\right)}{e} + 6\,b^2\,x\,\left(a^2 - 2\,a\,b\,n + 2\,b^2\,n^2\right)\right) + x\,\left(a^4 - 4\,a^3\,b\,n + 12\,a^2\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^4,x)
```

```
[Out] log(c*(d + e*x)^n)^2*((6*(a^2*b^2*d + 2*b^4*d*n^2 - 2*a*b^3*d*n))/e + 6*b^2
*x*(a^2 + 2*b^2*n^2 - 2*a*b*n)) + x*(a^4 + 24*b^4*n^4 - 24*a*b^3*n^3 + 12*a
^2*b^2*n^2 - 4*a^3*b*n) + log(c*(d + e*x)^n)^4*(b^4*x + (b^4*d)/e) + log(c*
(d + e*x)^n)^3*((4*(a*b^3*d - b^4*d*n))/e + 4*b^3*x*(a - b*n)) - (log(d + e
*x)*(24*b^4*d*n^4 + 12*a^2*b^2*d*n^2 - 4*a^3*b*d*n - 24*a*b^3*d*n^3))/e + 4
*b*x*log(c*(d + e*x)^n)*(a^3 - 6*b^3*n^3 + 6*a*b^2*n^2 - 3*a^2*b*n)
```

sympy [A] time = 6.92, size = 1059, normalized size = 8.08

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**4,x)
```

```
[Out] Piecewise((a**4*x + 4*a**3*b*d*n*log(d + e*x)/e + 4*a**3*b*n*x*log(d + e*x)
 - 4*a**3*b*n*x + 4*a**3*b*x*log(c) + 6*a**2*b**2*d*n**2*log(d + e*x)**2/e
- 12*a**2*b**2*d*n**2*log(d + e*x)/e + 12*a**2*b**2*d*n*log(c)*log(d + e*x)
/e + 6*a**2*b**2*n**2*x*log(d + e*x)**2 - 12*a**2*b**2*n**2*x*log(d + e*x)
+ 12*a**2*b**2*n**2*x + 12*a**2*b**2*n*x*log(c)*log(d + e*x) - 12*a**2*b**2
*n*x*log(c) + 6*a**2*b**2*x*log(c)**2 + 4*a*b**3*d*n**3*log(d + e*x)**3/e -
 12*a*b**3*d*n**3*log(d + e*x)**2/e + 24*a*b**3*d*n**3*log(d + e*x)/e + 12*
a*b**3*d*n**2*log(c)*log(d + e*x)**2/e - 24*a*b**3*d*n**2*log(c)*log(d + e*
x)/e + 12*a*b**3*d*n*log(c)**2*log(d + e*x)/e + 4*a*b**3*n**3*x*log(d + e*x
)**3 - 12*a*b**3*n**3*x*log(d + e*x)**2 + 24*a*b**3*n**3*x*log(d + e*x) - 2
4*a*b**3*n**3*x + 12*a*b**3*n**2*x*log(c)*log(d + e*x)**2 - 24*a*b**3*n**2*
x*log(c)*log(d + e*x) + 24*a*b**3*n**2*x*log(c) + 12*a*b**3*n*x*log(c)**2*l
og(d + e*x) - 12*a*b**3*n*x*log(c)**2 + 4*a*b**3*x*log(c)**3 + b**4*d*n**4*
log(d + e*x)**4/e - 4*b**4*d*n**4*log(d + e*x)**3/e + 12*b**4*d*n**4*log(d
+ e*x)**2/e - 24*b**4*d*n**4*log(d + e*x)/e + 4*b**4*d*n**3*log(c)*log(d +
e*x)**3/e - 12*b**4*d*n**3*log(c)*log(d + e*x)**2/e + 24*b**4*d*n**3*log(c)
*log(d + e*x)/e + 6*b**4*d*n**2*log(c)**2*log(d + e*x)**2/e - 12*b**4*d*n**
2*log(c)**2*log(d + e*x)/e + 4*b**4*d*n*log(c)**3*log(d + e*x)/e + b**4*n**
4*x*log(d + e*x)**4 - 4*b**4*n**4*x*log(d + e*x)**3 + 12*b**4*n**4*x*log(d
+ e*x)**2 - 24*b**4*n**4*x*log(d + e*x) + 24*b**4*n**4*x + 4*b**4*n**3*x*lo
g(c)*log(d + e*x)**3 - 12*b**4*n**3*x*log(c)*log(d + e*x)**2 + 24*b**4*n**3
*x*log(c)*log(d + e*x) - 24*b**4*n**3*x*log(c) + 6*b**4*n**2*x*log(c)**2*lo
g(d + e*x)**2 - 12*b**4*n**2*x*log(c)**2*log(d + e*x) + 12*b**4*n**2*x*log(
c)**2 + 4*b**4*n*x*log(c)**3*log(d + e*x) - 4*b**4*n*x*log(c)**3 + b**4*x*l
og(c)**4, Ne(e, 0)), (x*(a + b*log(c*d**n))**4, True))
```

3.62 $\int \frac{(a+b\log(c(d+ex)^n))^4}{f+gx}\,dx$

Optimal. Leaf size=205

$$\frac{24b^3n^3\text{Li}_4\left(-\frac{g(d+ex)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g}-\frac{12b^2n^2\text{Li}_3\left(-\frac{g(d+ex)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{g}+\frac{4bn\text{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right.}{}$$

```
[Out] (a+b*ln(c*(e*x+d)^n))^4*ln(e*(g*x+f)/(-d*g+e*f))/g+4*b*n*(a+b*ln(c*(e*x+d)^
n))^3*polylog(2,-g*(e*x+d)/(-d*g+e*f))/g-12*b^2*n^2*(a+b*ln(c*(e*x+d)^n))^2
*polylog(3,-g*(e*x+d)/(-d*g+e*f))/g+24*b^3*n^3*(a+b*ln(c*(e*x+d)^n))*polylo
g(4,-g*(e*x+d)/(-d*g+e*f))/g-24*b^4*n^4*polylog(5,-g*(e*x+d)/(-d*g+e*f))/g
```

Rubi [A] time = 0.23, antiderivative size = 205, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {2396, 2433, 2374, 2383, 6589}

$$\frac{24b^3n^3\text{PolyLog}\left(4,-\frac{g(d+ex)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g}-\frac{12b^2n^2\text{PolyLog}\left(3,-\frac{g(d+ex)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{g}+$$

Antiderivative was successfully verified.

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

```
[Out] ((a + b*Log[c*(d + e*x)^n])^4*Log[(e*(f + g*x))/(e*f - d*g)])/g + (4*b*n*(a
 + b*Log[c*(d + e*x)^n])^3*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/g - (1
2*b^2*n^2*(a + b*Log[c*(d + e*x)^n])^2*PolyLog[3, -((g*(d + e*x))/(e*f - d*
g))])/g + (24*b^3*n^3*(a + b*Log[c*(d + e*x)^n])*PolyLog[4, -((g*(d + e*x))
/(e*f - d*g))])/g - (24*b^4*n^4*PolyLog[5, -((g*(d + e*x))/(e*f - d*g))])/g
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2383

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^p)/q
, x] - Dist[(b*n*p)/q, Int[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^(p - 1
))/x, x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rule 2396

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

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
```

```
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^4}{f+gx}\,dx = \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^4\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} - \frac{(4ben)\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^3\log\left(\frac{e(f+gx)}{ef-dg}\right)}{d+ex}\,dx}{g}$$

$$= \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^4\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} - \frac{(4bn)\,\text{Subst}\left(\int \frac{\left(a+b\log(cx^n)\right)^3\log\left(\frac{e\left(\frac{ef-dg}{e}+\ldots\right)}{ef-dg}\right)}{x}\ldots\right)}{g}$$

$$= \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^4\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} + \frac{4bn\left(a+b\log\left(c(d+ex)^n\right)\right)^3\text{Li}_2\left(-\frac{g(d+\ldots}{ef-\ldots}\right.}{g}$$

$$= \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^4\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} + \frac{4bn\left(a+b\log\left(c(d+ex)^n\right)\right)^3\text{Li}_2\left(-\frac{g(d+\ldots}{ef-\ldots}\right.}{g}$$

$$= \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^4\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} + \frac{4bn\left(a+b\log\left(c(d+ex)^n\right)\right)^3\text{Li}_2\left(-\frac{g(d+\ldots}{ef-\ldots}\right.}{g}$$

$$= \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^4\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} + \frac{4bn\left(a+b\log\left(c(d+ex)^n\right)\right)^3\text{Li}_2\left(-\frac{g(d+\ldots}{ef-\ldots}\right.}{g}$$

Mathematica [B] time = 0.23, size = 503, normalized size = 2.45

$$\frac{-4b^3n^3\left(6\text{Li}_4\left(\frac{g(d+ex)}{dg-ef}\right)+3\log^2(d+ex)\text{Li}_2\left(\frac{g(d+ex)}{dg-ef}\right)-6\log(d+ex)\text{Li}_3\left(\frac{g(d+ex)}{dg-ef}\right)+\log^3(d+ex)\log\left(\frac{e(f+gx)}{ef-dg}\right)\right)\left(-a\ldots\right.}{\ldots}$$

Antiderivative was successfully verified.

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

```
[Out] ((a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^4*Log[f + g*x] + 4*b*n*(a -
b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^3*(Log[d + e*x]*Log[(e*(f + g*x))/
(e*f - d*g)] + PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)]) + 6*b^2*n^2*(a - b
*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2*(Log[d + e*x]^2*Log[(e*(f + g*x))
/(e*f - d*g)] + 2*Log[d + e*x]*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - 2
*PolyLog[3, (g*(d + e*x))/(-(e*f) + d*g)]) - 4*b^3*n^3*(-a + b*n*Log[d + e*
x] - b*Log[c*(d + e*x)^n])*(Log[d + e*x]^3*Log[(e*(f + g*x))/(e*f - d*g)] +
 3*Log[d + e*x]^2*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - 6*Log[d + e*x]
*PolyLog[3, (g*(d + e*x))/(-(e*f) + d*g)] + 6*PolyLog[4, (g*(d + e*x))/(-(e
*f) + d*g)]) + b^4*n^4*(Log[d + e*x]^4*Log[(e*(f + g*x))/(e*f - d*g)] + 4*L
og[d + e*x]^3*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - 12*Log[d + e*x]^2*
```

```
PolyLog[3, (g*(d + e*x))/(-(e*f) + d*g)] + 24*Log[d + e*x]*PolyLog[4, (g*(d
 + e*x))/(-(e*f) + d*g)] - 24*PolyLog[5, (g*(d + e*x))/(-(e*f) + d*g)]))/g
```

fricas [F] time = 0.48, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b^4\log\left((ex+d)^n c\right)^4 + 4\,ab^3\log\left((ex+d)^n c\right)^3 + 6\,a^2b^2\log\left((ex+d)^n c\right)^2 + 4\,a^3b\log\left((ex+d)^n c\right) + a^4}{gx+f}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^4/(g*x+f),x, algorithm="fricas")
```

```
[Out] integral((b^4*log((e*x + d)^n*c)^4 + 4*a*b^3*log((e*x + d)^n*c)^3 + 6*a^2*b
^2*log((e*x + d)^n*c)^2 + 4*a^3*b*log((e*x + d)^n*c) + a^4)/(g*x + f), x)
```

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

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)^4}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^4/(g*x+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^4/(g*x + f), x)
```

maple [C] time = 1.09, size = 33189, normalized size = 161.90

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\frac{a^4\log\left(gx+f\right)}{g}+\int \frac{b^4\log\left((ex+d)^n\right)^4 + b^4\log(c)^4 + 4\,ab^3\log(c)^3 + 6\,a^2b^2\log(c)^2 + 4\,a^3b\log(c) + 4\left(b^4\log(\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^4/(g*x+f),x, algorithm="maxima")
```

```
[Out] a^4*log(g*x + f)/g + integrate((b^4*log((e*x + d)^n)^4 + b^4*log(c)^4 + 4*a
*b^3*log(c)^3 + 6*a^2*b^2*log(c)^2 + 4*a^3*b*log(c) + 4*(b^4*log(c) + a*b^3
)*log((e*x + d)^n)^3 + 6*(b^4*log(c)^2 + 2*a*b^3*log(c) + a^2*b^2)*log((e*x
 + d)^n)^2 + 4*(b^4*log(c)^3 + 3*a*b^3*log(c)^2 + 3*a^2*b^2*log(c) + a^3*b)
*log((e*x + d)^n))/(g*x + f), x)
```

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

$$\int \frac{\left(a+b\,\ln\left(c\,(d+e\,x)^n\right)\right)^4}{f+g\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int((a + b*log(c*(d + e*x)^n))^4/(f + g*x), x)
```

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

$$\int \frac{\left(a + b\log\left(c\left(d + ex\right)^{n}\right)\right)^{4}}{f + gx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.63 $\int \frac{(a+b\log(c(d+ex)^n))^4}{(f+gx)^2}\,dx$

Optimal. Leaf size=248

$$\frac{24b^3en^3\text{Li}_3\left(-\frac{g(d+ex)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g(ef-dg)}-\frac{12b^2en^2\text{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{g(ef-dg)}-\frac{4ben\log\left(\frac{e(f+g}{ef-d}\right.}{}$$

```
[Out] (e*x+d)*(a+b*ln(c*(e*x+d)^n))^4/(-d*g+e*f)/(g*x+f)-4*b*e*n*(a+b*ln(c*(e*x+d
)^n))^3*ln(e*(g*x+f)/(-d*g+e*f))/g/(-d*g+e*f)-12*b^2*e*n^2*(a+b*ln(c*(e*x+d
)^n))^2*polylog(2,-g*(e*x+d)/(-d*g+e*f))/g/(-d*g+e*f)+24*b^3*e*n^3*(a+b*ln(
c*(e*x+d)^n))*polylog(3,-g*(e*x+d)/(-d*g+e*f))/g/(-d*g+e*f)-24*b^4*e*n^4*po
lylog(4,-g*(e*x+d)/(-d*g+e*f))/g/(-d*g+e*f)
```

Rubi [A] time = 0.23, antiderivative size = 248, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {2397, 2396, 2433, 2374, 2383, 6589}

$$\frac{24b^3en^3\text{PolyLog}\left(3,-\frac{g(d+ex)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g(ef-dg)}-\frac{12b^2en^2\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{g(ef-dg)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^4/(f + g*x)^2,x]
```

```
[Out] ((d + e*x)*(a + b*Log[c*(d + e*x)^n])^4)/((e*f - d*g)*(f + g*x)) - (4*b*e*n
*(a + b*Log[c*(d + e*x)^n])^3*Log[(e*(f + g*x))/(e*f - d*g)])/(g*(e*f - d*g
)) - (12*b^2*e*n^2*(a + b*Log[c*(d + e*x)^n])^2*PolyLog[2, -((g*(d + e*x))/
(e*f - d*g))])/(g*(e*f - d*g)) + (24*b^3*e*n^3*(a + b*Log[c*(d + e*x)^n])*P
olyLog[3, -((g*(d + e*x))/(e*f - d*g))])/(g*(e*f - d*g)) - (24*b^4*e*n^4*Po
lyLog[4, -((g*(d + e*x))/(e*f - d*g))])/(g*(e*f - d*g))
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2383

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^p)/q
, x] - Dist[(b*n*p)/q, Int[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^(p - 1
))/x, x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rule 2396

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

Rule 2397

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_))^2, x_Symbol] :> Simp[((d + e*x)*(a + b*Log[c*(d + e*x)^n])^p)/((e*f
```

```
 - d*g)*(f + g*x)), x] - Dist[(b*e*n*p)/(e*f - d*g), Int[(a + b*Log[c*(d +
e*x)^n])^(p - 1)/(f + g*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] &&
 NeQ[e*f - d*g, 0] && GtQ[p, 0]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^4}{(f+gx)^2}\,dx=\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^4}{(ef-dg)(f+gx)}-\frac{(4ben)\int\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{f+gx}\,dx}{ef-dg}$$

$$=\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^4}{(ef-dg)(f+gx)}-\frac{4ben\left(a+b\log\left(c(d+ex)^n\right)\right)^3\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g(ef-dg)}$$

$$=\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^4}{(ef-dg)(f+gx)}-\frac{4ben\left(a+b\log\left(c(d+ex)^n\right)\right)^3\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g(ef-dg)}$$

$$=\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^4}{(ef-dg)(f+gx)}-\frac{4ben\left(a+b\log\left(c(d+ex)^n\right)\right)^3\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g(ef-dg)}$$

$$=\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^4}{(ef-dg)(f+gx)}-\frac{4ben\left(a+b\log\left(c(d+ex)^n\right)\right)^3\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g(ef-dg)}$$

$$=\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^4}{(ef-dg)(f+gx)}-\frac{4ben\left(a+b\log\left(c(d+ex)^n\right)\right)^3\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g(ef-dg)}$$

Mathematica [B] time = 0.74, size = 531, normalized size = 2.14

$$4b^3n^3\left(6e(f+gx)\text{Li}_3\left(\frac{g(d+ex)}{dg-ef}\right)-6e(f+gx)\log(d+ex)\text{Li}_2\left(\frac{g(d+ex)}{dg-ef}\right)+\log^2(d+ex)\left(g(d+ex)\log(d+ex)-3e(f\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^4/(f + g*x)^2,x]
```

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

```
(f + g*x)*Log[(e*(f + g*x))/(e*f - d*g)]) + 6*b^2*n^2*(a - b*n*Log[d + e*x]
 + b*Log[c*(d + e*x)^n])^2*(Log[d + e*x]*(g*(d + e*x)*Log[d + e*x] - 2*e*(f
 + g*x)*Log[(e*(f + g*x))/(e*f - d*g)]) - 2*e*(f + g*x)*PolyLog[2, (g*(d +
e*x))/(-(e*f) + d*g)]) + 4*b^3*n^3*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x
)^n])*(Log[d + e*x]^2*(g*(d + e*x)*Log[d + e*x] - 3*e*(f + g*x)*Log[(e*(f +
 g*x))/(e*f - d*g)]) - 6*e*(f + g*x)*Log[d + e*x]*PolyLog[2, (g*(d + e*x))/
(-(e*f) + d*g)] + 6*e*(f + g*x)*PolyLog[3, (g*(d + e*x))/(-(e*f) + d*g)]) +
 b^4*n^4*(g*(d + e*x)*Log[d + e*x]^4 - 4*e*(f + g*x)*Log[d + e*x]^3*Log[(e*
(f + g*x))/(e*f - d*g)] - 12*e*(f + g*x)*Log[d + e*x]^2*PolyLog[2, (g*(d +
e*x))/(-(e*f) + d*g)] + 24*e*(f + g*x)*Log[d + e*x]*PolyLog[3, (g*(d + e*x)
)/(-(e*f) + d*g)] - 24*e*(f + g*x)*PolyLog[4, (g*(d + e*x))/(-(e*f) + d*g)]
))/(g*(e*f - d*g)*(f + g*x))
```

fricas [F] time = 0.50, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b^4\log\left((ex+d)^n c\right)^4 + 4\,ab^3\log\left((ex+d)^n c\right)^3 + 6\,a^2b^2\log\left((ex+d)^n c\right)^2 + 4\,a^3b\log\left((ex+d)^n c\right) + a^4}{g^2x^2 + 2\,fgx + f^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^4/(g*x+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b^4*log((e*x + d)^n*c)^4 + 4*a*b^3*log((e*x + d)^n*c)^3 + 6*a^2*b
^2*log((e*x + d)^n*c)^2 + 4*a^3*b*log((e*x + d)^n*c) + a^4)/(g^2*x^2 + 2*f*
g*x + f^2), x)
```

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

$$\int \frac{\left(b\log\left((ex+d)^n c\right) + a\right)^4}{\left(gx+f\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^4/(g*x+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^4/(g*x + f)^2, x)
```

maple [C] time = 1.47, size = 21740, normalized size = 87.66

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)^4/(g*x+f)^2,x)
```

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

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

$$4\,a^3ben\left(\frac{\log\left(ex+d\right)}{efg-dg^2} - \frac{\log\left(gx+f\right)}{efg-dg^2}\right) - \frac{b^4\log\left((ex+d)^n\right)^4}{g^2x+fg} - \frac{4\,a^3b\log\left((ex+d)^n c\right)}{g^2x+fg} - \frac{a^4}{g^2x+fg} + \int \frac{b^4dg\log(c)^4}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^4/(g*x+f)^2,x, algorithm="maxima")
```

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

```
*b^3*e*g + (e*g*n + e*g*log(c))*b^4)*x)*log((e*x + d)^n)^3 + 6*(b^4*d*g*log
(c)^2 + 2*a*b^3*d*g*log(c) + a^2*b^2*d*g + (b^4*e*g*log(c)^2 + 2*a*b^3*e*g*
log(c) + a^2*b^2*e*g)*x)*log((e*x + d)^n)^2 + (b^4*e*g*log(c)^4 + 4*a*b^3*e
*g*log(c)^3 + 6*a^2*b^2*e*g*log(c)^2)*x + 4*(b^4*d*g*log(c)^3 + 3*a*b^3*d*g
*log(c)^2 + 3*a^2*b^2*d*g*log(c) + (b^4*e*g*log(c)^3 + 3*a*b^3*e*g*log(c)^2
 + 3*a^2*b^2*e*g*log(c))*x)*log((e*x + d)^n))/(e*g^3*x^3 + d*f^2*g + (2*e*f
*g^2 + d*g^3)*x^2 + (e*f^2*g + 2*d*f*g^2)*x), x)
```

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

$$\int \frac{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)^4}{{\left(f+g\,x\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^4/(f + g*x)^2,x)
[Out] int((a + b*log(c*(d + e*x)^n))^4/(f + g*x)^2, x)
```

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

$$\int \frac{\left(a + b \log{\left(c \left(d + ex\right)^{n} \right)}\right)^{4}}{\left(f + gx\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**4/(g*x+f)**2,x)
[Out] Integral((a + b*log(c*(d + e*x)**n))**4/(f + g*x)**2, x)
```

3.64 $\int \log(a+bx)\,dx$

Optimal. Leaf size=19

$$\frac{(a+bx)\log(a+bx)}{b}-x$$

```
[Out] -x+(b*x+a)*ln(b*x+a)/b
```

Rubi [A] time = 0.01, antiderivative size = 19, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 6, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {2389, 2295}

$$\frac{(a+bx)\log(a+bx)}{b}-x$$

Antiderivative was successfully verified.

```
[In] Int[Log[a + b*x],x]
```

```
[Out] -x + ((a + b*x)*Log[a + b*x])/b
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rubi steps

$$\begin{aligned}\int \log(a+bx)\,dx &= \frac{\text{Subst}\left(\int \log(x)\,dx,x,a+bx\right)}{b}\\ &= -x+\frac{(a+bx)\log(a+bx)}{b}\end{aligned}$$

Mathematica [A] time = 0.00, size = 19, normalized size = 1.00

$$\frac{(a+bx)\log(a+bx)}{b}-x$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[a + b*x],x]
```

```
[Out] -x + ((a + b*x)*Log[a + b*x])/b
```

fricas [A] time = 0.46, size = 22, normalized size = 1.16

$$-\frac{bx-(bx+a)\log(bx+a)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a),x, algorithm="fricas")
```

```
[Out] -(b*x - (b*x + a)*log(b*x + a))/b
```

giac [**A**] time = 0.16, size = 23, normalized size = 1.21

$$-\frac{bx - (bx + a)\log(bx + a) + a}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a),x, algorithm="giac")
[Out] -(b*x - (b*x + a)*log(b*x + a) + a)/b
```

maple [**A**] time = 0.04, size = 30, normalized size = 1.58

$$x\ln(bx + a) + \frac{a\ln(bx + a)}{b} - x - \frac{a}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(b*x+a),x)
[Out] ln(b*x+a)*x+1/b*ln(b*x+a)*a-x-a/b
```

maxima [**A**] time = 0.63, size = 23, normalized size = 1.21

$$-\frac{bx - (bx + a)\log(bx + a) + a}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a),x, algorithm="maxima")
[Out] -(b*x - (b*x + a)*log(b*x + a) + a)/b
```

mupad [**B**] time = 0.07, size = 23, normalized size = 1.21

$$x\ \ln(a + b\,x) - x + \frac{a\ \ln(a + b\,x)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(a + b*x),x)
[Out] x*log(a + b*x) - x + (a*log(a + b*x))/b
```

sympy [**A**] time = 0.14, size = 24, normalized size = 1.26

$$-b\left(-\frac{a\log(a + bx)}{b^2} + \frac{x}{b}\right) + x\log(a + bx)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(b*x+a),x)
[Out] -b*(-a*log(a + b*x)/b**2 + x/b) + x*log(a + b*x)
```

3.65 $\int \log^2(a+bx)\,dx$

Optimal. Leaf size=37

$$\frac{(a+bx)\log^2(a+bx)}{b}-\frac{2(a+bx)\log(a+bx)}{b}+2x$$

```
[Out] 2*x-2*(b*x+a)*ln(b*x+a)/b+(b*x+a)*ln(b*x+a)^2/b
```

Rubi [A] time = 0.01, antiderivative size = 37, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.375, Rules used = {2389, 2296, 2295}

$$\frac{(a+bx)\log^2(a+bx)}{b}-\frac{2(a+bx)\log(a+bx)}{b}+2x$$

Antiderivative was successfully verified.

```
[In] Int[Log[a + b*x]^2,x]
[Out] 2*x - (2*(a + b*x)*Log[a + b*x])/b + ((a + b*x)*Log[a + b*x]^2)/b
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rubi steps

$$\begin{aligned}\int \log^2(a+bx)\,dx&=\frac{\text{Subst}\left(\int \log^2(x)\,dx,x,a+bx\right)}{b}\\&=\frac{(a+bx)\log^2(a+bx)}{b}-\frac{2\,\text{Subst}(\int \log(x)\,dx,x,a+bx)}{b}\\&=2x-\frac{2(a+bx)\log(a+bx)}{b}+\frac{(a+bx)\log^2(a+bx)}{b}\end{aligned}$$

Mathematica [A] time = 0.00, size = 36, normalized size = 0.97

$$\frac{(a+bx)\log^2(a+bx)-2(a+bx)\log(a+bx)+2bx}{b}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[a + b*x]^2,x]
```

```
[Out] (2*b*x - 2*(a + b*x)*Log[a + b*x] + (a + b*x)*Log[a + b*x]^2)/b
```

fricas [A] time = 0.43, size = 36, normalized size = 0.97

$$\frac{(bx+a)\log(bx+a)^2 + 2\,bx - 2\,(bx+a)\log(bx+a)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)^2,x, algorithm="fricas")
[Out] ((b*x + a)*log(b*x + a)^2 + 2*b*x - 2*(b*x + a)*log(b*x + a))/b
```

giac [A] time = 0.16, size = 44, normalized size = 1.19

$$\frac{(bx+a)\log(bx+a)^2}{b} - \frac{2\,(bx+a)\log(bx+a)}{b} + \frac{2\,(bx+a)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)^2,x, algorithm="giac")
[Out] (b*x + a)*log(b*x + a)^2/b - 2*(b*x + a)*log(b*x + a)/b + 2*(b*x + a)/b
```

maple [A] time = 0.04, size = 55, normalized size = 1.49

$$x\ln(bx+a)^2 + \frac{a\ln(bx+a)^2}{b} - 2x\ln(bx+a) - \frac{2a\ln(bx+a)}{b} + 2x + \frac{2a}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(b*x+a)^2,x)
[Out] ln(b*x+a)^2*x+1/b*ln(b*x+a)^2*a-2*x*ln(b*x+a)-2*a/b*ln(b*x+a)+2*x+2*a/b
```

maxima [A] time = 0.67, size = 27, normalized size = 0.73

$$\frac{(bx+a)\left(\log(bx+a)^2 - 2\,\log(bx+a) + 2\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)^2,x, algorithm="maxima")
[Out] (b*x + a)*(log(b*x + a)^2 - 2*log(b*x + a) + 2)/b
```

mupad [B] time = 0.29, size = 48, normalized size = 1.30

$$2\,x - 2\,x\,\ln(a+b\,x) + x\ln(a+b\,x)^2 + \frac{a\ln(a+b\,x)^2}{b} - \frac{2\,a\,\ln(a+b\,x)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(a + b*x)^2,x)
[Out] 2*x - 2*x*log(a + b*x) + x*log(a + b*x)^2 + (a*log(a + b*x)^2)/b - (2*a*log
(a + b*x))/b
```

sympy [A] time = 0.34, size = 42, normalized size = 1.14

$$2b\left(-\frac{a\log(a+bx)}{b^2} + \frac{x}{b}\right) - 2x\log(a+bx) + \frac{(a+bx)\log(a+bx)^2}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(b*x+a)**2,x)
[Out] 2*b*(-a*log(a + b*x)/b**2 + x/b) - 2*x*log(a + b*x) + (a + b*x)*log(a + b*x
)**2/b
```

3.66 $\int \log^3(a+bx)\,dx$

Optimal. Leaf size=55

$$\frac{(a+bx)\log^3(a+bx)}{b}-\frac{3(a+bx)\log^2(a+bx)}{b}+\frac{6(a+bx)\log(a+bx)}{b}-6x$$

```
[Out] -6*x+6*(b*x+a)*ln(b*x+a)/b-3*(b*x+a)*ln(b*x+a)^2/b+(b*x+a)*ln(b*x+a)^3/b
```

Rubi [A] time = 0.02, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.375, Rules used = {2389, 2296, 2295}

$$\frac{(a+bx)\log^3(a+bx)}{b}-\frac{3(a+bx)\log^2(a+bx)}{b}+\frac{6(a+bx)\log(a+bx)}{b}-6x$$

Antiderivative was successfully verified.

```
[In] Int[Log[a + b*x]^3,x]
```

```
[Out] -6*x + (6*(a + b*x)*Log[a + b*x])/b - (3*(a + b*x)*Log[a + b*x]^2)/b + ((a
+ b*x)*Log[a + b*x]^3)/b
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rubi steps

$$\begin{aligned}\int \log^3(a+bx)\,dx &= \frac{\text{Subst}\left(\int \log^3(x)\,dx,x,a+bx\right)}{b}\\ &= \frac{(a+bx)\log^3(a+bx)}{b}-\frac{3\,\text{Subst}\left(\int \log^2(x)\,dx,x,a+bx\right)}{b}\\ &= -\frac{3(a+bx)\log^2(a+bx)}{b}+\frac{(a+bx)\log^3(a+bx)}{b}+\frac{6\,\text{Subst}(\int \log(x)\,dx,x,a+bx)}{b}\\ &= -6x+\frac{6(a+bx)\log(a+bx)}{b}-\frac{3(a+bx)\log^2(a+bx)}{b}+\frac{(a+bx)\log^3(a+bx)}{b}\end{aligned}$$

Mathematica [A] time = 0.01, size = 51, normalized size = 0.93

$$\frac{(a+bx)\log^3(a+bx)-3(a+bx)\log^2(a+bx)+6(a+bx)\log(a+bx)-6bx}{b}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[a + b*x]^3,x]
```

```
[Out] (-6*b*x + 6*(a + b*x)*Log[a + b*x] - 3*(a + b*x)*Log[a + b*x]^2 + (a + b*x)
*Log[a + b*x]^3)/b
```

fricas [A] time = 0.44, size = 51, normalized size = 0.93

$$\frac{(bx+a)\log(bx+a)^3 - 3\,(bx+a)\log(bx+a)^2 - 6\,bx + 6\,(bx+a)\log(bx+a)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)^3,x, algorithm="fricas")
```

```
[Out] ((b*x + a)*log(b*x + a)^3 - 3*(b*x + a)*log(b*x + a)^2 - 6*b*x + 6*(b*x + a
)*log(b*x + a))/b
```

giac [A] time = 0.18, size = 62, normalized size = 1.13

$$\frac{(bx+a)\log(bx+a)^3}{b} - \frac{3\,(bx+a)\log(bx+a)^2}{b} + \frac{6\,(bx+a)\log(bx+a)}{b} - \frac{6\,(bx+a)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)^3,x, algorithm="giac")
```

```
[Out] (b*x + a)*log(b*x + a)^3/b - 3*(b*x + a)*log(b*x + a)^2/b + 6*(b*x + a)*log
(b*x + a)/b - 6*(b*x + a)/b
```

maple [A] time = 0.04, size = 80, normalized size = 1.45

$$x\ln(bx+a)^3 + \frac{a\ln(bx+a)^3}{b} - 3x\ln(bx+a)^2 - \frac{3a\ln(bx+a)^2}{b} + 6x\ln(bx+a) + \frac{6a\ln(bx+a)}{b} - 6x - \frac{6a}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(b*x+a)^3,x)
```

```
[Out] ln(b*x+a)^3*x+1/b*ln(b*x+a)^3*a-3*x*ln(b*x+a)^2-3*a/b*ln(b*x+a)^2+6*x*ln(b*
x+a)+6*a/b*ln(b*x+a)-6*x-6*a/b
```

maxima [A] time = 0.80, size = 37, normalized size = 0.67

$$\frac{\left(\log(bx+a)^3 - 3\,\log(bx+a)^2 + 6\,\log(bx+a) - 6\right)(bx+a)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)^3,x, algorithm="maxima")
```

```
[Out] (log(b*x + a)^3 - 3*log(b*x + a)^2 + 6*log(b*x + a) - 6)*(b*x + a)/b
```

mupad [B] time = 0.25, size = 73, normalized size = 1.33

$$6\,x\,\ln(a+b\,x) - 6\,x - 3\,x\ln(a+b\,x)^2 + x\ln(a+b\,x)^3 - \frac{3\,a\ln(a+b\,x)^2}{b} + \frac{a\ln(a+b\,x)^3}{b} + \frac{6\,a\,\ln(a+b\,x)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(a + b*x)^3,x)
```

```
[Out] 6*x*log(a + b*x) - 6*x - 3*x*log(a + b*x)^2 + x*log(a + b*x)^3 - (3*a*log(a
 + b*x)^2)/b + (a*log(a + b*x)^3)/b + (6*a*log(a + b*x))/b
```

<u>**sympy**</u> **[A]** time = 0.41, size = 63, normalized size = 1.15

$$-6b\left(-\frac{a\log\left(a+bx\right)}{b^2}+\frac{x}{b}\right)+6x\log\left(a+bx\right)+\frac{\left(-3a-3bx\right)\log\left(a+bx\right)^2}{b}+\frac{\left(a+bx\right)\log\left(a+bx\right)^3}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(b*x+a)**3,x)
```

```
[Out] -6*b*(-a*log(a + b*x)/b**2 + x/b) + 6*x*log(a + b*x) + (-3*a - 3*b*x)*log(a
 + b*x)**2/b + (a + b*x)*log(a + b*x)**3/b
```

3.67 $\int \log(a+bx+cx)\,dx$

Optimal. Leaf size=25

$$\frac{(a+x(b+c))\log(a+x(b+c))}{b+c}-x$$

```
[Out] -x+(a+(b+c)*x)*ln(a+(b+c)*x)/(b+c)
```

Rubi [A] time = 0.01, antiderivative size = 25, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {2444, 2389, 2295}

$$\frac{(a+x(b+c))\log(a+x(b+c))}{b+c}-x$$

Antiderivative was successfully verified.

```
[In] Int[Log[a + b*x + c*x],x]
```

```
[Out] -x + ((a + (b + c)*x)*Log[a + (b + c)*x])/(b + c)
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2444

```
Int[((a_.) + Log[(c_.)*(v_)^(n_.)]*(b_.))^(p_.)*(u_.), x_Symbol] :> Int[u*(
a + b*Log[c*ExpandToSum[v, x]^n])^p, x] /; FreeQ[{a, b, c, n, p}, x] && Lin
earQ[v, x] && !LinearMatchQ[v, x] && !(EqQ[n, 1] && MatchQ[c*v, (e_.)*((f
_) + (g_.)*x) /; FreeQ[{e, f, g}, x]])
```

Rubi steps

$$\begin{aligned}\int \log(a+bx+cx)\,dx &= \int \log(a+(b+c)x)\,dx\\ &= \frac{\text{Subst}(\int \log(x)\,dx, x, a+(b+c)x)}{b+c}\\ &= -x+\frac{(a+(b+c)x)\log(a+(b+c)x)}{b+c}\end{aligned}$$

Mathematica [A] time = 0.01, size = 25, normalized size = 1.00

$$\frac{(a+x(b+c))\log(a+x(b+c))}{b+c}-x$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[a + b*x + c*x],x]
```

```
[Out] -x + ((a + (b + c)*x)*Log[a + (b + c)*x])/(b + c)
```

fricas [A]   time = 0.49, size = 30, normalized size = 1.20

$$-\frac{(b+c)x-((b+c)x+a)\log\left((b+c)x+a\right)}{b+c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+c*x+a),x, algorithm="fricas")
[Out] -((b + c)*x - ((b + c)*x + a)*log((b + c)*x + a))/(b + c)
```

giac [A]   time = 0.18, size = 34, normalized size = 1.36

$$-\frac{bx+cx-(bx+cx+a)\log\left(bx+cx+a\right)+a}{b+c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+c*x+a),x, algorithm="giac")
[Out] -(b*x + c*x - (b*x + c*x + a)*log(b*x + c*x + a) + a)/(b + c)
```

maple [B]   time = 0.04, size = 75, normalized size = 3.00

$$\frac{bx\ln\left(a+(b+c)x\right)}{b+c}+\frac{cx\ln\left(a+(b+c)x\right)}{b+c}+\frac{a\ln\left(a+(b+c)x\right)}{b+c}-\frac{bx}{b+c}-\frac{cx}{b+c}-\frac{a}{b+c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(b*x+c*x+a),x)
[Out] 1/(b+c)*ln(a+(b+c)*x)*x*b+1/(b+c)*ln(a+(b+c)*x)*x*c+1/(b+c)*ln(a+(b+c)*x)*a
-1/(b+c)*b*x-1/(b+c)*x*c-1/(b+c)*a
```

maxima [A]   time = 0.70, size = 34, normalized size = 1.36

$$-\frac{bx+cx-(bx+cx+a)\log\left(bx+cx+a\right)+a}{b+c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+c*x+a),x, algorithm="maxima")
[Out] -(b*x + c*x - (b*x + c*x + a)*log(b*x + c*x + a) + a)/(b + c)
```

mupad [B]   time = 0.08, size = 31, normalized size = 1.24

$$x\ln\left(a+b\,x+c\,x\right)-x+\frac{a\,\ln\left(a+b\,x+c\,x\right)}{b+c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(a + b*x + c*x),x)
[Out] x*log(a + b*x + c*x) - x + (a*log(a + b*x + c*x))/(b + c)
```

sympy [A]   time = 0.33, size = 36, normalized size = 1.44

$$x\log\left(a+bx+cx\right)+(-b-c)\left(-\frac{a\log\left(a+x\left(b+c\right)\right)}{\left(b+c\right)^{2}}+\frac{x}{b+c}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(b*x+c*x+a),x)
[Out] x*log(a + b*x + c*x) + (-b - c)*(-a*log(a + x*(b + c))/(b + c)**2 + x/(b +
c))
```

3.68 $\int \log^2(a+bx+cx)\,dx$

Optimal. Leaf size=49

$$\frac{(a+x(b+c))\log^2(a+x(b+c))}{b+c}-\frac{2(a+x(b+c))\log(a+x(b+c))}{b+c}+2x$$

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

Rubi [A] time = 0.03, antiderivative size = 49, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.364, Rules used = {2444, 2389, 2296, 2295}

$$\frac{(a+x(b+c))\log^2(a+x(b+c))}{b+c}-\frac{2(a+x(b+c))\log(a+x(b+c))}{b+c}+2x$$

Antiderivative was successfully verified.

```
[In] Int[Log[a + b*x + c*x]^2,x]
```

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

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2444

```
Int[((a_.) + Log[(c_.)*(v_)^(n_.)]*(b_.))^(p_.)*(u_.), x_Symbol] :> Int[u*(
a + b*Log[c*ExpandToSum[v, x]^n])^p, x] /; FreeQ[{a, b, c, n, p}, x] && Lin
earQ[v, x] && !LinearMatchQ[v, x] && !(EqQ[n, 1] && MatchQ[c*v, (e_.)*((f
_) + (g_.)*x) /; FreeQ[{e, f, g}, x]])
```

Rubi steps

$$\begin{aligned}\int \log^2(a+bx+cx)\,dx &= \int \log^2(a+(b+c)x)\,dx\\ &= \frac{\text{Subst}\left(\int \log^2(x)\,dx, x, a+(b+c)x\right)}{b+c}\\ &= \frac{(a+(b+c)x)\log^2(a+(b+c)x)}{b+c}-\frac{2\,\text{Subst}(\int \log(x)\,dx, x, a+(b+c)x)}{b+c}\\ &= 2x-\frac{2(a+(b+c)x)\log(a+(b+c)x)}{b+c}+\frac{(a+(b+c)x)\log^2(a+(b+c)x)}{b+c}\end{aligned}$$

Mathematica [A] time = 0.01, size = 48, normalized size = 0.98

$$\frac{(a+x(b+c))\log^2(a+x(b+c))-2(a+x(b+c))\log(a+x(b+c))+2x(b+c)}{b+c}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[a + b*x + c*x]^2,x]
```

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

fricas [A] time = 0.47, size = 48, normalized size = 0.98

$$\frac{((b+c)x+a)\log\left((b+c)x+a\right)^2+2\,(b+c)x-2\left((b+c)x+a\right)\log\left((b+c)x+a\right)}{b+c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+c*x+a)^2,x, algorithm="fricas")
```

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

giac [A] time = 0.17, size = 65, normalized size = 1.33

$$\frac{(bx+cx+a)\log\left(bx+cx+a\right)^2}{b+c}-\frac{2\left(bx+cx+a\right)\log\left(bx+cx+a\right)}{b+c}+\frac{2\left(bx+cx+a\right)}{b+c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+c*x+a)^2,x, algorithm="giac")
```

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

maple [B] time = 0.04, size = 131, normalized size = 2.67

$$\frac{bx\ln\left(a+(b+c)\,x\right)^2}{b+c}+\frac{cx\ln\left(a+(b+c)\,x\right)^2}{b+c}+\frac{a\ln\left(a+(b+c)\,x\right)^2}{b+c}-\frac{2bx\ln\left(a+(b+c)\,x\right)}{b+c}-\frac{2cx\ln\left(a+(b+c)\,x\right)}{b+c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(b*x+c*x+a)^2,x)
```

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

maxima [A] time = 0.69, size = 38, normalized size = 0.78

$$\frac{(bx+cx+a)\left(\log\left(bx+cx+a\right)^2-2\,\log\left(bx+cx+a\right)+2\right)}{b+c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+c*x+a)^2,x, algorithm="maxima")
```

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

mupad [B] time = 0.36, size = 94, normalized size = 1.92

$$\frac{2\,b\,x+2\,c\,x-2\,a\,\ln\left(a+b\,x+c\,x\right)+a\ln\left(a+b\,x+c\,x\right)^2+b\,x\ln\left(a+b\,x+c\,x\right)^2+c\,x\ln\left(a+b\,x+c\,x\right)^2-2\,b\,x}{b+c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(a + b*x + c*x)^2,x)
```

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

sympy [A] time = 0.50, size = 63, normalized size = 1.29

$$-2x\log(a+bx+cx)+(2b+2c)\left(-\frac{a\log(a+x(b+c))}{(b+c)^2}+\frac{x}{b+c}\right)+\frac{(a+bx+cx)\log(a+bx+cx)^2}{b+c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(b*x+c*x+a)**2,x)
```

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

3.69 $\int \log^3(a + bx + cx) \, dx$

Optimal. Leaf size=73

$$\frac{(a + x(b + c)) \log^3(a + x(b + c))}{b + c} - \frac{3(a + x(b + c)) \log^2(a + x(b + c))}{b + c} + \frac{6(a + x(b + c)) \log(a + x(b + c))}{b + c} - 6x$$

```
[Out] -6*x+6*(a+(b+c)*x)*ln(a+(b+c)*x)/(b+c)-3*(a+(b+c)*x)*ln(a+(b+c)*x)^2/(b+c)+
(a+(b+c)*x)*ln(a+(b+c)*x)^3/(b+c)
```

Rubi [A] time = 0.03, antiderivative size = 73, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.364, Rules used = {2444, 2389, 2296, 2295}

$$\frac{(a + x(b + c)) \log^3(a + x(b + c))}{b + c} - \frac{3(a + x(b + c)) \log^2(a + x(b + c))}{b + c} + \frac{6(a + x(b + c)) \log(a + x(b + c))}{b + c} - 6x$$

Antiderivative was successfully verified.

```
[In] Int[Log[a + b*x + c*x]^3,x]
```

```
[Out] -6*x + (6*(a + (b + c)*x)*Log[a + (b + c)*x])/(b + c) - (3*(a + (b + c)*x)*
Log[a + (b + c)*x]^2)/(b + c) + ((a + (b + c)*x)*Log[a + (b + c)*x]^3)/(b +
 c)
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2444

```
Int[((a_.) + Log[(c_.)*(v_)^(n_.)]*(b_.))^(p_.)*(u_.), x_Symbol] :> Int[u*(
a + b*Log[c*ExpandToSum[v, x]^n])^p, x] /; FreeQ[{a, b, c, n, p}, x] && Lin
earQ[v, x] && !LinearMatchQ[v, x] && !(EqQ[n, 1] && MatchQ[c*v, (e_.)*((f
_) + (g_.)*x) /; FreeQ[{e, f, g}, x]])
```

Rubi steps

$$\int \log^3(a+bx+cx)\,dx = \int \log^3(a+(b+c)x)\,dx$$
$$= \frac{\mathrm{Subst}\left(\int \log^3(x)\,dx, x, a+(b+c)x\right)}{b+c}$$
$$= \frac{(a+(b+c)x)\log^3(a+(b+c)x)}{b+c} - \frac{3\,\mathrm{Subst}\left(\int \log^2(x)\,dx, x, a+(b+c)x\right)}{b+c}$$
$$= -\frac{3(a+(b+c)x)\log^2(a+(b+c)x)}{b+c} + \frac{(a+(b+c)x)\log^3(a+(b+c)x)}{b+c} + \frac{6\,\mathrm{Subst}(\int \mathrm{lo}$$
$$= -6x + \frac{6(a+(b+c)x)\log(a+(b+c)x)}{b+c} - \frac{3(a+(b+c)x)\log^2(a+(b+c)x)}{b+c} + \frac{(a+(b$$

Mathematica [A] time = 0.01, size = 67, normalized size = 0.92

$$\frac{(a+x(b+c))\log^3(a+x(b+c)) - 3(a+x(b+c))\log^2(a+x(b+c)) + 6(a+x(b+c))\log(a+x(b+c)) - 6x(b+}{b+c}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[a + b*x + c*x]^3,x]
```

```
[Out] (-6*(b + c)*x + 6*(a + (b + c)*x)*Log[a + (b + c)*x] - 3*(a + (b + c)*x)*Lo
g[a + (b + c)*x]^2 + (a + (b + c)*x)*Log[a + (b + c)*x]^3)/(b + c)
```

fricas [A] time = 0.59, size = 67, normalized size = 0.92

$$\frac{((b+c)x+a)\log\left((b+c)x+a\right)^3 - 3\left((b+c)x+a\right)\log\left((b+c)x+a\right)^2 - 6\,(b+c)x + 6\left((b+c)x+a\right)\log\left((b+c)x\right.}{b+c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+c*x+a)^3,x, algorithm="fricas")
```

```
[Out] (((b + c)*x + a)*log((b + c)*x + a)^3 - 3*((b + c)*x + a)*log((b + c)*x + a
)^2 - 6*(b + c)*x + 6*((b + c)*x + a)*log((b + c)*x + a))/(b + c)
```

giac [A] time = 0.17, size = 91, normalized size = 1.25

$$\frac{(bx+cx+a)\log\left(bx+cx+a\right)^3}{b+c} - \frac{3\left(bx+cx+a\right)\log\left(bx+cx+a\right)^2}{b+c} + \frac{6\left(bx+cx+a\right)\log\left(bx+cx+a\right)}{b+c} - \frac{6\left(bx+cx\right.}{b+c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+c*x+a)^3,x, algorithm="giac")
```

```
[Out] (b*x + c*x + a)*log(b*x + c*x + a)^3/(b + c) - 3*(b*x + c*x + a)*log(b*x +
c*x + a)^2/(b + c) + 6*(b*x + c*x + a)*log(b*x + c*x + a)/(b + c) - 6*(b*x
+ c*x + a)/(b + c)
```

maple [B] time = 0.04, size = 187, normalized size = 2.56

$$\frac{bx\ln\left(a+(b+c)\,x\right)^3}{b+c} + \frac{cx\ln\left(a+(b+c)\,x\right)^3}{b+c} + \frac{a\ln\left(a+(b+c)\,x\right)^3}{b+c} - \frac{3bx\ln\left(a+(b+c)\,x\right)^2}{b+c} - \frac{3cx\ln\left(a+(b+c)\,x\right)^2}{b+c} -$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(b*x+c*x+a)^3,x)
```

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

```
(a+(b+c)*x)^2+6/(b+c)*b*x*ln(a+(b+c)*x)+6/(b+c)*c*x*ln(a+(b+c)*x)+6/(b+c)*a
*ln(a+(b+c)*x)-6/(b+c)*b*x-6/(b+c)*c*x-6/(b+c)*a
```

maxima [A] time = 0.61, size = 51, normalized size = 0.70

$$\frac{\left(\log\left(bx+cx+a\right)^{3}-3\,\log\left(bx+cx+a\right)^{2}+6\,\log\left(bx+cx+a\right)-6\right)\left(bx+cx+a\right)}{b+c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+c*x+a)^3,x, algorithm="maxima")
```

```
[Out] (log(b*x + c*x + a)^3 - 3*log(b*x + c*x + a)^2 + 6*log(b*x + c*x + a) - 6)*
(b*x + c*x + a)/(b + c)
```

mupad [B] time = 0.37, size = 138, normalized size = 1.89

$$6\,a\,\ln\left(a+b\,x+c\,x\right)-6\,c\,x-6\,b\,x-3\,a\ln\left(a+b\,x+c\,x\right)^{2}+a\ln\left(a+b\,x+c\,x\right)^{3}-3\,b\,x\ln\left(a+b\,x+c\,x\right)^{2}+b\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(a + b*x + c*x)^3,x)
```

```
[Out] (6*a*log(a + b*x + c*x) - 6*c*x - 6*b*x - 3*a*log(a + b*x + c*x)^2 + a*log(
a + b*x + c*x)^3 - 3*b*x*log(a + b*x + c*x)^2 + b*x*log(a + b*x + c*x)^3 -
3*c*x*log(a + b*x + c*x)^2 + c*x*log(a + b*x + c*x)^3 + 6*b*x*log(a + b*x +
 c*x) + 6*c*x*log(a + b*x + c*x))/(b + c)
```

sympy [A] time = 0.65, size = 95, normalized size = 1.30

$$6x\log\left(a+bx+cx\right)+\left(-6b-6c\right)\left(-\frac{a\log\left(a+x\left(b+c\right)\right)}{\left(b+c\right)^{2}}+\frac{x}{b+c}\right)+\frac{\left(-3a-3bx-3cx\right)\log\left(a+bx+cx\right)^{2}}{b+c}+\frac{(a+}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(b*x+c*x+a)**3,x)
```

```
[Out] 6*x*log(a + b*x + c*x) + (-6*b - 6*c)*(-a*log(a + x*(b + c))/(b + c)**2 + x
/(b + c)) + (-3*a - 3*b*x - 3*c*x)*log(a + b*x + c*x)**2/(b + c) + (a + b*x
 + c*x)*log(a + b*x + c*x)**3/(b + c)
```

3.70 $\int \log \left(c(d+ex)^n\right) dx$

Optimal. Leaf size=24

$$\frac{(d+ex)\log \left(c(d+ex)^n\right)}{e}-nx$$

```
[Out] -n*x+(e*x+d)*ln(c*(e*x+d)^n)/e
```

Rubi [A] time = 0.01, antiderivative size = 24, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {2389, 2295}

$$\frac{(d+ex)\log \left(c(d+ex)^n\right)}{e}-nx$$

Antiderivative was successfully verified.

```
[In] Int[Log[c*(d + e*x)^n],x]
[Out] -(n*x) + ((d + e*x)*Log[c*(d + e*x)^n])/e
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rubi steps

$$\begin{aligned} \int \log \left(c(d+ex)^n\right) dx &= \frac{\text{Subst}\left(\int \log \left(cx^n\right) dx, x, d+ex\right)}{e}\\ &= -nx+\frac{(d+ex)\log \left(c(d+ex)^n\right)}{e} \end{aligned}$$

Mathematica [A] time = 0.01, size = 24, normalized size = 1.00

$$\frac{(d+ex)\log \left(c(d+ex)^n\right)}{e}-nx$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(d + e*x)^n],x]
[Out] -(n*x) + ((d + e*x)*Log[c*(d + e*x)^n])/e
```

fricas [A] time = 0.49, size = 32, normalized size = 1.33

$$-\frac{enx-ex\log(c)-(enx+dn)\log(ex+d)}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(e*x+d)^n),x, algorithm="fricas")
[Out] -(e*n*x - e*x*log(c) - (e*n*x + d*n)*log(e*x + d))/e
```

giac [A] time = 0.16, size = 40, normalized size = 1.67

$$(xe+d)ne^{(-1)}\log(xe+d) - (xe+d)ne^{(-1)} + (xe+d)e^{(-1)}\log(c)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(e*x+d)^n),x, algorithm="giac")
```

```
[Out] (x*e + d)*n*e^(-1)*log(x*e + d) - (x*e + d)*n*e^(-1) + (x*e + d)*e^(-1)*log
(c)
```

maple [A] time = 0.04, size = 30, normalized size = 1.25

$$\frac{dn\ln(ex+d)}{e} - nx + x\ln\left(c(ex+d)^n\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(c*(e*x+d)^n),x)
```

```
[Out] x*ln(c*(e*x+d)^n)-n*x+1/e*n*d*ln(e*x+d)
```

maxima [A] time = 0.72, size = 35, normalized size = 1.46

$$-en\left(\frac{x}{e} - \frac{d\log(ex+d)}{e^2}\right) + x\log\left((ex+d)^n c\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(e*x+d)^n),x, algorithm="maxima")
```

```
[Out] -e*n*(x/e - d*log(e*x + d)/e^2) + x*log((e*x + d)^n*c)
```

mupad [B] time = 0.06, size = 29, normalized size = 1.21

$$x\ln\left(c(d+ex)^n\right) - nx + \frac{dn\ln(d+ex)}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(c*(d + e*x)^n),x)
```

```
[Out] x*log(c*(d + e*x)^n) - n*x + (d*n*log(d + e*x))/e
```

sympy [A] time = 0.45, size = 37, normalized size = 1.54

$$\begin{cases} \frac{dn\log(d+ex)}{e} + nx\log(d+ex) - nx + x\log(c) & \text{for } e \neq 0 \\ x\log(cd^n) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(c*(e*x+d)**n),x)
```

```
[Out] Piecewise((d*n*log(d + e*x)/e + n*x*log(d + e*x) - n*x + x*log(c), Ne(e, 0)
), (x*log(c*d**n), True))
```

3.71 $\int \frac{\log\left(-\frac{g(d+ex)}{ef-dg}\right)}{f+gx}\,dx$

Optimal. Leaf size=24

$$-\frac{\text{Li}_2\left(\frac{e(f+gx)}{ef-dg}\right)}{g}$$

```
[Out] -polylog(2,e*(g*x+f)/(-d*g+e*f))/g
```

Rubi [A] time = 0.03, antiderivative size = 24, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {2393, 2391}

$$-\frac{\text{PolyLog}\left(2,\frac{e(f+gx)}{ef-dg}\right)}{g}$$

Antiderivative was successfully verified.

```
[In] Int[Log[-((g*(d + e*x))/(e*f - d*g))]/(f + g*x),x]
[Out] -(PolyLog[2, (e*(f + g*x))/(e*f - d*g)]/g)
```

Rule 2391

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

Rule 2393

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

Rubi steps

$$\begin{aligned}\int \frac{\log\left(-\frac{g(d+ex)}{ef-dg}\right)}{f+gx}\,dx &= \frac{\text{Subst}\left(\int \frac{\log\left(1-\frac{ex}{ef-dg}\right)}{x}\,dx, x, f+gx\right)}{g}\\ &= -\frac{\text{Li}_2\left(\frac{e(f+gx)}{ef-dg}\right)}{g}\end{aligned}$$

Mathematica [A] time = 0.01, size = 24, normalized size = 1.00

$$-\frac{\text{Li}_2\left(\frac{e(f+gx)}{ef-dg}\right)}{g}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[-((g*(d + e*x))/(e*f - d*g))]/(f + g*x),x]
[Out] -(PolyLog[2, (e*(f + g*x))/(e*f - d*g)]/g)
```

fricas [A] time = 0.44, size = 27, normalized size = 1.12

$$-\frac{\operatorname{Li}_2\left(\frac{egx+dg}{ef-dg}+1\right)}{g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(-g*(e*x+d)/(-d*g+e*f))/(g*x+f),x, algorithm="fricas")
[Out] -dilog((e*g*x + d*g)/(e*f - d*g) + 1)/g
```

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

$$\int \frac{\log\left(-\frac{(ex+d)g}{ef-dg}\right)}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(-g*(e*x+d)/(-d*g+e*f))/(g*x+f),x, algorithm="giac")
[Out] integrate(log(-(e*x + d)*g/(e*f - d*g))/(g*x + f), x)
```

maple [A] time = 0.04, size = 35, normalized size = 1.46

$$-\frac{\operatorname{dilog}\left(\frac{egx}{dg-ef}+\frac{dg}{dg-ef}\right)}{g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(-g*(e*x+d)/(-d*g+e*f))/(g*x+f),x)
[Out] -1/g*dilog(e*g/(d*g-e*f)*x+d*g/(d*g-e*f))
```

maxima [B] time = 0.67, size = 102, normalized size = 4.25

$$-\frac{\log(ex+d)\log(gx+f)}{g}+\frac{\log(gx+f)\log\left(-\frac{(ex+d)g}{ef-dg}\right)}{g}+\frac{\log(ex+d)\log\left(\frac{egx+dg}{ef-dg}+1\right)+\operatorname{Li}_2\left(-\frac{egx+dg}{ef-dg}\right)}{g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(-g*(e*x+d)/(-d*g+e*f))/(g*x+f),x, algorithm="maxima")
[Out] -log(e*x + d)*log(g*x + f)/g + log(g*x + f)*log(-(e*x + d)*g/(e*f - d*g))/g
 + (log(e*x + d)*log((e*g*x + d*g)/(e*f - d*g) + 1) + dilog(-(e*g*x + d*g)/
(e*f - d*g)))/g
```

mupad [B] time = 0.39, size = 23, normalized size = 0.96

$$-\frac{\operatorname{Li}_2\left(\frac{g\,(d+e\,x)}{d\,g-e\,f}\right)}{g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log((g*(d + e*x))/(d*g - e*f))/(f + g*x),x)
[Out] -dilog((g*(d + e*x))/(d*g - e*f))/g
```

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

$$\int \frac{\log\left(-\frac{dg}{-dg+ef}-\frac{egx}{-dg+ef}\right)}{f+gx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(-g*(e*x+d)/(-d*g+e*f))/(g*x+f),x)
```

```
[Out] Integral(log(-d*g/(-d*g + e*f) - e*g*x/(-d*g + e*f))/(f + g*x), x)
```

3.72 $\int \frac{a+b\log\left(c\left(\frac{1}{c}+ex\right)\right)}{x}\,dx$

Optimal. Leaf size=15

$$a\log(x) - b\text{Li}_2(-cex)$$

```
[Out] a*ln(x)-b*polylog(2,-c*e*x)
```

Rubi [A] time = 0.02, antiderivative size = 15, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.111$, Rules used = {2392, 2391}

$$a\log(x) - b\text{PolyLog}(2, -cex)$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(c^(-1) + e*x)])/x,x]
```

```
[Out] a*Log[x] - b*PolyLog[2, -(c*e*x)]
```

Rule 2391

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

Rule 2392

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/(x_), x_Symbol] :> Simp[
(a + b*Log[c*d])*Log[x], x] + Dist[b, Int[Log[1 + (e*x)/d]/x, x], x] /; Fre
eQ[{a, b, c, d, e}, x] && GtQ[c*d, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{a+b\log\left(c\left(\frac{1}{c}+ex\right)\right)}{x}\,dx &= a\log(x) + b\int \frac{\log(1+cex)}{x}\,dx\\ &= a\log(x) - b\text{Li}_2(-cex)\end{aligned}$$

Mathematica [A] time = 0.00, size = 15, normalized size = 1.00

$$a\log(x) - b\text{Li}_2(-cex)$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(c^(-1) + e*x)])/x,x]
```

```
[Out] a*Log[x] - b*PolyLog[2, -(c*e*x)]
```

fricas [A] time = 0.45, size = 14, normalized size = 0.93

$$-b\text{Li}_2\left(-cex\right) + a\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -b*dilog(-c*e*x) + a*log(x)
```

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

$$\int \frac{b\log\left(\left(ex+\frac{1}{c}\right)c\right)+a}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((b*log((e*x + 1/c)*c) + a)/x, x)
```

maple [A] time = 0.04, size = 19, normalized size = 1.27

$$a\ln\left(cex\right)-b\,\mathrm{dilog}\left(cex+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(1/c+e*x)))/x,x)
```

```
[Out] a*ln(c*e*x)-b*dilog(c*e*x+1)
```

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

$$b\int \frac{\log\left(cex+1\right)}{x}\,dx + a\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] b*integrate(log(c*e*x + 1)/x, x) + a*log(x)
```

mupad [B] time = 0.08, size = 15, normalized size = 1.00

$$a\ \ln(x)-b\,\mathrm{polylog}\left(2,-c\,e\,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(e*x + 1/c)))/x,x)
```

```
[Out] a*log(x) - b*polylog(2, -c*e*x)
```

sympy [C] time = 6.20, size = 17, normalized size = 1.13

$$a\log\left(x\right)-b\,\mathrm{Li}_2\left(cexe^{i\pi}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] a*log(x) - b*polylog(2, c*e*x*exp_polar(I*pi))
```

3.73 $\int \frac{\log(3+ex)}{x} \, dx$

Optimal. Leaf size=16

$$\log(3)\log(x) - \text{Li}_2\left(-\frac{ex}{3}\right)$$

```
[Out] ln(3)*ln(x)-polylog(2,-1/3*e*x)
```

Rubi [A] time = 0.02, antiderivative size = 16, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {2392, 2391}

$$\log(3)\log(x) - \text{PolyLog}\left(2, -\frac{ex}{3}\right)$$

Antiderivative was successfully verified.

```
[In] Int[Log[3 + e*x]/x,x]
```

```
[Out] Log[3]*Log[x] - PolyLog[2, -(e*x)/3]
```

Rule 2391

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

Rule 2392

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/(x_), x_Symbol] :> Simp[
(a + b*Log[c*d])*Log[x], x] + Dist[b, Int[Log[1 + (e*x)/d]/x, x], x] /; Fre
eQ[{a, b, c, d, e}, x] && GtQ[c*d, 0]
```

Rubi steps

$$\begin{aligned} \int \frac{\log(3+ex)}{x} \, dx &= \log(3)\log(x) + \int \frac{\log\left(1+\frac{ex}{3}\right)}{x} \, dx \\ &= \log(3)\log(x) - \text{Li}_2\left(-\frac{ex}{3}\right) \end{aligned}$$

Mathematica [A] time = 0.00, size = 16, normalized size = 1.00

$$\log(3)\log(x) - \text{Li}_2\left(-\frac{ex}{3}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[3 + e*x]/x,x]
```

```
[Out] Log[3]*Log[x] - PolyLog[2, -1/3*(e*x)]
```

fricas [F] time = 0.48, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\log(ex+3)}{x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integral(log(e*x + 3)/x, x)
```

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

$$\int \frac{\log(ex+3)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e*x+3)/x,x, algorithm="giac")
[Out] integrate(log(e*x + 3)/x, x)
```

maple [B] time = 0.04, size = 33, normalized size = 2.06

$$-\operatorname{dilog}\left(\frac{ex}{3}+1\right)+\left(-\ln\left(\frac{ex}{3}+1\right)+\ln(ex+3)\right)\ln\left(-\frac{ex}{3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(e*x+3)/x,x)
[Out] (ln(e*x+3)-ln(1/3*e*x+1))*ln(-1/3*e*x)-dilog(1/3*e*x+1)
```

maxima [A] time = 1.04, size = 20, normalized size = 1.25

$$\log(ex+3)\log\left(-\frac{1}{3}\,ex\right)+\mathrm{Li}_2\left(\frac{1}{3}\,ex+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e*x+3)/x,x, algorithm="maxima")
[Out] log(e*x + 3)*log(-1/3*e*x) + dilog(1/3*e*x + 1)
```

mupad [B] time = 0.03, size = 18, normalized size = 1.12

$$\mathrm{Li}_2\left(-\frac{e\,x}{3}\right)+\ln(e\,x+3)\,\ln\left(-\frac{e\,x}{3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(e*x + 3)/x,x)
[Out] dilog(-(e*x)/3) + log(e*x + 3)*log(-(e*x)/3)
```

sympy [C] time = 2.87, size = 68, normalized size = 4.25

$$\begin{cases} \log(3)\log(x)-\mathrm{Li}_2\left(\frac{exe^{i\pi}}{3}\right) & \text{for } |x|<1 \\ -\log(3)\log\left(\frac{1}{x}\right)-\mathrm{Li}_2\left(\frac{exe^{i\pi}}{3}\right) & \text{for } \frac{1}{|x|}<1 \\ -G_{2,2}^{2,0}\left(\begin{matrix} & 1,1 \\ 0,0 & \end{matrix}\middle| x\right)\log(3)+G_{2,2}^{0,2}\left(\begin{matrix} 1,1 & \\ & 0,0 \end{matrix}\middle| x\right)\log(3)-\mathrm{Li}_2\left(\frac{exe^{i\pi}}{3}\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(e*x+3)/x,x)
[Out] Piecewise((log(3)*log(x) - polylog(2, e*x*exp_polar(I*pi)/3), Abs(x) < 1),
(-log(3)*log(1/x) - polylog(2, e*x*exp_polar(I*pi)/3), 1/Abs(x) < 1), (-mei
jerg(((), (1, 1)), ((0, 0), ()), x)*log(3) + meijerg(((1, 1), ()), ((), (0,
 0)), x)*log(3) - polylog(2, e*x*exp_polar(I*pi)/3), True))
```

3.74 $\int \frac{\log(2+ex)}{x} dx$

Optimal. Leaf size=16

$$\log(2)\log(x) - \text{Li}_2\left(-\frac{ex}{2}\right)$$

```
[Out] ln(2)*ln(x)-polylog(2,-1/2*e*x)
```

Rubi [A] time = 0.01, antiderivative size = 16, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {2392, 2391}

$$\log(2)\log(x) - \text{PolyLog}\left(2, -\frac{ex}{2}\right)$$

Antiderivative was successfully verified.

```
[In] Int[Log[2 + e*x]/x,x]
[Out] Log[2]*Log[x] - PolyLog[2, -(e*x)/2]
```

Rule 2391

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

Rule 2392

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/(x_), x_Symbol] :> Simp[
(a + b*Log[c*d])*Log[x], x] + Dist[b, Int[Log[1 + (e*x)/d]/x, x], x] /; Fre
eQ[{a, b, c, d, e}, x] && GtQ[c*d, 0]
```

Rubi steps

$$\begin{aligned} \int \frac{\log(2+ex)}{x} dx &= \log(2)\log(x) + \int \frac{\log\left(1+\frac{ex}{2}\right)}{x} dx \\ &= \log(2)\log(x) - \text{Li}_2\left(-\frac{ex}{2}\right) \end{aligned}$$

Mathematica [A] time = 0.00, size = 16, normalized size = 1.00

$$\log(2)\log(x) - \text{Li}_2\left(-\frac{ex}{2}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[2 + e*x]/x,x]
[Out] Log[2]*Log[x] - PolyLog[2, -1/2*(e*x)]
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\log(ex+2)}{x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integral(log(e*x + 2)/x, x)
```

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

$$\int \frac{\log(ex+2)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(log(e*x + 2)/x, x)
```

maple [B] time = 0.04, size = 33, normalized size = 2.06

$$-\operatorname{dilog}\left(\frac{ex}{2}+1\right)+\left(-\ln\left(\frac{ex}{2}+1\right)+\ln(ex+2)\right)\ln\left(-\frac{ex}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(e*x+2)/x,x)
```

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

maxima [A] time = 0.62, size = 20, normalized size = 1.25

$$\log(ex+2)\log\left(-\frac{1}{2}\,ex\right)+\operatorname{Li}_2\left(\frac{1}{2}\,ex+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

mupad [B] time = 0.03, size = 18, normalized size = 1.12

$$\operatorname{Li}_2\left(-\frac{e\,x}{2}\right)+\ln(e\,x+2)\,\ln\left(-\frac{e\,x}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(e*x + 2)/x,x)
```

```
[Out] dilog(-(e*x)/2) + log(e*x + 2)*log(-(e*x)/2)
```

sympy [C] time = 2.92, size = 68, normalized size = 4.25

$$\begin{cases} \log(2)\log(x)-\operatorname{Li}_2\left(\frac{exe^{i\pi}}{2}\right) & \text{for } |x|<1 \\ -\log(2)\log\left(\frac{1}{x}\right)-\operatorname{Li}_2\left(\frac{exe^{i\pi}}{2}\right) & \text{for } \frac{1}{|x|}<1 \\ -G_{2,2}^{2,0}\left(\begin{matrix} & 1,1 \\ 0,0 & \end{matrix}\middle|\,x\right)\log(2)+G_{2,2}^{0,2}\left(\begin{matrix} 1,1 & \\ & 0,0 \end{matrix}\middle|\,x\right)\log(2)-\operatorname{Li}_2\left(\frac{exe^{i\pi}}{2}\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(e*x+2)/x,x)
```

```
[Out] Piecewise((log(2)*log(x) - polylog(2, e*x*exp_polar(I*pi)/2), Abs(x) < 1),
(-log(2)*log(1/x) - polylog(2, e*x*exp_polar(I*pi)/2), 1/Abs(x) < 1), (-mei
jerg(((), (1, 1)), ((0, 0), ()), x)*log(2) + meijerg(((1, 1), ()), ((), (0,
 0)), x)*log(2) - polylog(2, e*x*exp_polar(I*pi)/2), True))
```

3.75 $\int \frac{\log(1+ex)}{x} \, dx$

Optimal. Leaf size=8

$$-\text{Li}_2(-ex)$$

```
[Out] -polylog(2,-e*x)
```

Rubi [A] time = 0.01, antiderivative size = 8, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.100, Rules used = {2391}

$$-\text{PolyLog}(2, -ex)$$

Antiderivative was successfully verified.

```
[In] Int[Log[1 + e*x]/x,x]
```

```
[Out] -PolyLog[2, -(e*x)]
```

Rule 2391

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

Rubi steps

$$\int \frac{\log(1+ex)}{x} \, dx = -\text{Li}_2(-ex)$$

Mathematica [A] time = 0.00, size = 8, normalized size = 1.00

$$-\text{Li}_2(-ex)$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[1 + e*x]/x,x]
```

```
[Out] -PolyLog[2, -(e*x)]
```

fricas [A] time = 0.45, size = 7, normalized size = 0.88

$$-\text{Li}_2(-ex)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -dilog(-e*x)
```

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

$$\int \frac{\log(ex+1)}{x} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(log(e*x + 1)/x, x)
```

maple [A] time = 0.04, size = 9, normalized size = 1.12

$$-\text{dilog}(ex+1)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(e*x+1)/x,x)
```

```
[Out] -dilog(e*x+1)
```

maxima [B] time = 0.85, size = 19, normalized size = 2.38

$$\log(ex+1)\log(-ex) + \mathrm{Li}_2(ex+1)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] log(e*x + 1)*log(-e*x) + dilog(e*x + 1)
```

mupad [B] time = 0.03, size = 18, normalized size = 2.25

$$\mathrm{Li}_2(-e\,x) + \ln(e\,x+1)\,\ln(-e\,x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(e*x + 1)/x,x)
```

```
[Out] dilog(-e*x) + log(e*x + 1)*log(-e*x)
```

sympy [C] time = 2.40, size = 10, normalized size = 1.25

$$-\mathrm{Li}_2\left(exe^{i\pi}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(e*x+1)/x,x)
```

```
[Out] -polylog(2, e*x*exp_polar(I*pi))
```

3.76 $\int \frac{\log(ex)}{x} dx$

Optimal. Leaf size=10

$$\frac{1}{2}\log^2(ex)$$

```
[Out] 1/2*ln(e*x)^2
```

Rubi [A] time = 0.01, antiderivative size = 10, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {2301}

$$\frac{1}{2}\log^2(ex)$$

Antiderivative was successfully verified.

```
[In] Int[Log[e*x]/x,x]
```

```
[Out] Log[e*x]^2/2
```

Rule 2301

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

Rubi steps

$$\int \frac{\log(ex)}{x} dx = \frac{1}{2}\log^2(ex)$$

Mathematica [A] time = 0.00, size = 10, normalized size = 1.00

$$\frac{1}{2}\log^2(ex)$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[e*x]/x,x]
```

```
[Out] Log[e*x]^2/2
```

fricas [A] time = 0.45, size = 8, normalized size = 0.80

$$\frac{1}{2}\log(ex)^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e*x)/x,x, algorithm="fricas")
```

```
[Out] 1/2*log(e*x)^2
```

giac [A] time = 0.19, size = 9, normalized size = 0.90

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

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e*x)/x,x, algorithm="giac")
```

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

maple [A] time = 0.04, size = 9, normalized size = 0.90

$$\frac{\ln(ex)^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(e*x)/x,x)
```

```
[Out] 1/2*ln(e*x)^2
```

maxima [A] time = 0.67, size = 8, normalized size = 0.80

$$\frac{1}{2}\log(ex)^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e*x)/x,x, algorithm="maxima")
```

```
[Out] 1/2*log(e*x)^2
```

mupad [B] time = 0.17, size = 8, normalized size = 0.80

$$\frac{\ln(e\,x)^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(e*x)/x,x)
```

```
[Out] log(e*x)^2/2
```

sympy [A] time = 0.09, size = 7, normalized size = 0.70

$$\frac{\log(ex)^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(e*x)/x,x)
```

```
[Out] log(e*x)**2/2
```

3.77 $\int \frac{\log(-1+ex)}{x}\,dx$

Optimal. Leaf size=20

$$\text{Li}_2(1-ex)+\log(ex)\log(ex-1)$$

```
[Out] ln(e*x)*ln(e*x-1)+polylog(2,-e*x+1)
```

Rubi [A] time = 0.02, antiderivative size = 20, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {2394, 2315}

$$\text{PolyLog}(2,1-ex)+\log(ex)\log(ex-1)$$

Antiderivative was successfully verified.

```
[In] Int[Log[-1 + e*x]/x,x]
[Out] Log[e*x]*Log[-1 + e*x] + PolyLog[2, 1 - e*x]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2394

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

Rubi steps

$$\begin{aligned}\int \frac{\log(-1+ex)}{x}\,dx &= \log(ex)\log(-1+ex)-e\int \frac{\log(ex)}{-1+ex}\,dx\\ &= \log(ex)\log(-1+ex)+\text{Li}_2(1-ex)\end{aligned}$$

Mathematica [A] time = 0.00, size = 20, normalized size = 1.00

$$\text{Li}_2(1-ex)+\log(ex)\log(ex-1)$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[-1 + e*x]/x,x]
[Out] Log[e*x]*Log[-1 + e*x] + PolyLog[2, 1 - e*x]
```

fricas [F] time = 0.47, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\log(ex-1)}{x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e*x-1)/x,x, algorithm="fricas")
[Out] integral(log(e*x - 1)/x, x)
```

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

$$\int \frac{\log(ex-1)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e*x-1)/x,x, algorithm="giac")
[Out] integrate(log(e*x - 1)/x, x)
```

maple [A] time = 0.04, size = 17, normalized size = 0.85

$$\ln(ex)\ln(ex-1) + \operatorname{dilog}(ex)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(e*x-1)/x,x)
[Out] dilog(e*x)+ln(e*x)*ln(e*x-1)
```

maxima [A] time = 0.72, size = 19, normalized size = 0.95

$$\log(ex-1)\log(ex) + \operatorname{Li}_2(-ex+1)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e*x-1)/x,x, algorithm="maxima")
[Out] log(e*x - 1)*log(e*x) + dilog(-e*x + 1)
```

mupad [B] time = 0.03, size = 16, normalized size = 0.80

$$\operatorname{Li}_2(e\,x) + \ln(e\,x-1)\,\ln(e\,x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(e*x - 1)/x,x)
[Out] dilog(e*x) + log(e*x - 1)*log(e*x)
```

sympy [C] time = 3.36, size = 48, normalized size = 2.40

$$\begin{cases} i\pi\log(x) - \operatorname{Li}_2(ex) & \text{for } |x| < 1 \\ -i\pi\log\left(\frac{1}{x}\right) - \operatorname{Li}_2(ex) & \text{for } \frac{1}{|x|} < 1 \\ -i\pi G_{2,2}^{2,0}\left(\begin{matrix} & 1,1 \\ 0,0 & \end{matrix}\middle|\,x\right) + i\pi G_{2,2}^{0,2}\left(\begin{matrix} 1,1 & \\ & 0,0 \end{matrix}\middle|\,x\right) - \operatorname{Li}_2(ex) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(e*x-1)/x,x)
[Out] Piecewise((I*pi*log(x) - polylog(2, e*x), Abs(x) < 1), (-I*pi*log(1/x) - po
lylog(2, e*x), 1/Abs(x) < 1), (-I*pi*meijerg(((), (1, 1)), ((0, 0), ()), x)
 + I*pi*meijerg(((1, 1), ()), ((), (0, 0)), x) - polylog(2, e*x), True))
```

3.78 $\int \frac{\log(-2+ex)}{x}\,dx$

Optimal. Leaf size=25

$$\text{Li}_2\left(1-\frac{ex}{2}\right)+\log\left(\frac{ex}{2}\right)\log(ex-2)$$

```
[Out] ln(1/2*e*x)*ln(e*x-2)+polylog(2,1-1/2*e*x)
```

Rubi [A] time = 0.02, antiderivative size = 25, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {2394, 2315}

$$\text{PolyLog}\left(2,1-\frac{ex}{2}\right)+\log\left(\frac{ex}{2}\right)\log(ex-2)$$

Antiderivative was successfully verified.

```
[In] Int[Log[-2 + e*x]/x,x]
```

```
[Out] Log[(e*x)/2]*Log[-2 + e*x] + PolyLog[2, 1 - (e*x)/2]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2394

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

Rubi steps

$$\begin{aligned}\int \frac{\log(-2+ex)}{x}\,dx &= \log\left(\frac{ex}{2}\right)\log(-2+ex)-e\int \frac{\log\left(\frac{ex}{2}\right)}{-2+ex}\,dx\\ &= \log\left(\frac{ex}{2}\right)\log(-2+ex)+\text{Li}_2\left(1-\frac{ex}{2}\right)\end{aligned}$$

Mathematica [A] time = 0.00, size = 27, normalized size = 1.08

$$\text{Li}_2\left(\frac{1}{2}(2-ex)\right)+\log\left(\frac{ex}{2}\right)\log(ex-2)$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[-2 + e*x]/x,x]
```

```
[Out] Log[(e*x)/2]*Log[-2 + e*x] + PolyLog[2, (2 - e*x)/2]
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\log(ex-2)}{x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e*x-2)/x,x, algorithm="fricas")
[Out] integral(log(e*x - 2)/x, x)
```

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

$$\int \frac{\log(ex-2)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e*x-2)/x,x, algorithm="giac")
[Out] integrate(log(e*x - 2)/x, x)
```

maple [A] time = 0.04, size = 19, normalized size = 0.76

$$\ln\left(\frac{ex}{2}\right)\ln(ex-2)+\operatorname{dilog}\left(\frac{ex}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(e*x-2)/x,x)
[Out] dilog(1/2*e*x)+ln(1/2*e*x)*ln(e*x-2)
```

maxima [A] time = 0.68, size = 20, normalized size = 0.80

$$\log(ex-2)\log\left(\frac{1}{2}\,ex\right)+\operatorname{Li}_2\left(-\frac{1}{2}\,ex+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e*x-2)/x,x, algorithm="maxima")
[Out] log(e*x - 2)*log(1/2*e*x) + dilog(-1/2*e*x + 1)
```

mupad [B] time = 0.03, size = 18, normalized size = 0.72

$$\operatorname{Li}_2\left(\frac{e\,x}{2}\right)+\ln(e\,x-2)\,\ln\left(\frac{e\,x}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(e*x - 2)/x,x)
[Out] dilog((e*x)/2) + log(e*x - 2)*log((e*x)/2)
```

sympy [C] time = 3.50, size = 88, normalized size = 3.52

$$\begin{cases} \log(2)\log(x)+3i\pi\log(x)-\operatorname{Li}_2\left(\frac{ex}{2}\right) \\ -\log(2)\log\left(\frac{1}{x}\right)-3i\pi\log\left(\frac{1}{x}\right)-\operatorname{Li}_2\left(\frac{ex}{2}\right) \\ -G_{2,2}^{2,0}\left(\begin{matrix} & 1,1 \\ 0,0 & \end{matrix}\middle| x\right)\log(2)-3i\pi G_{2,2}^{2,0}\left(\begin{matrix} & 1,1 \\ 0,0 & \end{matrix}\middle| x\right)+G_{2,2}^{0,2}\left(\begin{matrix} 1,1 & \\ & 0,0 \end{matrix}\middle| x\right)\log(2)+3i\pi G_{2,2}^{0,2}\left(\begin{matrix} 1,1 & \\ & 0,0 \end{matrix}\middle| x\right)-\operatorname{Li}_2\left(\frac{ex}{2}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(e*x-2)/x,x)
[Out] Piecewise((log(2)*log(x) + 3*I*pi*log(x) - polylog(2, e*x/2), Abs(x) < 1),
(-log(2)*log(1/x) - 3*I*pi*log(1/x) - polylog(2, e*x/2), 1/Abs(x) < 1), (-m
eijerg(((), (1, 1)), ((0, 0), ()), x)*log(2) - 3*I*pi*meijerg(((), (1, 1)),
 ((0, 0), ()), x) + meijerg(((1, 1), ()), ((), (0, 0)), x)*log(2) + 3*I*pi*
meijerg(((1, 1), ()), ((), (0, 0)), x) - polylog(2, e*x/2), True))
```

3.79 $\int \frac{a+b\log(3+ex)}{x}\,dx$

Optimal. Leaf size=21

$$\log(x)(a+b\log(3))-b\text{Li}_2\left(-\frac{ex}{3}\right)$$

```
[Out] (a+b*ln(3))*ln(x)-b*polylog(2,-1/3*e*x)
```

Rubi [A] time = 0.02, antiderivative size = 21, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {2392, 2391}

$$\log(x)(a+b\log(3))-b\text{PolyLog}\left(2,-\frac{ex}{3}\right)$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[3 + e*x])/x,x]
```

```
[Out] (a + b*Log[3])*Log[x] - b*PolyLog[2, -(e*x)/3]
```

Rule 2391

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

Rule 2392

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/(x_), x_Symbol] :> Simp[
(a + b*Log[c*d])*Log[x], x] + Dist[b, Int[Log[1 + (e*x)/d]/x, x], x] /; Fre
eQ[{a, b, c, d, e}, x] && GtQ[c*d, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{a+b\log(3+ex)}{x}\,dx &= (a+b\log(3))\log(x)+b\int \frac{\log\left(1+\frac{ex}{3}\right)}{x}\,dx\\ &= (a+b\log(3))\log(x)-b\text{Li}_2\left(-\frac{ex}{3}\right)\end{aligned}$$

Mathematica [A] time = 0.00, size = 22, normalized size = 1.05

$$a\log(x)-b\text{Li}_2\left(-\frac{ex}{3}\right)+b\log(3)\log(x)$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[3 + e*x])/x,x]
```

```
[Out] a*Log[x] + b*Log[3]*Log[x] - b*PolyLog[2, -1/3*(e*x)]
```

fricas [F] time = 0.42, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b\log(ex+3)+a}{x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(e*x+3))/x,x, algorithm="fricas")
```

```
[Out] integral((b*log(e*x + 3) + a)/x, x)
```

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

$$\int \frac{b \log(ex+3)+a}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(e*x+3))/x,x, algorithm="giac")
[Out] integrate((b*log(e*x + 3) + a)/x, x)
```

maple [B] time = 0.04, size = 46, normalized size = 2.19

$$-b\ln\left(-\frac{ex}{3}\right)\ln\left(\frac{ex}{3}+1\right)+b\ln\left(-\frac{ex}{3}\right)\ln(ex+3)+a\ln(ex)-b\,\mathrm{dilog}\left(\frac{ex}{3}+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(e*x+3))/x,x)
[Out] a*ln(e*x)+ln(e*x+3)*ln(-1/3*e*x)*b-ln(1/3*e*x+1)*ln(-1/3*e*x)*b-dilog(1/3*e
*x+1)*b
```

maxima [A] time = 0.94, size = 27, normalized size = 1.29

$$\left(\log(ex+3)\log\left(-\frac{1}{3}ex\right)+\mathrm{Li}_2\left(\frac{1}{3}ex+1\right)\right)b+a\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(e*x+3))/x,x, algorithm="maxima")
[Out] (log(e*x + 3)*log(-1/3*e*x) + dilog(1/3*e*x + 1))*b + a*log(x)
```

mupad [B] time = 0.08, size = 25, normalized size = 1.19

$$b\,\mathrm{Li}_2\left(-\frac{e\,x}{3}\right)+a\,\ln(x)+b\,\ln(e\,x+3)\,\ln\left(-\frac{e\,x}{3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(e*x + 3))/x,x)
[Out] b*dilog(-(e*x)/3) + a*log(x) + b*log(e*x + 3)*log(-(e*x)/3)
```

sympy [A] time = 4.07, size = 75, normalized size = 3.57

$$a\log(x)+b\left(\begin{cases}\log(3)\log(x)-\mathrm{Li}_2\left(\frac{exe^{i\pi}}{3}\right) & \text{for}\ |x|<1\\ -\log(3)\log\left(\frac{1}{x}\right)-\mathrm{Li}_2\left(\frac{exe^{i\pi}}{3}\right) & \text{for}\ \frac{1}{|x|}<1\\ -G_{2,2}^{2,0}\left(\begin{matrix} & 1,1\\ 0,0 & \end{matrix}\middle|\,x\right)\log(3)+G_{2,2}^{0,2}\left(\begin{matrix}1,1 & \\ & 0,0\end{matrix}\middle|\,x\right)\log(3)-\mathrm{Li}_2\left(\frac{exe^{i\pi}}{3}\right) & \text{otherwise}\end{cases}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(e*x+3))/x,x)
[Out] a*log(x) + b*Piecewise((log(3)*log(x) - polylog(2, e*x*exp_polar(I*pi)/3),
Abs(x) < 1), (-log(3)*log(1/x) - polylog(2, e*x*exp_polar(I*pi)/3), 1/Abs(x
) < 1), (-meijerg(((), (1, 1)), ((0, 0), ()), x)*log(3) + meijerg(((1, 1),
()), ((), (0, 0)), x)*log(3) - polylog(2, e*x*exp_polar(I*pi)/3), True))
```

3.80 $\int \frac{a+b\log(2+ex)}{x}\,dx$

Optimal. Leaf size=21

$$\log(x)(a+b\log(2))-b\text{Li}_2\left(-\frac{ex}{2}\right)$$

```
[Out] (a+b*ln(2))*ln(x)-b*polylog(2,-1/2*e*x)
```

Rubi [A] time = 0.02, antiderivative size = 21, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {2392, 2391}

$$\log(x)(a+b\log(2))-b\text{PolyLog}\left(2,-\frac{ex}{2}\right)$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[2 + e*x])/x,x]
[Out] (a + b*Log[2])*Log[x] - b*PolyLog[2, -(e*x)/2]
```

Rule 2391

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

Rule 2392

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/(x_), x_Symbol] :> Simp[
(a + b*Log[c*d])*Log[x], x] + Dist[b, Int[Log[1 + (e*x)/d]/x, x], x] /; Fre
eQ[{a, b, c, d, e}, x] && GtQ[c*d, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{a+b\log(2+ex)}{x}\,dx &= (a+b\log(2))\log(x)+b\int \frac{\log\left(1+\frac{ex}{2}\right)}{x}\,dx\\ &= (a+b\log(2))\log(x)-b\text{Li}_2\left(-\frac{ex}{2}\right)\end{aligned}$$

Mathematica [A] time = 0.00, size = 22, normalized size = 1.05

$$a\log(x)-b\text{Li}_2\left(-\frac{ex}{2}\right)+b\log(2)\log(x)$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[2 + e*x])/x,x]
[Out] a*Log[x] + b*Log[2]*Log[x] - b*PolyLog[2, -1/2*(e*x)]
```

fricas [F] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b\log(ex+2)+a}{x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(e*x+2))/x,x, algorithm="fricas")
```

```
[Out] integral((b*log(e*x + 2) + a)/x, x)
```

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

$$\int \frac{b\log(ex+2)+a}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(e*x+2))/x,x, algorithm="giac")
[Out] integrate((b*log(e*x + 2) + a)/x, x)
```

maple [B] time = 0.04, size = 46, normalized size = 2.19

$$-b\ln\left(-\frac{ex}{2}\right)\ln\left(\frac{ex}{2}+1\right)+b\ln\left(-\frac{ex}{2}\right)\ln(ex+2)+a\ln(ex)-b\,\mathrm{dilog}\left(\frac{ex}{2}+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(e*x+2))/x,x)
[Out] a*ln(e*x)+ln(e*x+2)*ln(-1/2*e*x)*b-ln(1/2*e*x+1)*ln(-1/2*e*x)*b-dilog(1/2*e
*x+1)*b
```

maxima [A] time = 0.81, size = 27, normalized size = 1.29

$$\left(\log(ex+2)\log\left(-\frac{1}{2}\,ex\right)+\mathrm{Li}_2\left(\frac{1}{2}\,ex+1\right)\right)b+a\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(e*x+2))/x,x, algorithm="maxima")
[Out] (log(e*x + 2)*log(-1/2*e*x) + dilog(1/2*e*x + 1))*b + a*log(x)
```

mupad [B] time = 0.07, size = 25, normalized size = 1.19

$$b\,\mathrm{Li}_2\left(-\frac{e\,x}{2}\right)+a\,\ln(x)+b\,\ln(e\,x+2)\,\ln\left(-\frac{e\,x}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(e*x + 2))/x,x)
[Out] b*dilog(-(e*x)/2) + a*log(x) + b*log(e*x + 2)*log(-(e*x)/2)
```

sympy [A] time = 4.08, size = 75, normalized size = 3.57

$$a\log(x)+b\left(\begin{cases}\log(2)\log(x)-\mathrm{Li}_2\left(\frac{exe^{i\pi}}{2}\right) & \text{for } |x|<1\\ -\log(2)\log\left(\frac{1}{x}\right)-\mathrm{Li}_2\left(\frac{exe^{i\pi}}{2}\right) & \text{for } \frac{1}{|x|}<1\\ -G_{2,2}^{2,0}\left(\begin{matrix} & 1,1\\ 0,0 & \end{matrix}\middle|\,x\right)\log(2)+G_{2,2}^{0,2}\left(\begin{matrix}1,1 & \\ & 0,0\end{matrix}\middle|\,x\right)\log(2)-\mathrm{Li}_2\left(\frac{exe^{i\pi}}{2}\right) & \text{otherwise}\end{cases}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(e*x+2))/x,x)
[Out] a*log(x) + b*Piecewise((log(2)*log(x) - polylog(2, e*x*exp_polar(I*pi)/2),
Abs(x) < 1), (-log(2)*log(1/x) - polylog(2, e*x*exp_polar(I*pi)/2), 1/Abs(x
) < 1), (-meijerg(((), (1, 1)), ((0, 0), ()), x)*log(2) + meijerg(((1, 1),
()), ((), (0, 0)), x)*log(2) - polylog(2, e*x*exp_polar(I*pi)/2), True))
```

3.81 $\int \frac{a+b\log(1+ex)}{x}\,dx$

Optimal. Leaf size=14

$$a\log(x) - b\text{Li}_2(-ex)$$

```
[Out] a*ln(x)-b*polylog(2,-e*x)
```

Rubi [A] time = 0.02, antiderivative size = 14, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$, Rules used = {2392, 2391}

$$a\log(x) - b\text{PolyLog}(2, -ex)$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[1 + e*x])/x,x]
```

```
[Out] a*Log[x] - b*PolyLog[2, -(e*x)]
```

Rule 2391

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

Rule 2392

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/(x_), x_Symbol] :> Simp[
(a + b*Log[c*d])*Log[x], x] + Dist[b, Int[Log[1 + (e*x)/d]/x, x], x] /; Fre
eQ[{a, b, c, d, e}, x] && GtQ[c*d, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{a+b\log(1+ex)}{x}\,dx &= a\log(x) + b\int \frac{\log(1+ex)}{x}\,dx\\ &= a\log(x) - b\text{Li}_2(-ex)\end{aligned}$$

Mathematica [A] time = 0.00, size = 14, normalized size = 1.00

$$a\log(x) - b\text{Li}_2(-ex)$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[1 + e*x])/x,x]
```

```
[Out] a*Log[x] - b*PolyLog[2, -(e*x)]
```

fricas [A] time = 0.43, size = 13, normalized size = 0.93

$$-b\text{Li}_2(-ex) + a\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(e*x+1))/x,x, algorithm="fricas")
```

```
[Out] -b*dilog(-e*x) + a*log(x)
```

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

$$\int \frac{b\log(ex+1)+a}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(e*x+1))/x,x, algorithm="giac")
```

```
[Out] integrate((b*log(e*x + 1) + a)/x, x)
```

maple [A] time = 0.04, size = 17, normalized size = 1.21

$$a \ln(ex) - b \,\mathrm{dilog}(ex + 1)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(e*x+1))/x,x)
```

```
[Out] a*ln(e*x)-b*dilog(e*x+1)
```

maxima [A] time = 1.14, size = 26, normalized size = 1.86

$$\left(\log(ex + 1)\log(-ex) + \mathrm{Li}_2(ex + 1)\right)b + a\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(e*x+1))/x,x, algorithm="maxima")
```

```
[Out] (log(e*x + 1)*log(-e*x) + dilog(e*x + 1))*b + a*log(x)
```

mupad [B] time = 0.06, size = 14, normalized size = 1.00

$$a\ \ln(x) - b\,\mathrm{polylog}(2, -e\,x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(e*x + 1))/x,x)
```

```
[Out] a*log(x) - b*polylog(2, -e*x)
```

sympy [C] time = 3.55, size = 15, normalized size = 1.07

$$a\log(x) - b\,\mathrm{Li}_2\left(exe^{i\pi}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(e*x+1))/x,x)
```

```
[Out] a*log(x) - b*polylog(2, e*x*exp_polar(I*pi))
```

3.82 $\int \frac{a+b\log(ex)}{x}\,dx$

Optimal. Leaf size=17

$$\frac{(a+b\log(ex))^2}{2b}$$

```
[Out] 1/2*(a+b*ln(e*x))^2/b
```

Rubi [A] time = 0.01, antiderivative size = 17, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = {2301}

$$\frac{(a+b\log(ex))^2}{2b}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[e*x])/x,x]
```

```
[Out] (a + b*Log[e*x])^2/(2*b)
```

Rule 2301

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

Rubi steps

$$\int \frac{a+b\log(ex)}{x}\,dx = \frac{(a+b\log(ex))^2}{2b}$$

Mathematica [A] time = 0.00, size = 16, normalized size = 0.94

$$a\log(x)+\frac{1}{2}b\log^2(ex)$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[e*x])/x,x]
```

```
[Out] a*Log[x] + (b*Log[e*x]^2)/2
```

fricas [A] time = 0.49, size = 16, normalized size = 0.94

$$\frac{1}{2}\,b\log\left(ex\right)^2+a\log\left(ex\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*b*log(e*x)^2 + a*log(e*x)
```

giac [A] time = 0.17, size = 14, normalized size = 0.82

$$\frac{1}{2}\,b\log(x)^2+(a+b)\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*b*log(x)^2 + (a + b)*log(x)
```

maple [A] time = 0.04, size = 17, normalized size = 1.00

$$\frac{b\ln(ex)^2}{2} + a\ln(ex)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(e*x))/x,x)
```

```
[Out] 1/2*b*ln(e*x)^2+a*ln(e*x)
```

maxima [A] time = 0.72, size = 15, normalized size = 0.88

$$\frac{\left(b\log(ex) + a\right)^2}{2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*(b*log(e*x) + a)^2/b
```

mupad [B] time = 0.15, size = 14, normalized size = 0.82

$$\frac{b\ln(e\,x)^2}{2} + a\,\ln(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(e*x))/x,x)
```

```
[Out] a*log(x) + (b*log(e*x)^2)/2
```

sympy [A] time = 0.24, size = 14, normalized size = 0.82

$$a\log(x) + \frac{b\log(ex)^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(e*x))/x,x)
```

```
[Out] a*log(x) + b*log(e*x)**2/2
```

3.83 $\int \frac{a+b\log(-1+ex)}{x}\,dx$

Optimal. Leaf size=26

$$\log(ex)(a+b\log(ex-1))+b\text{Li}_2(1-ex)$$

```
[Out] ln(e*x)*(a+b*ln(e*x-1))+b*polylog(2,-e*x+1)
```

Rubi [A] time = 0.02, antiderivative size = 26, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {2394, 2315}

$$b\text{PolyLog}(2,1-ex)+\log(ex)(a+b\log(ex-1))$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[-1 + e*x])/x,x]
```

```
[Out] Log[e*x]*(a + b*Log[-1 + e*x]) + b*PolyLog[2, 1 - e*x]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 - c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2394

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

Rubi steps

$$\begin{aligned}\int \frac{a+b\log(-1+ex)}{x}\,dx &= \log(ex)(a+b\log(-1+ex))-(be)\int \frac{\log(ex)}{-1+ex}\,dx\\ &= \log(ex)(a+b\log(-1+ex))+b\text{Li}_2(1-ex)\end{aligned}$$

Mathematica [A] time = 0.00, size = 27, normalized size = 1.04

$$a\log(x)+b\text{Li}_2(1-ex)+b\log(ex)\log(ex-1)$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[-1 + e*x])/x,x]
```

```
[Out] a*Log[x] + b*Log[e*x]*Log[-1 + e*x] + b*PolyLog[2, 1 - e*x]
```

fricas [F] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b\log(ex-1)+a}{x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(e*x-1))/x,x, algorithm="fricas")
```

```
[Out] integral((b*log(e*x - 1) + a)/x, x)
```

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

$$\int \frac{b \log(ex-1) + a}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(e*x-1))/x,x, algorithm="giac")
[Out] integrate((b*log(e*x - 1) + a)/x, x)
```

maple [A] time = 0.04, size = 26, normalized size = 1.00

$$b \ln(ex) \ln(ex-1) + a \ln(ex) + b \,\mathrm{dilog}(ex)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(e*x-1))/x,x)
[Out] a*ln(e*x)+ln(e*x)*ln(e*x-1)*b+dilog(e*x)*b
```

maxima [A] time = 0.99, size = 26, normalized size = 1.00

$$\left(\log(ex-1)\log(ex) + \mathrm{Li}_2(-ex+1)\right)b + a\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(e*x-1))/x,x, algorithm="maxima")
[Out] (log(e*x - 1)*log(e*x) + dilog(-e*x + 1))*b + a*log(x)
```

mupad [B] time = 0.16, size = 23, normalized size = 0.88

$$b\,\mathrm{Li}_2(e\,x) + a\,\ln(x) + b\,\ln(e\,x-1)\,\ln(e\,x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(e*x - 1))/x,x)
[Out] b*dilog(e*x) + a*log(x) + b*log(e*x - 1)*log(e*x)
```

sympy [A] time = 4.53, size = 54, normalized size = 2.08

$$a\log(x) + b\left(\begin{cases} i\pi\log(x) - \mathrm{Li}_2(ex) & \text{for}\ |x| < 1 \\ -i\pi\log\left(\frac{1}{x}\right) - \mathrm{Li}_2(ex) & \text{for}\ \frac{1}{|x|} < 1 \\ -i\pi G_{2,2}^{2,0}\left(\begin{matrix} & 1,1 \\ 0,0 & \end{matrix}\middle| x\right) + i\pi G_{2,2}^{0,2}\left(\begin{matrix} 1,1 & \\ & 0,0 \end{matrix}\middle| x\right) - \mathrm{Li}_2(ex) & \text{otherwise} \end{cases}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(e*x-1))/x,x)
[Out] a*log(x) + b*Piecewise((I*pi*log(x) - polylog(2, e*x), Abs(x) < 1), (-I*pi*
log(1/x) - polylog(2, e*x), 1/Abs(x) < 1), (-I*pi*meijerg(((), (1, 1)), ((0
, 0), ()), x) + I*pi*meijerg(((1, 1), ()), ((), (0, 0)), x) - polylog(2, e*
x), True))
```

3.84 $\int \frac{a+b\log(-2+ex)}{x}\,dx$

Optimal. Leaf size=31

$$\log\left(\frac{ex}{2}\right)(a+b\log(ex-2))+b\text{Li}_2\left(1-\frac{ex}{2}\right)$$

```
[Out] ln(1/2*e*x)*(a+b*ln(e*x-2))+b*polylog(2,1-1/2*e*x)
```

Rubi [A] time = 0.02, antiderivative size = 31, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {2394, 2315}

$$b\text{PolyLog}\left(2,1-\frac{ex}{2}\right)+\log\left(\frac{ex}{2}\right)(a+b\log(ex-2))$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[-2 + e*x])/x,x]
```

```
[Out] Log[(e*x)/2]*(a + b*Log[-2 + e*x]) + b*PolyLog[2, 1 - (e*x)/2]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2394

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

Rubi steps

$$\begin{aligned}\int \frac{a+b\log(-2+ex)}{x}\,dx &= \log\left(\frac{ex}{2}\right)(a+b\log(-2+ex))-(be)\int \frac{\log\left(\frac{ex}{2}\right)}{-2+ex}\,dx\\ &= \log\left(\frac{ex}{2}\right)(a+b\log(-2+ex))+b\text{Li}_2\left(1-\frac{ex}{2}\right)\end{aligned}$$

Mathematica [A] time = 0.00, size = 34, normalized size = 1.10

$$a\log(x)+b\text{Li}_2\left(\frac{1}{2}(2-ex)\right)+b\log\left(\frac{ex}{2}\right)\log(ex-2)$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[-2 + e*x])/x,x]
```

```
[Out] a*Log[x] + b*Log[(e*x)/2]*Log[-2 + e*x] + b*PolyLog[2, (2 - e*x)/2]
```

fricas [F] time = 0.50, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b\log(ex-2)+a}{x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(e*x-2))/x,x, algorithm="fricas")
```

```
[Out] integral((b*log(e*x - 2) + a)/x, x)
```

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

$$\int \frac{b \log(ex-2) + a}{x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(e*x-2))/x,x, algorithm="giac")
```

```
[Out] integrate((b*log(e*x - 2) + a)/x, x)
```

maple [A] time = 0.04, size = 28, normalized size = 0.90

$$b \ln\left(\frac{ex}{2}\right) \ln(ex-2) + a \ln(ex) + b \operatorname{dilog}\left(\frac{ex}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(e*x-2))/x,x)
```

```
[Out] a*ln(e*x)+ln(e*x-2)*ln(1/2*e*x)*b+dilog(1/2*e*x)*b
```

maxima [A] time = 0.83, size = 27, normalized size = 0.87

$$\left(\log(ex-2)\log\left(\frac{1}{2}\,ex\right) + \operatorname{Li}_2\left(-\frac{1}{2}\,ex+1\right)\right)b + a\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(e*x-2))/x,x, algorithm="maxima")
```

```
[Out] (log(e*x - 2)*log(1/2*e*x) + dilog(-1/2*e*x + 1))*b + a*log(x)
```

mupad [B] time = 0.16, size = 25, normalized size = 0.81

$$b\,\operatorname{Li}_2\left(\frac{e\,x}{2}\right) + a\,\ln(x) + b\,\ln(e\,x-2)\,\ln\left(\frac{e\,x}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(e*x - 2))/x,x)
```

```
[Out] b*dilog((e*x)/2) + a*log(x) + b*log(e*x - 2)*log((e*x)/2)
```

sympy [A] time = 4.89, size = 95, normalized size = 3.06

$$a\log(x) + b\left(\begin{cases} \log(2)\log(x) + 3i\pi\log(x) - \operatorname{Li}_2\left(\frac{ex}{2}\right) \\ -\log(2)\log\left(\frac{1}{x}\right) - 3i\pi\log\left(\frac{1}{x}\right) - \operatorname{Li}_2\left(\frac{ex}{2}\right) \\ -G_{2,2}^{2,0}\left(\begin{matrix} & 1,1 \\ 0,0 & \end{matrix}\middle| x\right)\log(2) - 3i\pi G_{2,2}^{2,0}\left(\begin{matrix} & 1,1 \\ 0,0 & \end{matrix}\middle| x\right) + G_{2,2}^{0,2}\left(\begin{matrix} 1,1 & \\ & 0,0 \end{matrix}\middle| x\right)\log(2) + 3i\pi G_{2,2}^{0,2}\left(\begin{matrix} 1,1 & \\ & 0,0 \end{matrix}\right. \end{cases}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(e*x-2))/x,x)
```

```
[Out] a*log(x) + b*Piecewise((log(2)*log(x) + 3*I*pi*log(x) - polylog(2, e*x/2),
Abs(x) < 1), (-log(2)*log(1/x) - 3*I*pi*log(1/x) - polylog(2, e*x/2), 1/Abs
(x) < 1), (-meijerg(((), (1, 1)), ((0, 0), ()), x)*log(2) - 3*I*pi*meijerg(
((), (1, 1)), ((0, 0), ()), x) + meijerg(((1, 1), ()), ((), (0, 0)), x)*log
(2) + 3*I*pi*meijerg(((1, 1), ()), ((), (0, 0)), x) - polylog(2, e*x/2), Tr
ue))
```

3.85 $\int x^2 \log^2 (c(a+bx)^n)\, dx$

Optimal. Leaf size=187

$$\frac{2a^3n\log(a+bx)\log(c(a+bx)^n)}{3b^3}-\frac{a^3n^2\log^2(a+bx)}{3b^3}-\frac{2a^2n(a+bx)\log(c(a+bx)^n)}{b^3}+\frac{2a^2n^2x}{b^2}+\frac{an(a+bx)^2\log}{b^3}$$

```
[Out] 2*a^2*n^2*x/b^2-1/2*a*n^2*(b*x+a)^2/b^3+2/27*n^2*(b*x+a)^3/b^3-1/3*a^3*n^2*
ln(b*x+a)^2/b^3-2*a^2*n*(b*x+a)*ln(c*(b*x+a)^n)/b^3+a*n*(b*x+a)^2*ln(c*(b*x
+a)^n)/b^3-2/9*n*(b*x+a)^3*ln(c*(b*x+a)^n)/b^3+2/3*a^3*n*ln(b*x+a)*ln(c*(b*
x+a)^n)/b^3+1/3*x^3*ln(c*(b*x+a)^n)^2
```

Rubi [A] time = 0.19, antiderivative size = 156, normalized size of antiderivative = 0.83, number of steps used = 7, number of rules used = 7, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.438, Rules used = {2398, 2411, 43, 2334, 12, 14, 2301}

$$-\frac{1}{9}n\left(\frac{18a^2(a+bx)}{b^3}-\frac{6a^3\log(a+bx)}{b^3}-\frac{9a(a+bx)^2}{b^3}+\frac{2(a+bx)^3}{b^3}\right)\log(c(a+bx)^n)+\frac{2a^2n^2x}{b^2}-\frac{a^3n^2\log^2(a+b}{3b^3}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*Log[c*(a + b*x)^n]^2,x]
```

```
[Out] (2*a^2*n^2*x)/b^2 - (a*n^2*(a + b*x)^2)/(2*b^3) + (2*n^2*(a + b*x)^3)/(27*b
^3) - (a^3*n^2*Log[a + b*x]^2)/(3*b^3) - (n*((18*a^2*(a + b*x))/b^3 - (9*a*
(a + b*x)^2)/b^3 + (2*(a + b*x)^3)/b^3 - (6*a^3*Log[a + b*x])/b^3)*Log[c*(a
 + b*x)^n])/9 + (x^3*Log[c*(a + b*x)^n]^2)/3
```

Rule 12

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

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 43

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

Rule 2301

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

Rule 2334

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*(x_)^(m_.)*((d_) + (e_.)*(x_)^(r_
.))^(q_.), x_Symbol] :> With[{u = IntHide[x^m*(d + e*x^r)^q, x]}, Simp[u*(a
 + b*Log[c*x^n]), x] - Dist[b*n, Int[SimplifyIntegrand[u/x, x], x], x]] /;
FreeQ[{a, b, c, d, e, n, r}, x] && IGtQ[q, 0] && IntegerQ[m] &&  !(EqQ[q, 1
] && EqQ[m, -1])
```

Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rubi steps

$$\int x^2 \log^2\left(c(a+bx)^n\right)dx = \frac{1}{3}x^3\log^2\left(c(a+bx)^n\right) - \frac{1}{3}(2bn)\int \frac{x^3\log\left(c(a+bx)^n\right)}{a+bx}dx$$

$$= \frac{1}{3}x^3\log^2\left(c(a+bx)^n\right) - \frac{1}{3}(2n)\,\mathrm{Subst}\left(\int \frac{\left(-\frac{a}{b}+\frac{x}{b}\right)^3\log\left(cx^n\right)}{x}dx, x, a+bx\right)$$

$$= -\frac{1}{9}n\left(\frac{18a^2(a+bx)}{b^3} - \frac{9a(a+bx)^2}{b^3} + \frac{2(a+bx)^3}{b^3} - \frac{6a^3\log(a+bx)}{b^3}\right)\log\left(c(a+bx)^n\right)$$

$$= -\frac{1}{9}n\left(\frac{18a^2(a+bx)}{b^3} - \frac{9a(a+bx)^2}{b^3} + \frac{2(a+bx)^3}{b^3} - \frac{6a^3\log(a+bx)}{b^3}\right)\log\left(c(a+bx)^n\right)$$

$$= -\frac{1}{9}n\left(\frac{18a^2(a+bx)}{b^3} - \frac{9a(a+bx)^2}{b^3} + \frac{2(a+bx)^3}{b^3} - \frac{6a^3\log(a+bx)}{b^3}\right)\log\left(c(a+bx)^n\right)$$

$$= \frac{2a^2n^2x}{b^2} - \frac{an^2(a+bx)^2}{2b^3} + \frac{2n^2(a+bx)^3}{27b^3} - \frac{1}{9}n\left(\frac{18a^2(a+bx)}{b^3} - \frac{9a(a+bx)^2}{b^3} + \frac{2(a+b}{b^3}\right.$$

$$= \frac{2a^2n^2x}{b^2} - \frac{an^2(a+bx)^2}{2b^3} + \frac{2n^2(a+bx)^3}{27b^3} - \frac{a^3n^2\log^2(a+bx)}{3b^3} - \frac{1}{9}n\left(\frac{18a^2(a+bx)}{b^3} - \right.$$

Mathematica [A] time = 0.05, size = 163, normalized size = 0.87

$$\frac{a^3\log^2\left(c(a+bx)^n\right)}{3b^3} - \frac{11a^3n\log\left(c(a+bx)^n\right)}{9b^3} - \frac{2a^2nx\log\left(c(a+bx)^n\right)}{3b^2} + \frac{11a^2n^2x}{9b^2} + \frac{1}{3}x^3\log^2\left(c(a+bx)^n\right) - \frac{2}{9}nx^3\log($$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*Log[c*(a + b*x)^n]^2,x]
```

```
[Out] (11*a^2*n^2*x)/(9*b^2) - (5*a*n^2*x^2)/(18*b) + (2*n^2*x^3)/27 - (11*a^3*n*
Log[c*(a + b*x)^n])/(9*b^3) - (2*a^2*n*x*Log[c*(a + b*x)^n])/(3*b^2) + (a*n
*x^2*Log[c*(a + b*x)^n])/(3*b) - (2*n*x^3*Log[c*(a + b*x)^n])/9 + (a^3*Log[
c*(a + b*x)^n]^2)/(3*b^3) + (x^3*Log[c*(a + b*x)^n]^2)/3
```

fricas [A] time = 0.46, size = 179, normalized size = 0.96

$$\frac{4\,b^3n^2x^3 + 18\,b^3x^3\log(c)^2 - 15\,ab^2n^2x^2 + 66\,a^2bn^2x + 18\left(b^3n^2x^3 + a^3n^2\right)\log\left(bx+a\right)^2 - 6\left(2\,b^3n^2x^3 - 3\,ab^2n^2x^2\right.}{54\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(c*(b*x+a)^n)^2,x, algorithm="fricas")
```

```
[Out] 1/54*(4*b^3*n^2*x^3 + 18*b^3*x^3*log(c)^2 - 15*a*b^2*n^2*x^2 + 66*a^2*b*n^2
*x + 18*(b^3*n^2*x^3 + a^3*n^2)*log(b*x + a)^2 - 6*(2*b^3*n^2*x^3 - 3*a*b^2
*n^2*x^2 + 6*a^2*b*n^2*x + 11*a^3*n^2 - 6*(b^3*n*x^3 + a^3*n)*log(c))*log(b
*x + a) - 6*(2*b^3*n*x^3 - 3*a*b^2*n*x^2 + 6*a^2*b*n*x)*log(c))/b^3
```

giac [A] time = 0.18, size = 342, normalized size = 1.83

$$\frac{(bx+a)^3n^2\log(bx+a)^2}{3\,b^3}-\frac{(bx+a)^2an^2\log(bx+a)^2}{b^3}+\frac{(bx+a)a^2n^2\log(bx+a)^2}{b^3}-\frac{2\,(bx+a)^3n^2\log(bx+a)}{9\,b^3}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(c*(b*x+a)^n)^2,x, algorithm="giac")
```

```
[Out] 1/3*(b*x + a)^3*n^2*log(b*x + a)^2/b^3 - (b*x + a)^2*a*n^2*log(b*x + a)^2/b
^3 + (b*x + a)*a^2*n^2*log(b*x + a)^2/b^3 - 2/9*(b*x + a)^3*n^2*log(b*x + a
)/b^3 + (b*x + a)^2*a*n^2*log(b*x + a)/b^3 - 2*(b*x + a)*a^2*n^2*log(b*x +
a)/b^3 + 2/3*(b*x + a)^3*n*log(b*x + a)*log(c)/b^3 - 2*(b*x + a)^2*a*n*log(
b*x + a)*log(c)/b^3 + 2*(b*x + a)*a^2*n*log(b*x + a)*log(c)/b^3 + 2/27*(b*x
 + a)^3*n^2/b^3 - 1/2*(b*x + a)^2*a*n^2/b^3 + 2*(b*x + a)*a^2*n^2/b^3 - 2/9
*(b*x + a)^3*n*log(c)/b^3 + (b*x + a)^2*a*n*log(c)/b^3 - 2*(b*x + a)*a^2*n*
log(c)/b^3 + 1/3*(b*x + a)^3*log(c)^2/b^3 - (b*x + a)^2*a*log(c)^2/b^3 + (b
*x + a)*a^2*log(c)^2/b^3
```

maple [C] time = 0.46, size = 1300, normalized size = 6.95

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*ln(c*(b*x+a)^n)^2,x)
```

```
[Out] -5/18/b*a*n^2*x^2-1/12*Pi^2*x^3*csgn(I*(b*x+a)^n)^2*csgn(I*c*(b*x+a)^n)^4+1
/6*Pi^2*x^3*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)^5+1/6*Pi^2*x^3*csgn(I*c*(
b*x+a)^n)^5*csgn(I*c)-1/12*Pi^2*x^3*csgn(I*c*(b*x+a)^n)^4*csgn(I*c)^2-11/9*
a^3*n^2/b^3*ln(b*x+a)+2/27*n^2*x^3-1/12*Pi^2*x^3*csgn(I*c*(b*x+a)^n)^6-2/9*
n*ln(c)*x^3+1/9*(3*I*Pi*b^3*x^3*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)^2-3*I
*Pi*b^3*x^3*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)*csgn(I*c)-3*I*Pi*b^3*x^3*
csgn(I*c*(b*x+a)^n)^3+3*I*Pi*b^3*x^3*csgn(I*c*(b*x+a)^n)^2*csgn(I*c)+6*ln(c
)*b^3*x^3-2*b^3*n*x^3+3*a*b^2*n*x^2+6*a^3*n*ln(b*x+a)-6*b*a^2*n*x)/b^3*ln((
b*x+a)^n)+1/3*x^3*ln((b*x+a)^n)^2+1/3*ln(c)^2*x^3-1/6*I/b*Pi*a*n*x^2*csgn(I
*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)*csgn(I*c)-1/3*I/b^3*Pi*ln(b*x+a)*a^3*n*csgn
(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)*csgn(I*c)+1/3*I/b^2*Pi*a^2*n*x*csgn(I*(b*
x+a)^n)*csgn(I*c*(b*x+a)^n)*csgn(I*c)+11/9*a^2*n^2*x/b^2+1/3*I*ln(c)*Pi*x^3
*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)^2-1/6*I/b*Pi*a*n*x^2*csgn(I*c*(b*x+a
)^n)^3-1/3*I/b^3*Pi*ln(b*x+a)*a^3*n*csgn(I*c*(b*x+a)^n)^3+1/3*I/b^2*Pi*a^2*
n*x*csgn(I*c*(b*x+a)^n)^3-1/3*I*ln(c)*Pi*x^3*csgn(I*(b*x+a)^n)*csgn(I*c*(b*
x+a)^n)*csgn(I*c)+1/9*I*n*Pi*x^3*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)*csgn
(I*c)+1/6*I/b*Pi*a*n*x^2*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)^2+1/6*I/b*Pi
*a*n*x^2*csgn(I*c*(b*x+a)^n)^2*csgn(I*c)+1/3*I/b^3*Pi*ln(b*x+a)*a^3*n*csgn(
I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)^2-1/3*I/b^2*Pi*a^2*n*x*csgn(I*(b*x+a)^n)*c
sgn(I*c*(b*x+a)^n)^2+1/3*I/b^3*Pi*ln(b*x+a)*a^3*n*csgn(I*c*(b*x+a)^n)^2*csg
n(I*c)-1/3*I/b^2*Pi*a^2*n*x*csgn(I*c*(b*x+a)^n)^2*csgn(I*c)+1/6*Pi^2*x^3*cs
gn(I*(b*x+a)^n)^2*csgn(I*c*(b*x+a)^n)^3*csgn(I*c)-1/12*Pi^2*x^3*csgn(I*(b*x
+a)^n)^2*csgn(I*c*(b*x+a)^n)^2*csgn(I*c)^2-1/3*Pi^2*x^3*csgn(I*(b*x+a)^n)*c
sgn(I*c*(b*x+a)^n)^4*csgn(I*c)+1/6*Pi^2*x^3*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x
+a)^n)^3*csgn(I*c)^2+1/3/b*ln(c)*a*n*x^2+2/3/b^3*ln(c)*ln(b*x+a)*a^3*n-2/3/
b^2*ln(c)*a^2*n*x-1/3*I*ln(c)*Pi*x^3*csgn(I*c*(b*x+a)^n)^3+1/9*I*n*Pi*x^3*c
sgn(I*c*(b*x+a)^n)^3-1/9*I*n*Pi*x^3*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)^2
```

```
+1/3*I*ln(c)*Pi*x^3*csgn(I*c*(b*x+a)^n)^2*csgn(I*c)-1/9*I*n*Pi*x^3*csgn(I*c
*(b*x+a)^n)^2*csgn(I*c)-1/3*a^3*n^2*ln(b*x+a)^2/b^3
```

maxima [A] time = 0.60, size = 131, normalized size = 0.70

$$\frac{1}{3}x^3\log\left(\left(bx+a\right)^n c\right)^2+\frac{1}{9}bn\left(\frac{6a^3\log\left(bx+a\right)}{b^4}-\frac{2b^2x^3-3abx^2+6a^2x}{b^3}\right)\log\left(\left(bx+a\right)^n c\right)+\frac{\left(4b^3x^3-15ab^2x^2-1\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(c*(b*x+a)^n)^2,x, algorithm="maxima")
```

```
[Out] 1/3*x^3*log((b*x + a)^n*c)^2 + 1/9*b*n*(6*a^3*log(b*x + a)/b^4 - (2*b^2*x^3
 - 3*a*b*x^2 + 6*a^2*x)/b^3)*log((b*x + a)^n*c) + 1/54*(4*b^3*x^3 - 15*a*b^
2*x^2 - 18*a^3*log(b*x + a)^2 + 66*a^2*b*x - 66*a^3*log(b*x + a))*n^2/b^3
```

mupad [B] time = 0.24, size = 116, normalized size = 0.62

$$\frac{2n^2x^3}{27}+\ln\left(c\left(a+bx\right)^n\right)^2\left(\frac{x^3}{3}+\frac{a^3}{3b^3}\right)-\ln\left(c\left(a+bx\right)^n\right)\left(\frac{2nx^3}{9}-\frac{anx^2}{3b}+\frac{2a^2nx}{3b^2}\right)-\frac{11a^3n^2\ln\left(a+bx\right)}{9b^3}-\frac{5an^2}{18b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*log(c*(a + b*x)^n)^2,x)
```

```
[Out] (2*n^2*x^3)/27 + log(c*(a + b*x)^n)^2*(x^3/3 + a^3/(3*b^3)) - log(c*(a + b*
x)^n)*((2*n*x^3)/9 - (a*n*x^2)/(3*b) + (2*a^2*n*x)/(3*b^2)) - (11*a^3*n^2*l
og(a + b*x))/(9*b^3) - (5*a*n^2*x^2)/(18*b) + (11*a^2*n^2*x)/(9*b^2)
```

sympy [A] time = 3.91, size = 260, normalized size = 1.39

$$\begin{cases}\frac{a^3n^2\log\left(a+bx\right)^2}{3b^3}-\frac{11a^3n^2\log\left(a+bx\right)}{9b^3}+\frac{2a^3n\log\left(c\right)\log\left(a+bx\right)}{3b^3}-\frac{2a^2n^2x\log\left(a+bx\right)}{3b^2}+\frac{11a^2n^2x}{9b^2}-\frac{2a^2nx\log\left(c\right)}{3b^2}+\frac{an^2x^2\log\left(a+bx\right)}{3b}-\frac{5an^2}{18b} \\ \frac{x^3\log\left(a^nc\right)^2}{3}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*ln(c*(b*x+a)**n)**2,x)
```

```
[Out] Piecewise((a**3*n**2*log(a + b*x)**2/(3*b**3) - 11*a**3*n**2*log(a + b*x)/(
9*b**3) + 2*a**3*n*log(c)*log(a + b*x)/(3*b**3) - 2*a**2*n**2*x*log(a + b*x
)/(3*b**2) + 11*a**2*n**2*x/(9*b**2) - 2*a**2*n*x*log(c)/(3*b**2) + a*n**2*
x**2*log(a + b*x)/(3*b) - 5*a*n**2*x**2/(18*b) + a*n*x**2*log(c)/(3*b) + n*
*2*x**3*log(a + b*x)**2/3 - 2*n**2*x**3*log(a + b*x)/9 + 2*n**2*x**3/27 + 2
*n*x**3*log(c)*log(a + b*x)/3 - 2*n*x**3*log(c)/9 + x**3*log(c)**2/3, Ne(b,
 0)), (x**3*log(a**n*c)**2/3, True))
```

3.86 $\int \frac{\log^2(c(a+bx)^n)}{x^4} dx$

Optimal. Leaf size=177

$$\frac{2b^3n\log\left(1-\frac{a}{a+bx}\right)\log\left(c(a+bx)^n\right)}{3a^3}-\frac{2b^3n^2\text{Li}_2\left(\frac{a}{a+bx}\right)}{3a^3}-\frac{b^3n^2\log(x)}{a^3}+\frac{b^3n^2\log(a+bx)}{3a^3}+\frac{2b^2n(a+bx)\log\left(c(a-\right.}{3a^3x}$$

```
[Out] -1/3*b^2*n^2/a^2/x-b^3*n^2*ln(x)/a^3+1/3*b^3*n^2*ln(b*x+a)/a^3-1/3*b*n*ln(c
*(b*x+a)^n)/a/x^2+2/3*b^2*n*(b*x+a)*ln(c*(b*x+a)^n)/a^3/x-1/3*ln(c*(b*x+a)^
n)^2/x^3+2/3*b^3*n*ln(c*(b*x+a)^n)*ln(1-a/(b*x+a))/a^3-2/3*b^3*n^2*polylog(
2,a/(b*x+a))/a^3
```

Rubi [A] time = 0.31, antiderivative size = 193, normalized size of antiderivative = 1.09, number of steps used = 13, number of rules used = 11, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.688, Rules used = {2398, 2411, 2347, 2344, 2301, 2317, 2391, 2314, 31, 2319, 44}

$$\frac{2b^3n^2\text{PolyLog}\left(2,\frac{bx}{a}+1\right)}{3a^3}-\frac{b^3\log^2\left(c(a+bx)^n\right)}{3a^3}+\frac{2b^3n\log\left(-\frac{bx}{a}\right)\log\left(c(a+bx)^n\right)}{3a^3}+\frac{2b^2n(a+bx)\log\left(c(a+bx)\right.}{3a^3x}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c*(a + b*x)^n]^2/x^4,x]
```

```
[Out] -(b^2*n^2)/(3*a^2*x) - (b^3*n^2*Log[x])/a^3 + (b^3*n^2*Log[a + b*x])/(3*a^3
) - (b*n*Log[c*(a + b*x)^n])/(3*a*x^2) + (2*b^2*n*(a + b*x)*Log[c*(a + b*x)
^n])/(3*a^3*x) + (2*b^3*n*Log[-((b*x)/a)]*Log[c*(a + b*x)^n])/(3*a^3) - (b^
3*Log[c*(a + b*x)^n]^2)/(3*a^3) - Log[c*(a + b*x)^n]^2/(3*x^3) + (2*b^3*n^2
*PolyLog[2, 1 + (b*x)/a])/(3*a^3)
```

Rule 31

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

Rule 44

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

Rule 2301

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

Rule 2314

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_), x
_Symbol] :> Simp[(x*(d + e*x^r)^(q + 1)*(a + b*Log[c*x^n]))/d, x] - Dist[(b
*n)/d, Int[(d + e*x^r)^(q + 1), x], x] /; FreeQ[{a, b, c, d, e, n, q, r}, x
] && EqQ[r*(q + 1) + 1, 0]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
```

```
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2319

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/(e*(q + 1)), x]
- Dist[(b*n*p)/(e*(q + 1)), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2347

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/x
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2391

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

Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rubi steps

$$\int \frac{\log^2(c(a+bx)^n)}{x^4}\,dx = -\frac{\log^2(c(a+bx)^n)}{3x^3} + \frac{1}{3}(2bn)\int \frac{\log(c(a+bx)^n)}{x^3(a+bx)}\,dx$$
$$= -\frac{\log^2(c(a+bx)^n)}{3x^3} + \frac{1}{3}(2n)\,\text{Subst}\left(\int \frac{\log(cx^n)}{x\left(-\frac{a}{b}+\frac{x}{b}\right)^3}\,dx, x, a+bx\right)$$
$$= -\frac{\log^2(c(a+bx)^n)}{3x^3} + \frac{(2n)\,\text{Subst}\left(\int \frac{\log(cx^n)}{\left(-\frac{a}{b}+\frac{x}{b}\right)^3}\,dx, x, a+bx\right)}{3a} - \frac{(2bn)\,\text{Subst}\left(\int \frac{\log(cx^n)}{x\left(-\frac{a}{b}+\frac{x}{b}\right)^2}\right.}{3a}$$
$$= -\frac{bn\log(c(a+bx)^n)}{3ax^2} - \frac{\log^2(c(a+bx)^n)}{3x^3} - \frac{(2bn)\,\text{Subst}\left(\int \frac{\log(cx^n)}{\left(-\frac{a}{b}+\frac{x}{b}\right)^2}\,dx, x, a+bx\right)}{3a^2} + \cdots$$
$$= -\frac{bn\log(c(a+bx)^n)}{3ax^2} + \frac{2b^2n(a+bx)\log(c(a+bx)^n)}{3a^3x} - \frac{\log^2(c(a+bx)^n)}{3x^3} + \frac{(2b^2n)\,\text{S}\cdots}{}$$
$$= -\frac{b^2n^2}{3a^2x} - \frac{b^3n^2\log(x)}{a^3} + \frac{b^3n^2\log(a+bx)}{3a^3} - \frac{bn\log(c(a+bx)^n)}{3ax^2} + \frac{2b^2n(a+bx)\log(\cdots}{3a^3x}$$
$$= -\frac{b^2n^2}{3a^2x} - \frac{b^3n^2\log(x)}{a^3} + \frac{b^3n^2\log(a+bx)}{3a^3} - \frac{bn\log(c(a+bx)^n)}{3ax^2} + \frac{2b^2n(a+bx)\log(\cdots}{3a^3x}$$

Mathematica [A] time = 0.06, size = 186, normalized size = 1.05

$$-\frac{b^3\log^2(c(a+bx)^n)}{3a^3} + \frac{2b^3n\log\left(-\frac{bx}{a}\right)\log(c(a+bx)^n)}{3a^3} + \frac{2b^3n^2\text{Li}_2\left(\frac{a+bx}{a}\right)}{3a^3} - \frac{b^3n^2\log(x)}{a^3} + \frac{b^3n^2\log(a+bx)}{a^3} + \frac{2b^2\cdots}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(a + b*x)^n]^2/x^4,x]
```

```
[Out] -1/3*(b^2*n^2)/(a^2*x) - (b^3*n^2*Log[x])/a^3 + (b^3*n^2*Log[a + b*x])/a^3
- (b*n*Log[c*(a + b*x)^n])/(3*a*x^2) + (2*b^2*n*Log[c*(a + b*x)^n])/(3*a^2*
x) + (2*b^3*n*Log[-((b*x)/a)]*Log[c*(a + b*x)^n])/(3*a^3) - (b^3*Log[c*(a +
 b*x)^n]^2)/(3*a^3) - Log[c*(a + b*x)^n]^2/(3*x^3) + (2*b^3*n^2*PolyLog[2,
(a + b*x)/a])/(3*a^3)
```

fricas [F] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\log\left((bx+a)^n c\right)^2}{x^4}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integral(log((b*x + a)^n*c)^2/x^4, x)
```

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

$$\int \frac{\log\left((bx+a)^n c\right)^2}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(log((b*x + a)^n*c)^2/x^4, x)
```

maple [C] time = 0.40, size = 1102, normalized size = 6.23

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(c*(b*x+a)^n)^2/x^4,x)
```

```
[Out] -1/3/x^3*ln((b*x+a)^n)^2-1/12*(I*Pi*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)^2
-I*Pi*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)*csgn(I*c)-I*Pi*csgn(I*c*(b*x+a)
^n)^3+I*Pi*csgn(I*c*(b*x+a)^n)^2*csgn(I*c)+2*ln(c))^2/x^3-2/3/x^3*ln((b*x+a
)^n)*ln(c)-1/3*I/x^3*ln((b*x+a)^n)*Pi*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)
^2+1/3*I*b^2*n/a^2/x*Pi*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)^2-2/3*b^3*n^2
/a^3*dilog(1/a*(b*x+a))+1/3*b^3*n^2/a^3*ln(b*x+a)^2-1/3*I/x^3*ln((b*x+a)^n)
*Pi*csgn(I*c*(b*x+a)^n)^2*csgn(I*c)-1/3*I*b^3*n/a^3*ln(b*x+a)*Pi*csgn(I*c*(
b*x+a)^n)^2*csgn(I*c)+1/3*I*b^2*n/a^2/x*Pi*csgn(I*c*(b*x+a)^n)^2*csgn(I*c)-
1/6*I*b*n/a/x^2*Pi*csgn(I*c*(b*x+a)^n)^2*csgn(I*c)-1/3*I*b^3*n/a^3*ln(b*x+a
)*Pi*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)^2-1/6*I*b*n/a/x^2*Pi*csgn(I*(b*x
+a)^n)*csgn(I*c*(b*x+a)^n)^2-1/3*I*b^3*n/a^3*ln(x)*Pi*csgn(I*(b*x+a)^n)*csg
n(I*c*(b*x+a)^n)*csgn(I*c)+1/3*I*b^3*n/a^3*ln(b*x+a)*Pi*csgn(I*(b*x+a)^n)*c
sgn(I*c*(b*x+a)^n)*csgn(I*c)+1/3*I*b^3*n/a^3*ln(x)*Pi*csgn(I*(b*x+a)^n)*csg
n(I*c*(b*x+a)^n)^2+1/3*I*b^3*n/a^3*ln(x)*Pi*csgn(I*c*(b*x+a)^n)^2*csgn(I*c)
+2/3*b^2*n*ln((b*x+a)^n)/a^2/x-2/3*b^3*n*ln((b*x+a)^n)/a^3*ln(b*x+a)+1/3*I/
x^3*ln((b*x+a)^n)*Pi*csgn(I*c*(b*x+a)^n)^3-1/3*b*n*ln((b*x+a)^n)/a/x^2+2/3*
b^3*n*ln((b*x+a)^n)/a^3*ln(x)+1/6*I*b*n/a/x^2*Pi*csgn(I*(b*x+a)^n)*csgn(I*c
*(b*x+a)^n)*csgn(I*c)-1/3*I*b^2*n/a^2/x*Pi*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+
a)^n)*csgn(I*c)-1/3*b^2*n^2/a^2/x-1/3*I*b^2*n/a^2/x*Pi*csgn(I*c*(b*x+a)^n)^
3-1/3*I*b^3*n/a^3*ln(x)*Pi*csgn(I*c*(b*x+a)^n)^3+1/3*I/x^3*ln((b*x+a)^n)*Pi
*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)*csgn(I*c)+2/3*b^2*n/a^2/x*ln(c)+2/3*
b^3*n/a^3*ln(x)*ln(c)-2/3*b^3*n/a^3*ln(b*x+a)*ln(c)-1/3*b*n/a/x^2*ln(c)-2/3
*b^3*n^2/a^3*ln(x)*ln(1/a*(b*x+a))+1/3*I*b^3*n/a^3*ln(b*x+a)*Pi*csgn(I*c*(b
*x+a)^n)^3+1/6*I*b*n/a/x^2*Pi*csgn(I*c*(b*x+a)^n)^3-b^3*n^2*ln(x)/a^3+b^3*n
^2*ln(b*x+a)/a^3
```

maxima [A] time = 0.79, size = 150, normalized size = 0.85

$$-\frac{1}{3}\,b^2n^2\left(\frac{2\left(\log\left(\frac{bx}{a}+1\right)\log(x)+\mathrm{Li}_2\left(-\frac{bx}{a}\right)\right)b}{a^3}-\frac{3\,b\log\left(bx+a\right)}{a^3}-\frac{bx\log\left(bx+a\right)^2-3\,bx\log(x)-a}{a^3x}\right)-\frac{1}{3}\,bn\left(\frac{2\,b^2}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/3*b^2*n^2*(2*(log(b*x/a + 1)*log(x) + dilog(-b*x/a))*b/a^3 - 3*b*log(b*x
 + a)/a^3 - (b*x*log(b*x + a)^2 - 3*b*x*log(x) - a)/(a^3*x)) - 1/3*b*n*(2*b
^2*log(b*x + a)/a^3 - 2*b^2*log(x)/a^3 - (2*b*x - a)/(a^2*x^2))*log((b*x +
a)^n*c) - 1/3*log((b*x + a)^n*c)^2/x^3
```

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

$$\int \frac{\ln\left(c\,{\left(a+b\,x\right)}^n\right)^2}{x^4} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(c*(a + b*x)^n)^2/x^4,x)
```

```
[Out] int(log(c*(a + b*x)^n)^2/x^4, x)
```

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

$$\int \frac{\log\left(c\left(a+bx\right)^{n}\right)^{2}}{x^{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(c*(b*x+a)**n)**2/x**4,x)
```

```
[Out] Integral(log(c*(a + b*x)**n)**2/x**4, x)
```

3.87 $\int x^2 \log^3(c(a+bx)^n)\,dx$

Optimal. Leaf size=285

$$\frac{6a^2n^2(a+bx)\log(c(a+bx)^n)}{b^3}+\frac{a^2(a+bx)\log^3(c(a+bx)^n)}{b^3}-\frac{3a^2n(a+bx)\log^2(c(a+bx)^n)}{b^3}-\frac{6a^2n^3x}{b^2}+\frac{2n^2(a+b\ldots}{}$$

```
[Out] -6*a^2*n^3*x/b^2+3/4*a*n^3*(b*x+a)^2/b^3-2/27*n^3*(b*x+a)^3/b^3+6*a^2*n^2*(
b*x+a)*ln(c*(b*x+a)^n)/b^3-3/2*a*n^2*(b*x+a)^2*ln(c*(b*x+a)^n)/b^3+2/9*n^2*
(b*x+a)^3*ln(c*(b*x+a)^n)/b^3-3*a^2*n*(b*x+a)*ln(c*(b*x+a)^n)^2/b^3+3/2*a*n
*(b*x+a)^2*ln(c*(b*x+a)^n)^2/b^3-1/3*n*(b*x+a)^3*ln(c*(b*x+a)^n)^2/b^3+a^2*
(b*x+a)*ln(c*(b*x+a)^n)^3/b^3-a*(b*x+a)^2*ln(c*(b*x+a)^n)^3/b^3+1/3*(b*x+a)
^3*ln(c*(b*x+a)^n)^3/b^3
```

Rubi [A] time = 0.22, antiderivative size = 285, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 7, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.438, Rules used = {2401, 2389, 2296, 2295, 2390, 2305, 2304}

$$\frac{6a^2n^2(a+bx)\log(c(a+bx)^n)}{b^3}-\frac{3a^2n(a+bx)\log^2(c(a+bx)^n)}{b^3}+\frac{a^2(a+bx)\log^3(c(a+bx)^n)}{b^3}-\frac{6a^2n^3x}{b^2}+\frac{2n^2(a+b\ldots}{}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*Log[c*(a + b*x)^n]^3,x]
```

```
[Out] (-6*a^2*n^3*x)/b^2 + (3*a*n^3*(a + b*x)^2)/(4*b^3) - (2*n^3*(a + b*x)^3)/(2
7*b^3) + (6*a^2*n^2*(a + b*x)*Log[c*(a + b*x)^n])/b^3 - (3*a*n^2*(a + b*x)^
2*Log[c*(a + b*x)^n])/(2*b^3) + (2*n^2*(a + b*x)^3*Log[c*(a + b*x)^n])/(9*b
^3) - (3*a^2*n*(a + b*x)*Log[c*(a + b*x)^n]^2)/b^3 + (3*a*n*(a + b*x)^2*Log
[c*(a + b*x)^n]^2)/(2*b^3) - (n*(a + b*x)^3*Log[c*(a + b*x)^n]^2)/(3*b^3) +
 (a^2*(a + b*x)*Log[c*(a + b*x)^n]^3)/b^3 - (a*(a + b*x)^2*Log[c*(a + b*x)^
n]^3)/b^3 + ((a + b*x)^3*Log[c*(a + b*x)^n]^3)/(3*b^3)
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
```

```
, b, c, d, e, n, p}, x]
```

Rule 2390

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

Rule 2401

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

Rubi steps

$$\int x^2\log^3(c(a+bx)^n)\,dx = \int\left(\frac{a^2\log^3(c(a+bx)^n)}{b^2}-\frac{2a(a+bx)\log^3(c(a+bx)^n)}{b^2}+\frac{(a+bx)^2\log^3(c(a+bx)^n)}{b^2}\right.$$

$$=\frac{\int(a+bx)^2\log^3(c(a+bx)^n)\,dx}{b^2}-\frac{(2a)\int(a+bx)\log^3(c(a+bx)^n)\,dx}{b^2}+\frac{a^2\int\log^3}{}$$

$$=\frac{\mathrm{Subst}\left(\int x^2\log^3(cx^n)\,dx,x,a+bx\right)}{b^3}-\frac{(2a)\,\mathrm{Subst}\left(\int x\log^3(cx^n)\,dx,x,a+bx\right)}{b^3}+$$

$$=\frac{a^2(a+bx)\log^3(c(a+bx)^n)}{b^3}-\frac{a(a+bx)^2\log^3(c(a+bx)^n)}{b^3}+\frac{(a+bx)^3\log^3(c(a+}{3b^3}$$

$$=-\frac{3a^2n(a+bx)\log^2(c(a+bx)^n)}{b^3}+\frac{3an(a+bx)^2\log^2(c(a+bx)^n)}{2b^3}-\frac{n(a+bx)^3\log}{3}$$

$$=-\frac{6a^2n^3x}{b^2}+\frac{3an^3(a+bx)^2}{4b^3}-\frac{2n^3(a+bx)^3}{27b^3}+\frac{6a^2n^2(a+bx)\log(c(a+bx)^n)}{b^3}-3a$$

Mathematica [A] time = 0.10, size = 260, normalized size = 0.91

$$\frac{85a^3n^2\log(c(a+bx)^n)}{18b^3}+\frac{a^3\log^3(c(a+bx)^n)}{3b^3}-\frac{11a^3n\log^2(c(a+bx)^n)}{6b^3}+\frac{11a^2n^2x\log(c(a+bx)^n)}{3b^2}-\frac{a^2nx\log^2(}{b^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*Log[c*(a + b*x)^n]^3,x]
```

```
[Out] (-85*a^2*n^3*x)/(18*b^2) + (19*a*n^3*x^2)/(36*b) - (2*n^3*x^3)/27 + (85*a^3
*n^2*Log[c*(a + b*x)^n])/(18*b^3) + (11*a^2*n^2*x*Log[c*(a + b*x)^n])/(3*b^
2) - (5*a*n^2*x^2*Log[c*(a + b*x)^n])/(6*b) + (2*n^2*x^3*Log[c*(a + b*x)^n]
)/9 - (11*a^3*n*Log[c*(a + b*x)^n]^2)/(6*b^3) - (a^2*n*x*Log[c*(a + b*x)^n]
^2)/b^2 + (a*n*x^2*Log[c*(a + b*x)^n]^2)/(2*b) - (n*x^3*Log[c*(a + b*x)^n]^
2)/3 + (a^3*Log[c*(a + b*x)^n]^3)/(3*b^3) + (x^3*Log[c*(a + b*x)^n]^3)/3
```

fricas [A] time = 0.48, size = 341, normalized size = 1.20

$$-\frac{8\,b^3n^3x^3-36\,b^3x^3\log(c)^3-57\,ab^2n^3x^2+510\,a^2bn^3x-36\left(b^3n^3x^3+a^3n^3\right)\log(bx+a)^3+18\left(2\,b^3n^3x^3-3\,\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(c*(b*x+a)^n)^3,x, algorithm="fricas")
```

```
[Out] -1/108*(8*b^3*n^3*x^3 - 36*b^3*x^3*log(c)^3 - 57*a*b^2*n^3*x^2 + 510*a^2*b*
n^3*x - 36*(b^3*n^3*x^3 + a^3*n^3)*log(b*x + a)^3 + 18*(2*b^3*n^3*x^3 - 3*a
*b^2*n^3*x^2 + 6*a^2*b*n^3*x + 11*a^3*n^3 - 6*(b^3*n^2*x^3 + a^3*n^2)*log(c
))*log(b*x + a)^2 + 18*(2*b^3*n*x^3 - 3*a*b^2*n*x^2 + 6*a^2*b*n*x)*log(c)^2
 - 6*(4*b^3*n^3*x^3 - 15*a*b^2*n^3*x^2 + 66*a^2*b*n^3*x + 85*a^3*n^3 + 18*(
b^3*n*x^3 + a^3*n)*log(c)^2 - 6*(2*b^3*n^2*x^3 - 3*a*b^2*n^2*x^2 + 6*a^2*b*
n^2*x + 11*a^3*n^2)*log(c))*log(b*x + a) - 6*(4*b^3*n^2*x^3 - 15*a*b^2*n^2*
x^2 + 66*a^2*b*n^2*x)*log(c))/b^3
```

giac [B] time = 0.20, size = 626, normalized size = 2.20

$$\frac{(bx+a)^3n^3\log(bx+a)^3}{3\,b^3}-\frac{(bx+a)^2an^3\log(bx+a)^3}{b^3}+\frac{(bx+a)a^2n^3\log(bx+a)^3}{b^3}-\frac{(bx+a)^3n^3\log(bx+a)^2}{3\,b^3}+\frac{3\,(}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(c*(b*x+a)^n)^3,x, algorithm="giac")
```

```
[Out] 1/3*(b*x + a)^3*n^3*log(b*x + a)^3/b^3 - (b*x + a)^2*a*n^3*log(b*x + a)^3/b
^3 + (b*x + a)*a^2*n^3*log(b*x + a)^3/b^3 - 1/3*(b*x + a)^3*n^3*log(b*x + a
)^2/b^3 + 3/2*(b*x + a)^2*a*n^3*log(b*x + a)^2/b^3 - 3*(b*x + a)*a^2*n^3*lo
g(b*x + a)^2/b^3 + (b*x + a)^3*n^2*log(b*x + a)^2*log(c)/b^3 - 3*(b*x + a)^
2*a*n^2*log(b*x + a)^2*log(c)/b^3 + 3*(b*x + a)*a^2*n^2*log(b*x + a)^2*log(
c)/b^3 + 2/9*(b*x + a)^3*n^3*log(b*x + a)/b^3 - 3/2*(b*x + a)^2*a*n^3*log(b
*x + a)/b^3 + 6*(b*x + a)*a^2*n^3*log(b*x + a)/b^3 - 2/3*(b*x + a)^3*n^2*lo
g(b*x + a)*log(c)/b^3 + 3*(b*x + a)^2*a*n^2*log(b*x + a)*log(c)/b^3 - 6*(b*
x + a)*a^2*n^2*log(b*x + a)*log(c)/b^3 + (b*x + a)^3*n*log(b*x + a)*log(c)^
2/b^3 - 3*(b*x + a)^2*a*n*log(b*x + a)*log(c)^2/b^3 + 3*(b*x + a)*a^2*n*log
(b*x + a)*log(c)^2/b^3 - 2/27*(b*x + a)^3*n^3/b^3 + 3/4*(b*x + a)^2*a*n^3/b
^3 - 6*(b*x + a)*a^2*n^3/b^3 + 2/9*(b*x + a)^3*n^2*log(c)/b^3 - 3/2*(b*x +
a)^2*a*n^2*log(c)/b^3 + 6*(b*x + a)*a^2*n^2*log(c)/b^3 - 1/3*(b*x + a)^3*n*
log(c)^2/b^3 + 3/2*(b*x + a)^2*a*n*log(c)^2/b^3 - 3*(b*x + a)*a^2*n*log(c)^
2/b^3 + 1/3*(b*x + a)^3*log(c)^3/b^3 - (b*x + a)^2*a*log(c)^3/b^3 + (b*x +
a)*a^2*log(c)^3/b^3
```

maple [C] time = 0.83, size = 5345, normalized size = 18.75

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*ln(c*(b*x+a)^n)^3,x)
```

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

maxima [A] time = 0.62, size = 215, normalized size = 0.75

$$\frac{1}{3}\,x^3\log\left((bx+a)^n c\right)^3+\frac{1}{6}\,bn\left(\frac{6\,a^3\log(bx+a)}{b^4}-\frac{2\,b^2x^3-3\,abx^2+6\,a^2x}{b^3}\right)\log\left((bx+a)^n c\right)^2-\frac{1}{108}\,bn\left(\frac{\left(8\,b^3x^3-36\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(c*(b*x+a)^n)^3,x, algorithm="maxima")
```

```
[Out] 1/3*x^3*log((b*x + a)^n*c)^3 + 1/6*b*n*(6*a^3*log(b*x + a)/b^4 - (2*b^2*x^3
 - 3*a*b*x^2 + 6*a^2*x)/b^3)*log((b*x + a)^n*c)^2 - 1/108*b*n*((8*b^3*x^3 -
 36*a^3*log(b*x + a)^3 - 57*a*b^2*x^2 - 198*a^3*log(b*x + a)^2 + 510*a^2*b*
x - 510*a^3*log(b*x + a))*n^2/b^4 - 6*(4*b^3*x^3 - 15*a*b^2*x^2 - 18*a^3*lo
g(b*x + a)^2 + 66*a^2*b*x - 66*a^3*log(b*x + a))*n*log((b*x + a)^n*c)/b^4)
```

mupad [B] time = 0.26, size = 172, normalized size = 0.60

$$\ln\left(c\,(a+b\,x)^n\right)^3\,\left(\frac{x^3}{3}+\frac{a^3}{3\,b^3}\right)-\frac{2\,n^3\,x^3}{27}-\ln\left(c\,(a+b\,x)^n\right)^2\,\left(\frac{n\,x^3}{3}+\frac{11\,a^3\,n}{6\,b^3}-\frac{a\,n\,x^2}{2\,b}+\frac{a^2\,n\,x}{b^2}\right)+\frac{\ln\left(c\,(a+b\,x)^n\right)\,\left(2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*log(c*(a + b*x)^n)^3,x)
```

```
[Out] log(c*(a + b*x)^n)^3*(x^3/3 + a^3/(3*b^3)) - (2*n^3*x^3)/27 - log(c*(a + b*
x)^n)^2*((n*x^3)/3 + (11*a^3*n)/(6*b^3) - (a*n*x^2)/(2*b) + (a^2*n*x)/b^2)
+ (log(c*(a + b*x)^n)*((2*b*n^2*x^3)/3 - (5*a*n^2*x^2)/2 + (11*a^2*n^2*x)/b
))/(3*b) + (85*a^3*n^3*log(a + b*x))/(18*b^3) + (19*a*n^3*x^2)/(36*b) - (85
*a^2*n^3*x)/(18*b^2)
```

sympy [A] time = 7.34, size = 517, normalized size = 1.81

$$\begin{cases} \frac{a^3n^3\log(a+bx)^3}{3b^3} - \frac{11a^3n^3\log(a+bx)^2}{6b^3} + \frac{85a^3n^3\log(a+bx)}{18b^3} + \frac{a^3n^2\log(c)\log(a+bx)^2}{b^3} - \frac{11a^3n^2\log(c)\log(a+bx)}{3b^3} + \frac{a^3n\log(c)^2\log(a+b}{b^3} \\ \frac{x^3\log(a^nc)^3}{3} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*ln(c*(b*x+a)**n)**3,x)
```

```
[Out] Piecewise((a**3*n**3*log(a + b*x)**3/(3*b**3) - 11*a**3*n**3*log(a + b*x)**
2/(6*b**3) + 85*a**3*n**3*log(a + b*x)/(18*b**3) + a**3*n**2*log(c)*log(a +
 b*x)**2/b**3 - 11*a**3*n**2*log(c)*log(a + b*x)/(3*b**3) + a**3*n*log(c)**
2*log(a + b*x)/b**3 - a**2*n**3*x*log(a + b*x)**2/b**2 + 11*a**2*n**3*x*log
(a + b*x)/(3*b**2) - 85*a**2*n**3*x/(18*b**2) - 2*a**2*n**2*x*log(c)*log(a
+ b*x)/b**2 + 11*a**2*n**2*x*log(c)/(3*b**2) - a**2*n*x*log(c)**2/b**2 + a*
n**3*x**2*log(a + b*x)**2/(2*b) - 5*a*n**3*x**2*log(a + b*x)/(6*b) + 19*a*n
**3*x**2/(36*b) + a*n**2*x**2*log(c)*log(a + b*x)/b - 5*a*n**2*x**2*log(c)/
(6*b) + a*n*x**2*log(c)**2/(2*b) + n**3*x**3*log(a + b*x)**3/3 - n**3*x**3*
log(a + b*x)**2/3 + 2*n**3*x**3*log(a + b*x)/9 - 2*n**3*x**3/27 + n**2*x**3
*log(c)*log(a + b*x)**2 - 2*n**2*x**3*log(c)*log(a + b*x)/3 + 2*n**2*x**3*l
og(c)/9 + n*x**3*log(c)**2*log(a + b*x) - n*x**3*log(c)**2/3 + x**3*log(c)*
*3/3, Ne(b, 0)), (x**3*log(a**n*c)**3/3, True))
```

3.88 $\int \frac{(f+gx)^3}{a+b\log(c(d+ex)^n)}\,dx$

Optimal. Leaf size=299

$$\frac{3g^2e^{-\frac{3a}{bn}}(d+ex)^3(ef-dg)\left(c(d+ex)^n\right)^{-3/n}\operatorname{Ei}\left(\frac{3(a+b\log(c(d+ex)^n))}{bn}\right)}{be^4n}+\frac{3ge^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)^2\left(c(d+ex)^n\right)^{-2/n}\operatorname{Ei}\left(\frac{2(\cdots}{\cdots}\right.}{be^4n}$$

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

Rubi [A] time = 0.45, antiderivative size = 299, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {2399, 2389, 2300, 2178, 2390, 2310}

$$\frac{3g^2e^{-\frac{3a}{bn}}(d+ex)^3(ef-dg)\left(c(d+ex)^n\right)^{-3/n}\operatorname{Ei}\left(\frac{3(a+b\log(c(d+ex)^n))}{bn}\right)}{be^4n}+\frac{3ge^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)^2\left(c(d+ex)^n\right)^{-2/n}\operatorname{Ei}\left(\frac{2(\cdots}{\cdots}\right.}{be^4n}$$

Antiderivative was successfully verified.

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

```
[Out] ((e*f - d*g)^3*(d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(
b*e^4*E^(a/(b*n))*n*(c*(d + e*x)^n)^n^(-1)) + (3*g*(e*f - d*g)^2*(d + e*x)^
2*ExpIntegralEi[(2*(a + b*Log[c*(d + e*x)^n]))/(b*n)])/(b*e^4*E^((2*a)/(b*n
))*n*(c*(d + e*x)^n)^(2/n)) + (3*g^2*(e*f - d*g)*(d + e*x)^3*ExpIntegralEi[
(3*(a + b*Log[c*(d + e*x)^n]))/(b*n)])/(b*e^4*E^((3*a)/(b*n))*n*(c*(d + e*x
)^n)^(3/n)) + (g^3*(d + e*x)^4*ExpIntegralEi[(4*(a + b*Log[c*(d + e*x)^n]))
/(b*n)])/(b*e^4*E^((4*a)/(b*n))*n*(c*(d + e*x)^n)^(4/n))
```

Rule 2178

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - (c*f)/d))*ExpIntegralEi[(f*g*(c + d*x)*Log[F])/d])/d, x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2390

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

Rule 2399

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

Rubi steps

$$\int \frac{(f+gx)^3}{a+b\log\left(c(d+ex)^n\right)}\,dx = \int \left(\frac{(ef-dg)^3}{e^3\left(a+b\log\left(c(d+ex)^n\right)\right)} + \frac{3g(ef-dg)^2(d+ex)}{e^3\left(a+b\log\left(c(d+ex)^n\right)\right)} + \frac{3g^2(ef-dg)(d}{e^3\left(a+b\log(c(d\right.}\right.$$

$$= \frac{g^3\int \frac{(d+ex)^3}{a+b\log(c(d+ex)^n)}\,dx}{e^3} + \frac{\left(3g^2(ef-dg)\right)\int \frac{(d+ex)^2}{a+b\log(c(d+ex)^n)}\,dx}{e^3} + \frac{\left(3g(ef-dg)^2\right)\int}{e}$$

$$= \frac{g^3\,\text{Subst}\left(\int \frac{x^3}{a+b\log(cx^n)}\,dx, x, d+ex\right)}{e^4} + \frac{\left(3g^2(ef-dg)\right)\text{Subst}\left(\int \frac{x^2}{a+b\log(cx^n)}\,dx, x\right.}{e^4}$$

$$= \frac{\left(g^3(d+ex)^4\left(c(d+ex)^n\right)^{-4/n}\right)\text{Subst}\left(\int \frac{e^{\frac{4x}{n}}}{a+bx}\,dx, x, \log\left(c(d+ex)^n\right)\right)}{e^4 n} + \frac{\left(3g^2(ef-\right.}{}$$

$$= \frac{e^{-\frac{a}{bn}}(ef-dg)^3(d+ex)\left(c(d+ex)^n\right)^{-1/n}\,\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{be^4 n} + \frac{3e^{-\frac{2a}{bn}}g(ef-dg)^2(d}{}$$

Mathematica [A] time = 1.04, size = 266, normalized size = 0.89

$$\frac{e^{-\frac{4a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-4/n}\left(e^{\frac{3a}{bn}}(ef-dg)^3\left(c(d+ex)^n\right)^{3/n}\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)+g(d+ex)\left(3e^{\frac{2a}{bn}}(ef-dg)^2\left(c(d\right.\right.\right.}{}$$

Antiderivative was successfully verified.

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

```
[Out] ((d + e*x)*(E^((3*a)/(b*n))*(e*f - d*g)^3*(c*(d + e*x)^n)^(3/n)*ExpIntegral
Ei[(a + b*Log[c*(d + e*x)^n])/(b*n)] + g*(d + e*x)*(3*E^((2*a)/(b*n))*(e*f
- d*g)^2*(c*(d + e*x)^n)^(2/n)*ExpIntegralEi[(2*(a + b*Log[c*(d + e*x)^n]))
/(b*n)] - g*(d + e*x)*(-3*E^(a/(b*n))*(e*f - d*g)*(c*(d + e*x)^n)^n^(-1)*Ex
pIntegralEi[(3*(a + b*Log[c*(d + e*x)^n]))/(b*n)] - g*(d + e*x)*ExpIntegral
Ei[(4*(a + b*Log[c*(d + e*x)^n]))/(b*n)]))))/(b*e^4*E^((4*a)/(b*n))*n*(c*(d
 + e*x)^n)^(4/n))
```

fricas [A] time = 0.49, size = 305, normalized size = 1.02

$$\frac{\left(g^3\,\text{log\_integral}\left(\left(e^4x^4+4de^3x^3+6d^2e^2x^2+4d^3ex+d^4\right)e^{\left(\frac{4(b\log(c)+a)}{bn}\right)}\right)+3\left(efg^2-dg^3\right)e^{\left(\frac{b\log(c)+a}{bn}\right)}\text{log\_integ}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

giac [A] time = 0.38, size = 582, normalized size = 1.95

$$-\frac{d^3g^3\mathrm{Ei}\left(\frac{\log(c)}{n}+\frac{a}{bn}+\log\left(xe+d\right)\right)e^{\left(-\frac{a}{bn}-4\right)}}{bc^{\left(\frac{1}{n}\right)}n}+\frac{3\,d^2fg^2\mathrm{Ei}\left(\frac{\log(c)}{n}+\frac{a}{bn}+\log\left(xe+d\right)\right)e^{\left(-\frac{a}{bn}-3\right)}}{bc^{\left(\frac{1}{n}\right)}n}+\frac{3\,d^2g^3\mathrm{Ei}\left(\frac{2\log(c)}{n}+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

maple [F] time = 0.59, size = 0, normalized size = 0.00

$$\int \frac{\left(gx+f\right)^{3}}{b\ln\left(c\left(ex+d\right)^{n}\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int((g*x+f)^3/(b*ln(c*(e*x+d)^n)+a),x)
```

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

$$\int \frac{\left(gx+f\right)^{3}}{b\log\left(\left(ex+d\right)^{n}c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((g*x + f)^3/(b*log((e*x + d)^n*c) + a), x)
```

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

$$\int \frac{\left(f+g\,x\right)^3}{a+b\,\ln\left(c\,\left(d+e\,x\right)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int((f + g*x)^3/(a + b*log(c*(d + e*x)^n)), x)
```

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

$$\int \frac{\left(f+gx\right)^3}{a+b\log\left(c\left(d+ex\right)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.89 $\int \frac{(f+gx)^2}{a+b\log(c(d+ex)^n)}\,dx$

Optimal. Leaf size=219

$$\frac{2ge^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)\left(c(d+ex)^n\right)^{-2/n}\operatorname{Ei}\left(\frac{2\left(a+b\log(c(d+ex)^n)\right)}{bn}\right)}{be^3n}+\frac{e^{-\frac{a}{bn}}(d+ex)(ef-dg)^2\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log}{}\right.}{be^3n}$$

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

Rubi [A] time = 0.29, antiderivative size = 219, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {2399, 2389, 2300, 2178, 2390, 2310}

$$\frac{2ge^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)\left(c(d+ex)^n\right)^{-2/n}\operatorname{Ei}\left(\frac{2\left(a+b\log(c(d+ex)^n)\right)}{bn}\right)}{be^3n}+\frac{e^{-\frac{a}{bn}}(d+ex)(ef-dg)^2\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log}{}\right.}{be^3n}$$

Antiderivative was successfully verified.

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

```
[Out] ((e*f - d*g)^2*(d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(
b*e^3*E^(a/(b*n))*n*(c*(d + e*x)^n)^n^(-1)) + (2*g*(e*f - d*g)*(d + e*x)^2*
ExpIntegralEi[(2*(a + b*Log[c*(d + e*x)^n]))/(b*n)])/(b*e^3*E^((2*a)/(b*n))
*n*(c*(d + e*x)^n)^(2/n)) + (g^2*(d + e*x)^3*ExpIntegralEi[(3*(a + b*Log[c*
(d + e*x)^n]))/(b*n)])/(b*e^3*E^((3*a)/(b*n))*n*(c*(d + e*x)^n)^(3/n))
```

Rule 2178

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - (c*f)/d))*ExpIntegralEi[(f*g*(c + d*x)*Log[F])/d])/d, x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2390

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

```
qQ[e*f - d*g, 0]
```

Rule 2399

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

Rubi steps

$$\int \frac{(f+gx)^2}{a+b\log\left(c(d+ex)^n\right)}\,dx = \int \left(\frac{(ef-dg)^2}{e^2\left(a+b\log\left(c(d+ex)^n\right)\right)} + \frac{2g(ef-dg)(d+ex)}{e^2\left(a+b\log\left(c(d+ex)^n\right)\right)} + \frac{g^2(d+ex)^{\cdots}}{e^2\left(a+b\log\left(c(d\cdots\right.\right.}\right.$$

$$= \frac{g^2\int \frac{(d+ex)^2}{a+b\log(c(d+ex)^n)}\,dx}{e^2} + \frac{(2g(ef-dg))\int \frac{d+ex}{a+b\log(c(d+ex)^n)}\,dx}{e^2} + \frac{(ef-dg)^2\int \frac{\cdots}{a+b\log\cdots}}{e^2}$$

$$= \frac{g^2\,\mathrm{Subst}\left(\int \frac{x^2}{a+b\log(cx^n)}\,dx, x, d+ex\right)}{e^3} + \frac{(2g(ef-dg))\,\mathrm{Subst}\left(\int \frac{x}{a+b\log(cx^n)}\,dx, x, \cdots\right.}{e^3}$$

$$= \frac{\left(g^2(d+ex)^3\left(c(d+ex)^n\right)^{-3/n}\right)\mathrm{Subst}\left(\int \frac{e^{\frac{3x}{n}}}{a+bx}\,dx, x, \log\left(c(d+ex)^n\right)\right)}{e^3 n} + \frac{(2g(ef-\cdots}{\cdots}$$

$$= \frac{e^{-\frac{a}{bn}}(ef-dg)^2(d+ex)\left(c(d+ex)^n\right)^{-1/n}\,\mathrm{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{be^3 n} + \frac{2e^{-\frac{2a}{bn}}g(ef-dg)(d\cdots}{\cdots}$$

Mathematica [A] time = 0.41, size = 197, normalized size = 0.90

$$\frac{e^{-\frac{3a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-3/n}\left(e^{\frac{2a}{bn}}(ef-dg)^2\left(c(d+ex)^n\right)^{2/n}\,\mathrm{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right) - g(d+ex)\left(-2e^{\frac{a}{bn}}(ef-dg)\left(c(d\cdots\right.\right.\right.}{be^3 n}$$

Antiderivative was successfully verified.

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

```
[Out] ((d + e*x)*(E^((2*a)/(b*n))*(e*f - d*g)^2*(c*(d + e*x)^n)^(2/n)*ExpIntegral
Ei[(a + b*Log[c*(d + e*x)^n])/(b*n)] - g*(d + e*x)*(-2*E^(a/(b*n))*(e*f - d
*g)*(c*(d + e*x)^n)^n^(-1)*ExpIntegralEi[(2*(a + b*Log[c*(d + e*x)^n]))/(b*
n)] - g*(d + e*x)*ExpIntegralEi[(3*(a + b*Log[c*(d + e*x)^n]))/(b*n)])))/(b
*e^3*E^((3*a)/(b*n))*n*(c*(d + e*x)^n)^(3/n))
```

fricas [A] time = 0.53, size = 192, normalized size = 0.88

$$\frac{\left(g^2\,\mathrm{log\_integral}\left(\left(e^3x^3+3\,de^2x^2+3\,d^2ex+d^3\right)e^{\left(\frac{3\left(b\log(c)+a\right)}{bn}\right)}\right) + 2\left(efg-dg^2\right)e^{\left(\frac{b\log(c)+a}{bn}\right)}\mathrm{log\_integral}\left(\left(e^2x^2+\cdots\right.\right.\right.}{be^{\cdots}}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

```
d^2*g^2)*e^(2*(b*log(c) + a)/(b*n))*log_integral((e*x + d)*e^((b*log(c) + a
)/(b*n))))*e^(-3*(b*log(c) + a)/(b*n))/(b*e^3*n)
```

giac [A] time = 0.26, size = 337, normalized size = 1.54

$$\frac{d^2g^2\text{Ei}\left(\frac{\log(c)}{n}+\frac{a}{bn}+\log(xe+d)\right)e^{\left(-\frac{a}{bn}-3\right)}}{bc^{\left(\frac{1}{n}\right)}n}-\frac{2\,dfg\text{Ei}\left(\frac{\log(c)}{n}+\frac{a}{bn}+\log(xe+d)\right)e^{\left(-\frac{a}{bn}-2\right)}}{bc^{\left(\frac{1}{n}\right)}n}-\frac{2\,dg^2\text{Ei}\left(\frac{2\log(c)}{n}+\frac{2a}{bn}+\right.}{bc}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

maple [F] time = 0.57, size = 0, normalized size = 0.00

$$\int \frac{(gx+f)^2}{b\ln\left(c\,(ex+d)^n\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\int \frac{(gx+f)^2}{b\log\left((ex+d)^n c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\int \frac{(f+g\,x)^2}{a+b\,\ln\left(c\,(d+e\,x)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\int \frac{(f+gx)^2}{a+b\log\left(c\,(d+ex)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.90 $\int \frac{f+gx}{a+b\log(c(d+ex)^n)}\,dx$

Optimal. Leaf size=139

$$\frac{e^{-\frac{a}{bn}}(d+ex)(ef-dg)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{be^2n}+\frac{ge^{-\frac{2a}{bn}}(d+ex)^2\left(c(d+ex)^n\right)^{-2/n}\operatorname{Ei}\left(\frac{2(a+b\log(c(d+ex)^n))}{bn}\right)}{be^2n}$$

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

Rubi [A] time = 0.16, antiderivative size = 139, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.273$, Rules used = {2399, 2389, 2300, 2178, 2390, 2310}

$$\frac{e^{-\frac{a}{bn}}(d+ex)(ef-dg)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{be^2n}+\frac{ge^{-\frac{2a}{bn}}(d+ex)^2\left(c(d+ex)^n\right)^{-2/n}\operatorname{Ei}\left(\frac{2(a+b\log(c(d+ex)^n))}{bn}\right)}{be^2n}$$

Antiderivative was successfully verified.

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

```
[Out] ((e*f - d*g)*(d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(b*
e^2*E^(a/(b*n))*n*(c*(d + e*x)^n)^n^(-1)) + (g*(d + e*x)^2*ExpIntegralEi[(2
*(a + b*Log[c*(d + e*x)^n]))/(b*n)])/(b*e^2*E^((2*a)/(b*n))*n*(c*(d + e*x)^
n)^(2/n))
```

Rule 2178

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - (c*f)/d))*ExpIntegralEi[(f*g*(c + d*x)*Log[F])/d])/d, x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2390

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

Rule 2399

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

Rubi steps

$$\int \frac{f+gx}{a+b\log(c(d+ex)^n)}\,dx = \int \left(\frac{ef-dg}{e\left(a+b\log(c(d+ex)^n)\right)}+\frac{g(d+ex)}{e\left(a+b\log(c(d+ex)^n)\right)}\right)dx$$
$$= \frac{g\int \frac{d+ex}{a+b\log(c(d+ex)^n)}\,dx}{e}+\frac{(ef-dg)\int \frac{1}{a+b\log(c(d+ex)^n)}\,dx}{e}$$
$$= \frac{g\,\text{Subst}\left(\int \frac{x}{a+b\log(cx^n)}\,dx,x,d+ex\right)}{e^2}+\frac{(ef-dg)\,\text{Subst}\left(\int \frac{1}{a+b\log(cx^n)}\,dx,x,d+e\right.}{e^2}$$
$$= \frac{\left(g(d+ex)^2\left(c(d+ex)^n\right)^{-2/n}\right)\text{Subst}\left(\int \frac{e^{\frac{2x}{n}}}{a+bx}\,dx,x,\log(c(d+ex)^n)\right)}{e^2n}+\frac{\left((ef-dg)\right.}{}$$
$$= \frac{e^{-\frac{a}{bn}}(ef-dg)(d+ex)\left(c(d+ex)^n\right)^{-1/n}\,\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{be^2n}+\frac{e^{-\frac{2a}{bn}}g(d+ex)^2\left(c(d\right.}{}$$

Mathematica [A] time = 0.17, size = 126, normalized size = 0.91

$$\frac{e^{-\frac{2a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-2/n}\left(e^{\frac{a}{bn}}(ef-dg)\left(c(d+ex)^n\right)^{\frac{1}{n}}\,\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)+g(d+ex)\text{Ei}\left(\frac{2\left(a+b\log(c(d+ex)^n)\right)}{bn}\right)\right)}{be^2n}$$

Antiderivative was successfully verified.

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

```
[Out] ((d + e*x)*(E^(a/(b*n))*(e*f - d*g)*(c*(d + e*x)^n)^n^(-1)*ExpIntegralEi[(a
 + b*Log[c*(d + e*x)^n])/(b*n)] + g*(d + e*x)*ExpIntegralEi[(2*(a + b*Log[c
*(d + e*x)^n]))/(b*n)]))/(b*e^2*E^((2*a)/(b*n))*n*(c*(d + e*x)^n)^(2/n))
```

fricas [A] time = 0.46, size = 105, normalized size = 0.76

$$\frac{\left(\left(ef-dg\right)e^{\left(\frac{b\log(c)+a}{bn}\right)}\,\text{log\_integral}\left((ex+d)e^{\left(\frac{b\log(c)+a}{bn}\right)}\right)+g\,\text{log\_integral}\left(\left(e^2x^2+2\,dex+d^2\right)e^{\left(\frac{2\left(b\log(c)+a\right)}{bn}\right)}\right)\right)e^{\left(-\right.}}{be^2n}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

giac [A] time = 0.21, size = 159, normalized size = 1.14

$$-\frac{dg\text{Ei}\left(\frac{\log(c)}{n}+\frac{a}{bn}+\log(xe+d)\right)e^{\left(-\frac{a}{bn}-2\right)}}{bc^{\left(\frac{1}{n}\right)}n}+\frac{f\text{Ei}\left(\frac{\log(c)}{n}+\frac{a}{bn}+\log(xe+d)\right)e^{\left(-\frac{a}{bn}-1\right)}}{bc^{\left(\frac{1}{n}\right)}n}+\frac{g\text{Ei}\left(\frac{2\log(c)}{n}+\frac{2a}{bn}+2\log\right.}{bc^{\frac{2}{n}}n}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

maple [F] time = 0.41, size = 0, normalized size = 0.00

$$\int \frac{gx + f}{b \ln\left(c (ex + d)^n\right) + a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int((g*x+f)/(b*ln(c*(e*x+d)^n)+a),x)
```

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

$$\int \frac{gx + f}{b \log\left((ex + d)^n c\right) + a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\int \frac{f + g\,x}{a + b\,\ln\left(c\,(d + e\,x)^n\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int((f + g*x)/(a + b*log(c*(d + e*x)^n)), x)
```

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

$$\int \frac{f + gx}{a + b \log\left(c (d + ex)^n\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.91 $\int \frac{1}{a+b\log(c(d+ex)^n)}\,dx$

Optimal. Leaf size=63

$$\frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{ben}$$

```
[Out] (e*x+d)*Ei((a+b*ln(c*(e*x+d)^n))/b/n)/b/e/exp(a/b/n)/n/((c*(e*x+d)^n)^(1/n)
)
```

Rubi [A] time = 0.05, antiderivative size = 63, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188, Rules used = {2389, 2300, 2178}

$$\frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{ben}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^(-1),x]
```

```
[Out] ((d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(b*e*E^(a/(b*n)
)*n*(c*(d + e*x)^n)^n^(-1))
```

Rule 2178

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - (c*f)/d))*ExpIntegralEi[(f*g*(c + d*x)*Log[F])/d])/d, x] /; F
reeQ[{F, c, d, e, f, g}, x] && !$UseGamma === True
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rubi steps

$$\begin{aligned}
\int \frac{1}{a+b\log\left(c(d+ex)^n\right)}\,dx &= \frac{\text{Subst}\left(\int \frac{1}{a+b\log(cx^n)}\,dx,x,d+ex\right)}{e}\\
&= \frac{\left((d+ex)\left(c(d+ex)^n\right)^{-1/n}\right)\text{Subst}\left(\int \frac{e^{\frac{x}{n}}}{a+bx}\,dx,x,\log\left(c(d+ex)^n\right)\right)}{en}\\
&= \frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{ben}
\end{aligned}$$

Mathematica [A] time = 0.02, size = 63, normalized size = 1.00

$$\frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{ben}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^(-1),x]
```

```
[Out] ((d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(b*e*E^(a/(b*n)
)*n*(c*(d + e*x)^n)^n^(-1))
```

fricas [A] time = 0.45, size = 46, normalized size = 0.73

$$\frac{e^{\left(-\frac{b\log(c)+a}{bn}\right)}\operatorname{log\_integral}\left((ex+d)e^{\left(\frac{b\log(c)+a}{bn}\right)}\right)}{ben}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
```

```
[Out] e^(-(b*log(c) + a)/(b*n))*log_integral((e*x + d)*e^((b*log(c) + a)/(b*n)))/
(b*e*n)
```

giac [A] time = 0.18, size = 49, normalized size = 0.78

$$\frac{\operatorname{Ei}\left(\frac{\log(c)}{n}+\frac{a}{bn}+\log(xe+d)\right)e^{\left(-\frac{a}{bn}-1\right)}}{bc^{\left(\frac{1}{n}\right)}n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
```

```
[Out] Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) - 1)/(b*c^(1/n)*n)
```

maple [C] time = 0.06, size = 311, normalized size = 4.94

$$-\frac{(ex+d)\,c^{-\frac{1}{n}}\left((ex+d)^{n}\right)^{-\frac{1}{n}}\operatorname{Ei}\left(1,-\ln(ex+d)-\frac{-i\pi b\operatorname{csgn}(ic)\operatorname{csgn}\left(i(ex+d)^{n}\right)\operatorname{csgn}\left(ic(ex+d)^{n}\right)+i\pi b\operatorname{csgn}(ic)\operatorname{csgn}\left(ic(ex+d)^{n}\right)^{2}+i\pi b\operatorname{csg}}{}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/e/b/n*(e*x+d)*((e*x+d)^n)^(-1/n)*c^(-1/n)*exp(-1/2*(-I*Pi*b*csgn(I*c)*cs
gn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*Pi*b*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+
I*Pi*b*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*Pi*b*csgn(I*c*(e*x+d)^n)^3
+2*a)/b/n)*Ei(1,-ln(e*x+d)-1/2*(-I*Pi*b*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*
c*(e*x+d)^n)+I*Pi*b*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*Pi*b*csgn(I*(e*x+d)^n
)*csgn(I*c*(e*x+d)^n)^2-I*Pi*b*csgn(I*c*(e*x+d)^n)^3+2*b*ln(c)+2*a+2*(-n*ln
(e*x+d)+ln((e*x+d)^n))*b)/b/n)
```

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

$$\int \frac{1}{b\log\left((ex+d)^{n}c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
```

```
[Out] integrate(1/(b*log((e*x + d)^n*c) + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{1}{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*log(c*(d + e*x)^n)),x)
[Out] int(1/(a + b*log(c*(d + e*x)^n)), x)
```

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

$$\int \frac{1}{a+b\log \left(c\left(d+ex\right)^{n}\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(e*x+d)**n)),x)
[Out] Integral(1/(a + b*log(c*(d + e*x)**n)), x)
```

3.92 $\int \frac{1}{(f+gx)\left(a+b\log(c(d+ex)^n)\right)}\,dx$

Optimal. Leaf size=27

$$\text{Int}\left(\frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)},x\right)$$

[Out] Unintegrable(1/(g*x+f)/(a+b*ln(c*(e*x+d)^n)),x)

Rubi [A] time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)}\,dx$$

Verification is Not applicable to the result.

[In] Int[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])),x]

[Out] Defer[Int][1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])), x]

Rubi steps

$$\int \frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)}\,dx=\int \frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)}\,dx$$

Mathematica [A] time = 0.20, size = 0, normalized size = 0.00

$$\int \frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)}\,dx$$

Verification is Not applicable to the result.

[In] Integrate[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])),x]

[Out] Integrate[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])), x]

fricas [A] time = 0.47, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{1}{agx+af+\left(bgx+bf\right)\log\left((ex+d)^n c\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] integral(1/(a*g*x + a*f + (b*g*x + b*f)*log((e*x + d)^n*c)), x)

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

$$\int \frac{1}{(gx+f)\left(b\log\left((ex+d)^n c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

maple [A] time = 0.73, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(gx+f\right)\left(b\ln\left(c\left(ex+d\right)^{n}\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int(1/(g*x+f)/(b*ln(c*(e*x+d)^n)+a),x)
```

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

$$\int \frac{1}{\left(gx+f\right)\left(b\log\left(\left(ex+d\right)^{n}c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{\left(f+g\,x\right)\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^{n}\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int(1/((f + g*x)*(a + b*log(c*(d + e*x)^n))), x)
```

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

$$\int \frac{1}{\left(a+b\log\left(c\left(d+ex\right)^{n}\right)\right)\left(f+gx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Integral(1/((a + b*log(c*(d + e*x)**n))*(f + g*x)), x)
```

3.93 $\int \frac{1}{(f+gx)^2\left(a+b\log(c(d+ex)^n)\right)}\,dx$

Optimal. Leaf size=27

$$\text{Int}\left(\frac{1}{(f+gx)^2\left(a+b\log\left(c(d+ex)^n\right)\right)},x\right)$$

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

Rubi [A] time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(f+gx)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((f + g*x)^2*(a + b*Log[c*(d + e*x)^n])),x]
[Out] Defer[Int][1/((f + g*x)^2*(a + b*Log[c*(d + e*x)^n])), x]
```

Rubi steps

$$\int \frac{1}{(f+gx)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}\,dx=\int \frac{1}{(f+gx)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}\,dx$$

Mathematica [A] time = 0.61, size = 0, normalized size = 0.00

$$\int \frac{1}{(f+gx)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((f + g*x)^2*(a + b*Log[c*(d + e*x)^n])),x]
[Out] Integrate[1/((f + g*x)^2*(a + b*Log[c*(d + e*x)^n])), x]
```

fricas [A] time = 0.47, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{1}{ag^2x^2+2\,afgx+af^2+\left(bg^2x^2+2\,bfgx+bf^2\right)\log\left((ex+d)^nc\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)^2/(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
[Out] integral(1/(a*g^2*x^2 + 2*a*f*g*x + a*f^2 + (b*g^2*x^2 + 2*b*f*g*x + b*f^2)
*log((e*x + d)^n*c)), x)
```

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

$$\int \frac{1}{(gx+f)^2\left(b\log\left((ex+d)^nc\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)^2/(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
[Out] integrate(1/((g*x + f)^2*(b*log((e*x + d)^n*c) + a)), x)
```

maple [A] time = 0.75, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(gx+f\right)^{2}\left(b\ln\left(c\left(ex+d\right)^{n}\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

$$\int \frac{1}{\left(gx+f\right)^{2}\left(b\log\left(\left(ex+d\right)^{n}c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)^2/(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
[Out] integrate(1/((g*x + f)^2*(b*log((e*x + d)^n*c) + a)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{\left(f+g\,x\right)^{2}\,\left(a+b\,\ln\left(c\,\left(d+e\,x\right)^{n}\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

$$\int \frac{1}{\left(a+b\log\left(c\left(d+ex\right)^{n}\right)\right)\left(f+gx\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)**2/(a+b*ln(c*(e*x+d)**n)),x)
[Out] Integral(1/((a + b*log(c*(d + e*x)**n))*(f + g*x)**2), x)
```

3.94 $\int \frac{(f+gx)^3}{(a+b\log(c(d+ex)^n))^2}\,dx$

Optimal. Leaf size=339

$$\frac{9g^2e^{-\frac{3a}{bn}}(d+ex)^3(ef-dg)\left(c(d+ex)^n\right)^{-3/n}\operatorname{Ei}\left(\frac{3(a+b\log(c(d+ex)^n))}{bn}\right)}{b^2e^4n^2}+\frac{6ge^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)^2\left(c(d+ex)^n\right)^{-2/n}\operatorname{Ei}\left(\frac{2(}{}\right.}{b^2e^4n^2}$$

```
[Out] (-d*g+e*f)^3*(e*x+d)*Ei((a+b*ln(c*(e*x+d)^n))/b/n)/b^2/e^4/exp(a/b/n)/n^2/(
(c*(e*x+d)^n)^(1/n))+6*g*(-d*g+e*f)^2*(e*x+d)^2*Ei(2*(a+b*ln(c*(e*x+d)^n))/
b/n)/b^2/e^4/exp(2*a/b/n)/n^2/((c*(e*x+d)^n)^(2/n))+9*g^2*(-d*g+e*f)*(e*x+d
)^3*Ei(3*(a+b*ln(c*(e*x+d)^n))/b/n)/b^2/e^4/exp(3*a/b/n)/n^2/((c*(e*x+d)^n)
^(3/n))+4*g^3*(e*x+d)^4*Ei(4*(a+b*ln(c*(e*x+d)^n))/b/n)/b^2/e^4/exp(4*a/b/n
)/n^2/((c*(e*x+d)^n)^(4/n))-(e*x+d)*(g*x+f)^3/b/e/n/(a+b*ln(c*(e*x+d)^n))
```

Rubi [A] time = 0.79, antiderivative size = 339, normalized size of antiderivative = 1.00, number of steps used = 26, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.292$, Rules used = {2400, 2399, 2389, 2300, 2178, 2390, 2310}

$$\frac{9g^2e^{-\frac{3a}{bn}}(d+ex)^3(ef-dg)\left(c(d+ex)^n\right)^{-3/n}\operatorname{Ei}\left(\frac{3(a+b\log(c(d+ex)^n))}{bn}\right)}{b^2e^4n^2}+\frac{6ge^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)^2\left(c(d+ex)^n\right)^{-2/n}\operatorname{Ei}\left(\frac{2(}{}\right.}{b^2e^4n^2}$$

Antiderivative was successfully verified.

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

```
[Out] ((e*f - d*g)^3*(d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(
b^2*e^4*E^(a/(b*n))*n^2*(c*(d + e*x)^n)^n^(-1)) + (6*g*(e*f - d*g)^2*(d + e
*x)^2*ExpIntegralEi[(2*(a + b*Log[c*(d + e*x)^n]))/(b*n)])/(b^2*e^4*E^((2*a
)/(b*n))*n^2*(c*(d + e*x)^n)^(2/n)) + (9*g^2*(e*f - d*g)*(d + e*x)^3*ExpInt
egralEi[(3*(a + b*Log[c*(d + e*x)^n]))/(b*n)])/(b^2*e^4*E^((3*a)/(b*n))*n^2
*(c*(d + e*x)^n)^(3/n)) + (4*g^3*(d + e*x)^4*ExpIntegralEi[(4*(a + b*Log[c*
(d + e*x)^n]))/(b*n)])/(b^2*e^4*E^((4*a)/(b*n))*n^2*(c*(d + e*x)^n)^(4/n))
- ((d + e*x)*(f + g*x)^3)/(b*e*n*(a + b*Log[c*(d + e*x)^n]))
```

Rule 2178

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - (c*f)/d))*ExpIntegralEi[(f*g*(c + d*x)*Log[F])/d])/d, x] /; F
reeQ[{F, c, d, e, f, g}, x] && !$UseGamma === True
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
```

```
, b, c, d, e, n, p}, x]
```

Rule 2390

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

Rule 2399

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

Rule 2400

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

Rubi steps

$$\int \frac{(f+gx)^3}{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}\,dx = -\frac{(d+ex)(f+gx)^3}{ben\left(a+b\log\left(c(d+ex)^n\right)\right)} + \frac{4\int \frac{(f+gx)^3}{a+b\log(c(d+ex)^n)}\,dx}{bn} - \frac{(3(ef-dg))\int \frac{(f}{a+b\log}}{ben}$$

$$= -\frac{(d+ex)(f+gx)^3}{ben\left(a+b\log\left(c(d+ex)^n\right)\right)} + \frac{4\int\left(\frac{(ef-dg)^3}{e^3\left(a+b\log(c(d+ex)^n)\right)} + \frac{3g(ef-dg)^2(d+ex)}{e^3\left(a+b\log(c(d+ex)^n)\right)} + \right.}{bn}$$

$$= -\frac{(d+ex)(f+gx)^3}{ben\left(a+b\log\left(c(d+ex)^n\right)\right)} + \frac{\left(4g^3\right)\int \frac{(d+ex)^3}{a+b\log(c(d+ex)^n)}\,dx}{be^3n} - \frac{\left(3g^2(ef-dg)\right)\int}{b}$$

$$= -\frac{(d+ex)(f+gx)^3}{ben\left(a+b\log\left(c(d+ex)^n\right)\right)} + \frac{\left(4g^3\right)\text{Subst}\left(\int \frac{x^3}{a+b\log(cx^n)}\,dx, x, d+ex\right)}{be^4n} - \frac{(3}{}$$

$$= -\frac{(d+ex)(f+gx)^3}{ben\left(a+b\log\left(c(d+ex)^n\right)\right)} + \frac{\left(4g^3(d+ex)^4\left(c(d+ex)^n\right)^{-4/n}\right)\text{Subst}\left(\int \frac{e^{\frac{4x}{n}}}{a+bx}\right.}{be^4n^2}$$

$$= \frac{e^{-\frac{a}{bn}}(ef-dg)^3(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{b^2e^4n^2} + \frac{6e^{-\frac{2a}{bn}}g(ef-dg}{}$$

Mathematica [B] time = 1.13, size = 1674, normalized size = 4.94

result too large to display

Antiderivative was successfully verified.

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

```
[Out] (-(b*d*e^3*E^((4*a)/(b*n))*f^3*n*(c*(d + e*x)^n)^(4/n)) - b*e^4*E^((4*a)/(b
*n))*f^3*n*x*(c*(d + e*x)^n)^(4/n) - 3*b*d*e^3*E^((4*a)/(b*n))*f^2*g*n*x*(c
*(d + e*x)^n)^(4/n) - 3*b*e^4*E^((4*a)/(b*n))*f^2*g*n*x^2*(c*(d + e*x)^n)^(
4/n) - 3*b*d*e^3*E^((4*a)/(b*n))*f*g^2*n*x^2*(c*(d + e*x)^n)^(4/n) - 3*b*e^
4*E^((4*a)/(b*n))*f*g^2*n*x^3*(c*(d + e*x)^n)^(4/n) - b*d*e^3*E^((4*a)/(b*n
))*g^3*n*x^3*(c*(d + e*x)^n)^(4/n) - b*e^4*E^((4*a)/(b*n))*g^3*n*x^4*(c*(d
+ e*x)^n)^(4/n) + a*e^3*E^((3*a)/(b*n))*f^3*(d + e*x)*(c*(d + e*x)^n)^(3/n)
*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)] - 3*a*d*e^2*E^((3*a)/(b*n)
)*f^2*g*(d + e*x)*(c*(d + e*x)^n)^(3/n)*ExpIntegralEi[(a + b*Log[c*(d + e*x
)^n])/(b*n)] + 3*a*d^2*e*E^((3*a)/(b*n))*f*g^2*(d + e*x)*(c*(d + e*x)^n)^(3
/n)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)] - a*d^3*E^((3*a)/(b*n))
*g^3*(d + e*x)*(c*(d + e*x)^n)^(3/n)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n
])/(b*n)] + 6*a*e^2*E^((2*a)/(b*n))*f^2*g*(d + e*x)^2*(c*(d + e*x)^n)^(2/n)
*ExpIntegralEi[(2*(a + b*Log[c*(d + e*x)^n]))/(b*n)] - 12*a*d*e*E^((2*a)/(b
*n))*f*g^2*(d + e*x)^2*(c*(d + e*x)^n)^(2/n)*ExpIntegralEi[(2*(a + b*Log[c*
(d + e*x)^n]))/(b*n)] + 6*a*d^2*E^((2*a)/(b*n))*g^3*(d + e*x)^2*(c*(d + e*x
)^n)^(2/n)*ExpIntegralEi[(2*(a + b*Log[c*(d + e*x)^n]))/(b*n)] + 9*a*e*E^(a
/(b*n))*f*g^2*(d + e*x)^3*(c*(d + e*x)^n)^n^(-1)*ExpIntegralEi[(3*(a + b*Lo
g[c*(d + e*x)^n]))/(b*n)] - 9*a*d*E^(a/(b*n))*g^3*(d + e*x)^3*(c*(d + e*x)^
n)^n^(-1)*ExpIntegralEi[(3*(a + b*Log[c*(d + e*x)^n]))/(b*n)] + 4*a*g^3*(d
+ e*x)^4*ExpIntegralEi[(4*(a + b*Log[c*(d + e*x)^n]))/(b*n)] + b*e^3*E^((3*
a)/(b*n))*f^3*(d + e*x)*(c*(d + e*x)^n)^(3/n)*ExpIntegralEi[(a + b*Log[c*(d
 + e*x)^n])/(b*n)]*Log[c*(d + e*x)^n] - 3*b*d*e^2*E^((3*a)/(b*n))*f^2*g*(d
+ e*x)*(c*(d + e*x)^n)^(3/n)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)
]*Log[c*(d + e*x)^n] + 3*b*d^2*e*E^((3*a)/(b*n))*f*g^2*(d + e*x)*(c*(d + e*
x)^n)^(3/n)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)]*Log[c*(d + e*x)
^n] - b*d^3*E^((3*a)/(b*n))*g^3*(d + e*x)*(c*(d + e*x)^n)^(3/n)*ExpIntegral
Ei[(a + b*Log[c*(d + e*x)^n])/(b*n)]*Log[c*(d + e*x)^n] + 6*b*e^2*E^((2*a)/
(b*n))*f^2*g*(d + e*x)^2*(c*(d + e*x)^n)^(2/n)*ExpIntegralEi[(2*(a + b*Log[
c*(d + e*x)^n]))/(b*n)]*Log[c*(d + e*x)^n] - 12*b*d*e*E^((2*a)/(b*n))*f*g^2
*(d + e*x)^2*(c*(d + e*x)^n)^(2/n)*ExpIntegralEi[(2*(a + b*Log[c*(d + e*x)^
n]))/(b*n)]*Log[c*(d + e*x)^n] + 6*b*d^2*E^((2*a)/(b*n))*g^3*(d + e*x)^2*(c
*(d + e*x)^n)^(2/n)*ExpIntegralEi[(2*(a + b*Log[c*(d + e*x)^n]))/(b*n)]*Log
[c*(d + e*x)^n] + 9*b*e*E^(a/(b*n))*f*g^2*(d + e*x)^3*(c*(d + e*x)^n)^n^(-1
)*ExpIntegralEi[(3*(a + b*Log[c*(d + e*x)^n]))/(b*n)]*Log[c*(d + e*x)^n] -
9*b*d*E^(a/(b*n))*g^3*(d + e*x)^3*(c*(d + e*x)^n)^n^(-1)*ExpIntegralEi[(3*(
a + b*Log[c*(d + e*x)^n]))/(b*n)]*Log[c*(d + e*x)^n] + 4*b*g^3*(d + e*x)^4*
ExpIntegralEi[(4*(a + b*Log[c*(d + e*x)^n]))/(b*n)]*Log[c*(d + e*x)^n])/(b^
2*e^4*E^((4*a)/(b*n))*n^2*(c*(d + e*x)^n)^(4/n)*(a + b*Log[c*(d + e*x)^n]))
```

fricas [A] time = 0.49, size = 681, normalized size = 2.01

$$\frac{\left(9\left(aefg^2 - adg^3 + \left(befg^2 - bdg^3\right)n\log\left(ex+d\right) + \left(befg^2 - bdg^3\right)\log(c)\right)e^{\left(\frac{b\log(c)+a}{bn}\right)}\operatorname{log\_integral}\left(\left(e^3x^3 + 3\,de^2x\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="fricas")
```

```
[Out] (9*(a*e*f*g^2 - a*d*g^3 + (b*e*f*g^2 - b*d*g^3)*n*log(e*x + d) + (b*e*f*g^2
 - b*d*g^3)*log(c))*e^((b*log(c) + a)/(b*n))*log_integral((e^3*x^3 + 3*d*e^
2*x^2 + 3*d^2*e*x + d^3)*e^(3*(b*log(c) + a)/(b*n))) + 6*(a*e^2*f^2*g - 2*a
*d*e*f*g^2 + a*d^2*g^3 + (b*e^2*f^2*g - 2*b*d*e*f*g^2 + b*d^2*g^3)*n*log(e*
x + d) + (b*e^2*f^2*g - 2*b*d*e*f*g^2 + b*d^2*g^3)*log(c))*e^(2*(b*log(c) +
 a)/(b*n))*log_integral((e^2*x^2 + 2*d*e*x + d^2)*e^(2*(b*log(c) + a)/(b*n)
)) + (a*e^3*f^3 - 3*a*d*e^2*f^2*g + 3*a*d^2*e*f*g^2 - a*d^3*g^3 + (b*e^3*f^
3 - 3*b*d*e^2*f^2*g + 3*b*d^2*e*f*g^2 - b*d^3*g^3)*n*log(e*x + d) + (b*e^3*
```

```
f^3 - 3*b*d*e^2*f^2*g + 3*b*d^2*e*f*g^2 - b*d^3*g^3)*log(c))*e^(3*(b*log(c)
 + a)/(b*n))*log_integral((e*x + d)*e^((b*log(c) + a)/(b*n))) - (b*e^4*g^3*
n*x^4 + b*d*e^3*f^3*n + (3*b*e^4*f*g^2 + b*d*e^3*g^3)*n*x^3 + 3*(b*e^4*f^2*
g + b*d*e^3*f*g^2)*n*x^2 + (b*e^4*f^3 + 3*b*d*e^3*f^2*g)*n*x)*e^(4*(b*log(c
) + a)/(b*n)) + 4*(b*g^3*n*log(e*x + d) + b*g^3*log(c) + a*g^3)*log_integra
l((e^4*x^4 + 4*d*e^3*x^3 + 6*d^2*e^2*x^2 + 4*d^3*e*x + d^4)*e^(4*(b*log(c)
+ a)/(b*n))))*e^(-4*(b*log(c) + a)/(b*n))/(b^3*e^4*n^3*log(e*x + d) + b^3*e
^4*n^2*log(c) + a*b^2*e^4*n^2)
```

giac [B] time = 0.82, size = 3475, normalized size = 10.25

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="giac")
```

```
[Out] -(x*e + d)^4*b*g^3*n*e^6/(b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) +
 a*b^2*n^2*e^10) + 3*(x*e + d)^3*b*d*g^3*n*e^6/(b^3*n^3*e^10*log(x*e + d) +
 b^3*n^2*e^10*log(c) + a*b^2*n^2*e^10) - 3*(x*e + d)^2*b*d^2*g^3*n*e^6/(b^3
*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b^2*n^2*e^10) + (x*e + d)*
b*d^3*g^3*n*e^6/(b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b^2*n^
2*e^10) - b*d^3*g^3*n*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 6
)*log(x*e + d)/((b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b^2*n^
2*e^10)*c^(1/n)) - 3*(x*e + d)^3*b*f*g^2*n*e^7/(b^3*n^3*e^10*log(x*e + d) +
 b^3*n^2*e^10*log(c) + a*b^2*n^2*e^10) + 6*(x*e + d)^2*b*d*f*g^2*n*e^7/(b^3
*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b^2*n^2*e^10) - 3*(x*e + d
)*b*d^2*f*g^2*n*e^7/(b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b^
2*n^2*e^10) + 3*b*d^2*f*g^2*n*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(
b*n) + 7)*log(x*e + d)/((b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) +
a*b^2*n^2*e^10)*c^(1/n)) + 6*b*d^2*g^3*n*Ei(2*log(c)/n + 2*a/(b*n) + 2*log(
x*e + d))*e^(-2*a/(b*n) + 6)*log(x*e + d)/((b^3*n^3*e^10*log(x*e + d) + b^3
*n^2*e^10*log(c) + a*b^2*n^2*e^10)*c^(2/n)) - b*d^3*g^3*Ei(log(c)/n + a/(b*
n) + log(x*e + d))*e^(-a/(b*n) + 6)*log(c)/((b^3*n^3*e^10*log(x*e + d) + b^
3*n^2*e^10*log(c) + a*b^2*n^2*e^10)*c^(1/n)) - 3*(x*e + d)^2*b*f^2*g*n*e^8/
(b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b^2*n^2*e^10) + 3*(x*e
 + d)*b*d*f^2*g*n*e^8/(b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*
b^2*n^2*e^10) - a*d^3*g^3*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n)
 + 6)/((b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b^2*n^2*e^10)*c
^(1/n)) - 3*b*d*f^2*g*n*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) +
 8)*log(x*e + d)/((b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b^2*
n^2*e^10)*c^(1/n)) - 12*b*d*f*g^2*n*Ei(2*log(c)/n + 2*a/(b*n) + 2*log(x*e +
 d))*e^(-2*a/(b*n) + 7)*log(x*e + d)/((b^3*n^3*e^10*log(x*e + d) + b^3*n^2*
e^10*log(c) + a*b^2*n^2*e^10)*c^(2/n)) - 9*b*d*g^3*n*Ei(3*log(c)/n + 3*a/(b
*n) + 3*log(x*e + d))*e^(-3*a/(b*n) + 6)*log(x*e + d)/((b^3*n^3*e^10*log(x*
e + d) + b^3*n^2*e^10*log(c) + a*b^2*n^2*e^10)*c^(3/n)) + 3*b*d^2*f*g^2*Ei(
log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 7)*log(c)/((b^3*n^3*e^10*l
og(x*e + d) + b^3*n^2*e^10*log(c) + a*b^2*n^2*e^10)*c^(1/n)) + 6*b*d^2*g^3*
Ei(2*log(c)/n + 2*a/(b*n) + 2*log(x*e + d))*e^(-2*a/(b*n) + 6)*log(c)/((b^3
*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b^2*n^2*e^10)*c^(2/n)) - (
x*e + d)*b*f^3*n*e^9/(b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b
^2*n^2*e^10) + 3*a*d^2*f*g^2*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b
*n) + 7)/((b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b^2*n^2*e^10
)*c^(1/n)) + 6*a*d^2*g^3*Ei(2*log(c)/n + 2*a/(b*n) + 2*log(x*e + d))*e^(-2*
a/(b*n) + 6)/((b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b^2*n^2*
e^10)*c^(2/n)) + b*f^3*n*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n)
+ 9)*log(x*e + d)/((b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b^2
*n^2*e^10)*c^(1/n)) + 6*b*f^2*g*n*Ei(2*log(c)/n + 2*a/(b*n) + 2*log(x*e + d
))*e^(-2*a/(b*n) + 8)*log(x*e + d)/((b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^
10*log(c) + a*b^2*n^2*e^10)*c^(2/n)) + 9*b*f*g^2*n*Ei(3*log(c)/n + 3*a/(b*n
) + 3*log(x*e + d))*e^(-3*a/(b*n) + 7)*log(x*e + d)/((b^3*n^3*e^10*log(x*e
```

```
+ d) + b^3*n^2*e^10*log(c) + a*b^2*n^2*e^10)*c^(3/n)) + 4*b*g^3*n*Ei(4*log(
c)/n + 4*a/(b*n) + 4*log(x*e + d))*e^(-4*a/(b*n) + 6)*log(x*e + d)/((b^3*n^
3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b^2*n^2*e^10)*c^(4/n)) - 3*b*
d*f^2*g*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 8)*log(c)/((b^3
*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b^2*n^2*e^10)*c^(1/n)) - 1
2*b*d*f*g^2*Ei(2*log(c)/n + 2*a/(b*n) + 2*log(x*e + d))*e^(-2*a/(b*n) + 7)*
log(c)/((b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b^2*n^2*e^10)*
c^(2/n)) - 9*b*d*g^3*Ei(3*log(c)/n + 3*a/(b*n) + 3*log(x*e + d))*e^(-3*a/(b
*n) + 6)*log(c)/((b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b^2*n
^2*e^10)*c^(3/n)) - 3*a*d*f^2*g*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a
/(b*n) + 8)/((b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b^2*n^2*e
^10)*c^(1/n)) - 12*a*d*f*g^2*Ei(2*log(c)/n + 2*a/(b*n) + 2*log(x*e + d))*e^
(-2*a/(b*n) + 7)/((b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b^2*
n^2*e^10)*c^(2/n)) - 9*a*d*g^3*Ei(3*log(c)/n + 3*a/(b*n) + 3*log(x*e + d))*
e^(-3*a/(b*n) + 6)/((b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b^
2*n^2*e^10)*c^(3/n)) + b*f^3*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b
*n) + 9)*log(c)/((b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b^2*n
^2*e^10)*c^(1/n)) + 6*b*f^2*g*Ei(2*log(c)/n + 2*a/(b*n) + 2*log(x*e + d))*e
^(-2*a/(b*n) + 8)*log(c)/((b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c)
+ a*b^2*n^2*e^10)*c^(2/n)) + 9*b*f*g^2*Ei(3*log(c)/n + 3*a/(b*n) + 3*log(x*
e + d))*e^(-3*a/(b*n) + 7)*log(c)/((b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^1
0*log(c) + a*b^2*n^2*e^10)*c^(3/n)) + 4*b*g^3*Ei(4*log(c)/n + 4*a/(b*n) + 4
*log(x*e + d))*e^(-4*a/(b*n) + 6)*log(c)/((b^3*n^3*e^10*log(x*e + d) + b^3*
n^2*e^10*log(c) + a*b^2*n^2*e^10)*c^(4/n)) + a*f^3*Ei(log(c)/n + a/(b*n) +
log(x*e + d))*e^(-a/(b*n) + 9)/((b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*l
og(c) + a*b^2*n^2*e^10)*c^(1/n)) + 6*a*f^2*g*Ei(2*log(c)/n + 2*a/(b*n) + 2*
log(x*e + d))*e^(-2*a/(b*n) + 8)/((b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10
*log(c) + a*b^2*n^2*e^10)*c^(2/n)) + 9*a*f*g^2*Ei(3*log(c)/n + 3*a/(b*n) +
3*log(x*e + d))*e^(-3*a/(b*n) + 7)/((b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^
10*log(c) + a*b^2*n^2*e^10)*c^(3/n)) + 4*a*g^3*Ei(4*log(c)/n + 4*a/(b*n) +
4*log(x*e + d))*e^(-4*a/(b*n) + 6)/((b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^
10*log(c) + a*b^2*n^2*e^10)*c^(4/n))
```

maple [F] time = 5.06, size = 0, normalized size = 0.00

$$\int \frac{\left(gx+f\right)^{3}}{\left(b\ln\left(c\left(ex+d\right)^{n}\right)+a\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int((g*x+f)^3/(b*ln(c*(e*x+d)^n)+a)^2,x)
```

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

$$-\frac{eg^3x^4+df^3+\left(3\,efg^2+dg^3\right)x^3+3\left(ef^2g+dfg^2\right)x^2+\left(ef^3+3\,df^2g\right)x}{b^2en\log\left(\left(ex+d\right)^n\right)+b^2en\log(c)+aben}+\int\frac{4\,eg^3x^3+ef^3+3\,df^2g+3\left(3\,efg^2\right.}{b^2en\log\left(\left(ex+d\right)^n\right)+b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="maxima")
```

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

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

$$\int \frac{\left(f+g\,x\right)^3}{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

$$\int \frac{\left(f+gx\right)^3}{\left(a+b\log\left(c\left(d+ex\right)^n\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**3/(a+b*ln(c*(e*x+d)**n))**2,x)
[Out] Integral((f + g*x)**3/(a + b*log(c*(d + e*x)**n))**2, x)
```

3.95 $\int \frac{(f+gx)^2}{\left(a+b\log(c(d+ex)^n)\right)^2}\,dx$

Optimal. Leaf size=259

$$\frac{4ge^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)\left(c(d+ex)^n\right)^{-2/n}\operatorname{Ei}\left(\frac{2\left(a+b\log(c(d+ex)^n)\right)}{bn}\right)}{b^2e^3n^2}+\frac{e^{-\frac{a}{bn}}(d+ex)(ef-dg)^2\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log}{}\right.}{b^2e^3n^2}$$

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

Rubi [A] time = 0.52, antiderivative size = 259, normalized size of antiderivative = 1.00, number of steps used = 20, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.292$, Rules used = {2400, 2399, 2389, 2300, 2178, 2390, 2310}

$$\frac{4ge^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)\left(c(d+ex)^n\right)^{-2/n}\operatorname{Ei}\left(\frac{2\left(a+b\log(c(d+ex)^n)\right)}{bn}\right)}{b^2e^3n^2}+\frac{e^{-\frac{a}{bn}}(d+ex)(ef-dg)^2\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log}{}\right.}{b^2e^3n^2}$$

Antiderivative was successfully verified.

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

```
[Out] ((e*f - d*g)^2*(d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(
b^2*e^3*E^(a/(b*n))*n^2*(c*(d + e*x)^n)^n^(-1)) + (4*g*(e*f - d*g)*(d + e*x
)^2*ExpIntegralEi[(2*(a + b*Log[c*(d + e*x)^n]))/(b*n)])/(b^2*e^3*E^((2*a)/
(b*n))*n^2*(c*(d + e*x)^n)^(2/n)) + (3*g^2*(d + e*x)^3*ExpIntegralEi[(3*(a
+ b*Log[c*(d + e*x)^n]))/(b*n)])/(b^2*e^3*E^((3*a)/(b*n))*n^2*(c*(d + e*x)^
n)^(3/n)) - ((d + e*x)*(f + g*x)^2)/(b*e*n*(a + b*Log[c*(d + e*x)^n]))
```

Rule 2178

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - (c*f)/d))*ExpIntegralEi[(f*g*(c + d*x)*Log[F])/d])/d, x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2390

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

Rule 2399

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

Rule 2400

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

Rubi steps

$$\int \frac{(f+gx)^2}{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}\,dx = -\frac{(d+ex)(f+gx)^2}{ben\left(a+b\log\left(c(d+ex)^n\right)\right)} + \frac{3\int \frac{(f+gx)^2}{a+b\log(c(d+ex)^n)}\,dx}{bn} - \frac{(2(ef-dg))\int \frac{f}{a+b\log}}{ben}$$

$$= -\frac{(d+ex)(f+gx)^2}{ben\left(a+b\log\left(c(d+ex)^n\right)\right)} + \frac{3\int\left(\frac{(ef-dg)^2}{e^2\left(a+b\log(c(d+ex)^n)\right)} + \frac{2g(ef-dg)(d+ex)}{e^2\left(a+b\log(c(d+ex)^n)\right)} + \right.}{bn}$$

$$= -\frac{(d+ex)(f+gx)^2}{ben\left(a+b\log\left(c(d+ex)^n\right)\right)} + \frac{\left(3g^2\right)\int \frac{(d+ex)^2}{a+b\log(c(d+ex)^n)}\,dx}{be^2n} - \frac{(2g(ef-dg))\int}{be}$$

$$= -\frac{(d+ex)(f+gx)^2}{ben\left(a+b\log\left(c(d+ex)^n\right)\right)} + \frac{\left(3g^2\right)\mathrm{Subst}\left(\int \frac{x^2}{a+b\log(cx^n)}\,dx, x, d+ex\right)}{be^3n} - \frac{(2}{}$$

$$= -\frac{(d+ex)(f+gx)^2}{ben\left(a+b\log\left(c(d+ex)^n\right)\right)} + \frac{\left(3g^2(d+ex)^3\left(c(d+ex)^n\right)^{-3/n}\right)\mathrm{Subst}\left(\int \frac{e^{\frac{3x}{n}}}{a+bx}\right.}{be^3n^2}$$

$$= \frac{e^{-\frac{a}{bn}}(ef-dg)^2(d+ex)\left(c(d+ex)^n\right)^{-1/n}\mathrm{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{b^2e^3n^2} + \frac{4e^{-\frac{2a}{bn}}g(ef-dg}{}$$

Mathematica [B] time = 0.62, size = 1015, normalized size = 3.92

$$\frac{e^{-\frac{3a}{bn}}\left(c(d+ex)^n\right)^{-3/n}\left(ae^2e^{\frac{2a}{bn}}f^2(d+ex)\mathrm{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)\left(c(d+ex)^n\right)^{2/n} + ad^2e^{\frac{2a}{bn}}g^2(d+ex)\mathrm{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)\right.}{}$$

Antiderivative was successfully verified.

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

```
[Out] (-(b*d*e^2*E^((3*a)/(b*n))*f^2*n*(c*(d + e*x)^n)^(3/n)) - b*e^3*E^((3*a)/(b
*n))*f^2*n*x*(c*(d + e*x)^n)^(3/n) - 2*b*d*e^2*E^((3*a)/(b*n))*f*g*n*x*(c*(
d + e*x)^n)^(3/n) - 2*b*e^3*E^((3*a)/(b*n))*f*g*n*x^2*(c*(d + e*x)^n)^(3/n)
 - b*d*e^2*E^((3*a)/(b*n))*g^2*n*x^2*(c*(d + e*x)^n)^(3/n) - b*e^3*E^((3*a)
/(b*n))*g^2*n*x^3*(c*(d + e*x)^n)^(3/n) + a*e^2*E^((2*a)/(b*n))*f^2*(d + e*
x)*(c*(d + e*x)^n)^(2/n)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)] -
2*a*d*e*E^((2*a)/(b*n))*f*g*(d + e*x)*(c*(d + e*x)^n)^(2/n)*ExpIntegralEi[(
a + b*Log[c*(d + e*x)^n])/(b*n)] + a*d^2*E^((2*a)/(b*n))*g^2*(d + e*x)*(c*(
d + e*x)^n)^(2/n)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)] + 4*a*e*E
^(a/(b*n))*f*g*(d + e*x)^2*(c*(d + e*x)^n)^n^(-1)*ExpIntegralEi[(2*(a + b*L
og[c*(d + e*x)^n]))/(b*n)] - 4*a*d*E^(a/(b*n))*g^2*(d + e*x)^2*(c*(d + e*x)
^n)^n^(-1)*ExpIntegralEi[(2*(a + b*Log[c*(d + e*x)^n]))/(b*n)] + 3*a*g^2*(d
 + e*x)^3*ExpIntegralEi[(3*(a + b*Log[c*(d + e*x)^n]))/(b*n)] + b*e^2*E^((2
*a)/(b*n))*f^2*(d + e*x)*(c*(d + e*x)^n)^(2/n)*ExpIntegralEi[(a + b*Log[c*(
d + e*x)^n])/(b*n)]*Log[c*(d + e*x)^n] - 2*b*d*e*E^((2*a)/(b*n))*f*g*(d + e
*x)*(c*(d + e*x)^n)^(2/n)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)]*L
og[c*(d + e*x)^n] + b*d^2*E^((2*a)/(b*n))*g^2*(d + e*x)*(c*(d + e*x)^n)^(2/
n)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)]*Log[c*(d + e*x)^n] + 4*b
*e*E^(a/(b*n))*f*g*(d + e*x)^2*(c*(d + e*x)^n)^n^(-1)*ExpIntegralEi[(2*(a +
 b*Log[c*(d + e*x)^n]))/(b*n)]*Log[c*(d + e*x)^n] - 4*b*d*E^(a/(b*n))*g^2*(
d + e*x)^2*(c*(d + e*x)^n)^n^(-1)*ExpIntegralEi[(2*(a + b*Log[c*(d + e*x)^n
]))/(b*n)]*Log[c*(d + e*x)^n] + 3*b*g^2*(d + e*x)^3*ExpIntegralEi[(3*(a + b
*Log[c*(d + e*x)^n]))/(b*n)]*Log[c*(d + e*x)^n])/(b^2*e^3*E^((3*a)/(b*n))*n
^2*(c*(d + e*x)^n)^(3/n)*(a + b*Log[c*(d + e*x)^n]))
```

fricas [A] time = 0.45, size = 433, normalized size = 1.67

$$\frac{\left(4\left(aefg - adg^2 + \left(befg - bdg^2\right)n\log\left(ex+d\right) + \left(befg - bdg^2\right)\log(c)\right)e^{\left(\frac{b\log(c)+a}{bn}\right)}\operatorname{log\_integral}\left(\left(e^2x^2 + 2\,dex + d\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

giac [B] time = 0.50, size = 2041, normalized size = 7.88

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

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

```
*g*n*e^4/(b^3*n^3*e^6*log(x*e + d) + b^3*n^2*e^6*log(c) + a*b^2*n^2*e^6) +
2*(x*e + d)*b*d*f*g*n*e^4/(b^3*n^3*e^6*log(x*e + d) + b^3*n^2*e^6*log(c) +
a*b^2*n^2*e^6) - 2*b*d*f*g*n*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b
*n) + 4)*log(x*e + d)/((b^3*n^3*e^6*log(x*e + d) + b^3*n^2*e^6*log(c) + a*b
^2*n^2*e^6)*c^(1/n)) - 4*b*d*g^2*n*Ei(2*log(c)/n + 2*a/(b*n) + 2*log(x*e +
d))*e^(-2*a/(b*n) + 3)*log(x*e + d)/((b^3*n^3*e^6*log(x*e + d) + b^3*n^2*e^
6*log(c) + a*b^2*n^2*e^6)*c^(2/n)) + b*d^2*g^2*Ei(log(c)/n + a/(b*n) + log(
x*e + d))*e^(-a/(b*n) + 3)*log(c)/((b^3*n^3*e^6*log(x*e + d) + b^3*n^2*e^6*
log(c) + a*b^2*n^2*e^6)*c^(1/n)) - (x*e + d)*b*f^2*n*e^5/(b^3*n^3*e^6*log(x
*e + d) + b^3*n^2*e^6*log(c) + a*b^2*n^2*e^6) + a*d^2*g^2*Ei(log(c)/n + a/(
b*n) + log(x*e + d))*e^(-a/(b*n) + 3)/((b^3*n^3*e^6*log(x*e + d) + b^3*n^2*
e^6*log(c) + a*b^2*n^2*e^6)*c^(1/n)) + b*f^2*n*Ei(log(c)/n + a/(b*n) + log(
x*e + d))*e^(-a/(b*n) + 5)*log(x*e + d)/((b^3*n^3*e^6*log(x*e + d) + b^3*n^
2*e^6*log(c) + a*b^2*n^2*e^6)*c^(1/n)) + 4*b*f*g*n*Ei(2*log(c)/n + 2*a/(b*n
) + 2*log(x*e + d))*e^(-2*a/(b*n) + 4)*log(x*e + d)/((b^3*n^3*e^6*log(x*e +
 d) + b^3*n^2*e^6*log(c) + a*b^2*n^2*e^6)*c^(2/n)) + 3*b*g^2*n*Ei(3*log(c)/
n + 3*a/(b*n) + 3*log(x*e + d))*e^(-3*a/(b*n) + 3)*log(x*e + d)/((b^3*n^3*e
^6*log(x*e + d) + b^3*n^2*e^6*log(c) + a*b^2*n^2*e^6)*c^(3/n)) - 2*b*d*f*g*
Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 4)*log(c)/((b^3*n^3*e^6
*log(x*e + d) + b^3*n^2*e^6*log(c) + a*b^2*n^2*e^6)*c^(1/n)) - 4*b*d*g^2*Ei
(2*log(c)/n + 2*a/(b*n) + 2*log(x*e + d))*e^(-2*a/(b*n) + 3)*log(c)/((b^3*n
^3*e^6*log(x*e + d) + b^3*n^2*e^6*log(c) + a*b^2*n^2*e^6)*c^(2/n)) - 2*a*d*
f*g*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 4)/((b^3*n^3*e^6*lo
g(x*e + d) + b^3*n^2*e^6*log(c) + a*b^2*n^2*e^6)*c^(1/n)) - 4*a*d*g^2*Ei(2*
log(c)/n + 2*a/(b*n) + 2*log(x*e + d))*e^(-2*a/(b*n) + 3)/((b^3*n^3*e^6*log
(x*e + d) + b^3*n^2*e^6*log(c) + a*b^2*n^2*e^6)*c^(2/n)) + b*f^2*Ei(log(c)/
n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 5)*log(c)/((b^3*n^3*e^6*log(x*e +
 d) + b^3*n^2*e^6*log(c) + a*b^2*n^2*e^6)*c^(1/n)) + 4*b*f*g*Ei(2*log(c)/n
+ 2*a/(b*n) + 2*log(x*e + d))*e^(-2*a/(b*n) + 4)*log(c)/((b^3*n^3*e^6*log(x
*e + d) + b^3*n^2*e^6*log(c) + a*b^2*n^2*e^6)*c^(2/n)) + 3*b*g^2*Ei(3*log(c
)/n + 3*a/(b*n) + 3*log(x*e + d))*e^(-3*a/(b*n) + 3)*log(c)/((b^3*n^3*e^6*l
og(x*e + d) + b^3*n^2*e^6*log(c) + a*b^2*n^2*e^6)*c^(3/n)) + a*f^2*Ei(log(c
)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 5)/((b^3*n^3*e^6*log(x*e + d) +
 b^3*n^2*e^6*log(c) + a*b^2*n^2*e^6)*c^(1/n)) + 4*a*f*g*Ei(2*log(c)/n + 2*a
/(b*n) + 2*log(x*e + d))*e^(-2*a/(b*n) + 4)/((b^3*n^3*e^6*log(x*e + d) + b^
3*n^2*e^6*log(c) + a*b^2*n^2*e^6)*c^(2/n)) + 3*a*g^2*Ei(3*log(c)/n + 3*a/(b
*n) + 3*log(x*e + d))*e^(-3*a/(b*n) + 3)/((b^3*n^3*e^6*log(x*e + d) + b^3*n
^2*e^6*log(c) + a*b^2*n^2*e^6)*c^(3/n))
```

maple [F] time = 4.90, size = 0, normalized size = 0.00

$$\int \frac{\left(gx+f\right)^{2}}{\left(b\ln\left(c\left(ex+d\right)^{n}\right)+a\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$-\frac{eg^{2}x^{3}+df^{2}+\left(2\,efg+dg^{2}\right)x^{2}+\left(ef^{2}+2\,dfg\right)x}{b^{2}en\log\left(\left(ex+d\right)^{n}\right)+b^{2}en\log(c)+aben}+\int \frac{3\,eg^{2}x^{2}+ef^{2}+2\,dfg+2\left(2\,efg+dg^{2}\right)x}{b^{2}en\log\left(\left(ex+d\right)^{n}\right)+b^{2}en\log(c)+aben}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\int \frac{\left(f+g\,x\right)^2}{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\int \frac{\left(f+gx\right)^2}{\left(a+b\log\left(c\left(d+ex\right)^n\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.96 $\int \frac{f+gx}{\left(a+b\log(c(d+ex)^n)\right)^2}\,dx$

Optimal. Leaf size=177

$$\frac{e^{-\frac{a}{bn}}(d+ex)(ef-dg)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{b^2e^2n^2}+\frac{2ge^{-\frac{2a}{bn}}(d+ex)^2\left(c(d+ex)^n\right)^{-2/n}\operatorname{Ei}\left(\frac{2(a+b\log(c(d+ex)^n)}{bn}\right)}{b^2e^2n^2}$$

```
[Out] (-d*g+e*f)*(e*x+d)*Ei((a+b*ln(c*(e*x+d)^n))/b/n)/b^2/e^2/exp(a/b/n)/n^2/((c
*(e*x+d)^n)^(1/n))+2*g*(e*x+d)^2*Ei(2*(a+b*ln(c*(e*x+d)^n))/b/n)/b^2/e^2/ex
p(2*a/b/n)/n^2/((c*(e*x+d)^n)^(2/n))-(e*x+d)*(g*x+f)/b/e/n/(a+b*ln(c*(e*x+d
)^n))
```

Rubi [A] time = 0.25, antiderivative size = 177, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 7, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.318, Rules used = {2400, 2399, 2389, 2300, 2178, 2390, 2310}

$$\frac{e^{-\frac{a}{bn}}(d+ex)(ef-dg)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{b^2e^2n^2}+\frac{2ge^{-\frac{2a}{bn}}(d+ex)^2\left(c(d+ex)^n\right)^{-2/n}\operatorname{Ei}\left(\frac{2(a+b\log(c(d+ex)^n)}{bn}\right)}{b^2e^2n^2}$$

Antiderivative was successfully verified.

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

```
[Out] ((e*f - d*g)*(d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(b^
2*e^2*E^(a/(b*n))*n^2*(c*(d + e*x)^n)^n^(-1)) + (2*g*(d + e*x)^2*ExpIntegra
lEi[(2*(a + b*Log[c*(d + e*x)^n]))/(b*n)])/(b^2*e^2*E^((2*a)/(b*n))*n^2*(c*
(d + e*x)^n)^(2/n)) - ((d + e*x)*(f + g*x))/(b*e*n*(a + b*Log[c*(d + e*x)^n
]))
```

Rule 2178

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - (c*f)/d))*ExpIntegralEi[(f*g*(c + d*x)*Log[F])/d])/d, x] /; F
reeQ[{F, c, d, e, f, g}, x] && !$UseGamma === True
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
```

```
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2399

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

Rule 2400

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

Rubi steps

$$\int \frac{f+gx}{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}\,dx = -\frac{(d+ex)(f+gx)}{ben\left(a+b\log\left(c(d+ex)^n\right)\right)} + \frac{2\int \frac{f+gx}{a+b\log(c(d+ex)^n)}\,dx}{bn} - \frac{(ef-dg)\int \frac{1}{a+b\log(c(d+ex}$$

$$= -\frac{(d+ex)(f+gx)}{ben\left(a+b\log\left(c(d+ex)^n\right)\right)} + \frac{2\int \left(\frac{ef-dg}{e\left(a+b\log(c(d+ex)^n)\right)} + \frac{g(d+ex)}{e\left(a+b\log(c(d+ex)^n)\right)}\right)dx}{bn} -$$

$$= -\frac{(d+ex)(f+gx)}{ben\left(a+b\log\left(c(d+ex)^n\right)\right)} + \frac{(2g)\int \frac{d+ex}{a+b\log(c(d+ex)^n)}\,dx}{ben} + \frac{(2(ef-dg))\int \frac{}{a+b\log}}{ben}$$

$$= -\frac{e^{-\frac{a}{bn}}(ef-dg)(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{b^2e^2n^2} - \frac{(d+ex)(f+}{ben\left(a+b\log(c(d\right.}$$

$$= -\frac{e^{-\frac{a}{bn}}(ef-dg)(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{b^2e^2n^2} - \frac{(d+ex)(f+}{ben\left(a+b\log(c(d\right.}$$

$$= \frac{e^{-\frac{a}{bn}}(ef-dg)(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{b^2e^2n^2} + \frac{2e^{-\frac{2a}{bn}}g(d+ex)^2\left(c(d\right.}{}$$

Mathematica [A] time = 0.29, size = 208, normalized size = 1.18

$$-\frac{e^{-\frac{2a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-2/n}\left(-e^{\frac{a}{bn}}(ef-dg)\left(c(d+ex)^n\right)^{\frac{1}{n}}\left(a+b\log\left(c(d+ex)^n\right)\right)\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)-2g(d+e\right.}{b^2e^2n^2\left(a+b\log\left(c(d+ex)^n\right)\right)}$$

Antiderivative was successfully verified.

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

```
[Out] -(((d + e*x)*(b*e*E^((2*a)/(b*n))*n*(c*(d + e*x)^n)^(2/n)*(f + g*x) - E^(a/
(b*n))*(e*f - d*g)*(c*(d + e*x)^n)^n^(-1)*ExpIntegralEi[(a + b*Log[c*(d + e
```

```
*x)^n])/(b*n)]*(a + b*Log[c*(d + e*x)^n]) - 2*g*(d + e*x)*ExpIntegralEi[(2*
(a + b*Log[c*(d + e*x)^n]))/(b*n)]*(a + b*Log[c*(d + e*x)^n])))/(b^2*e^2*E^
((2*a)/(b*n))*n^2*(c*(d + e*x)^n)^(2/n)*(a + b*Log[c*(d + e*x)^n])))
```

fricas [A] time = 0.49, size = 239, normalized size = 1.35

$$\frac{\left(\left(aef - adg + \left(bef - bdg\right)n\log\left(ex + d\right) + \left(bef - bdg\right)\log(c)\right)e^{\left(\frac{b\log(c)+a}{bn}\right)}\operatorname{log\_integral}\left(\left(ex + d\right)e^{\left(\frac{b\log(c)+a}{bn}\right)}\right) - (b}{b^3e}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

giac [B] time = 0.37, size = 984, normalized size = 5.56

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -(x*e + d)^2*b*g*n*e/(b^3*n^3*e^3*log(x*e + d) + b^3*n^2*e^3*log(c) + a*b^2
*n^2*e^3) + (x*e + d)*b*d*g*n*e/(b^3*n^3*e^3*log(x*e + d) + b^3*n^2*e^3*log
(c) + a*b^2*n^2*e^3) - b*d*g*n*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/
(b*n) + 1)*log(x*e + d)/((b^3*n^3*e^3*log(x*e + d) + b^3*n^2*e^3*log(c) + a
*b^2*n^2*e^3)*c^(1/n)) - (x*e + d)*b*f*n*e^2/(b^3*n^3*e^3*log(x*e + d) + b^
3*n^2*e^3*log(c) + a*b^2*n^2*e^3) + b*f*n*Ei(log(c)/n + a/(b*n) + log(x*e +
 d))*e^(-a/(b*n) + 2)*log(x*e + d)/((b^3*n^3*e^3*log(x*e + d) + b^3*n^2*e^3
*log(c) + a*b^2*n^2*e^3)*c^(1/n)) + 2*b*g*n*Ei(2*log(c)/n + 2*a/(b*n) + 2*l
og(x*e + d))*e^(-2*a/(b*n) + 1)*log(x*e + d)/((b^3*n^3*e^3*log(x*e + d) + b
^3*n^2*e^3*log(c) + a*b^2*n^2*e^3)*c^(2/n)) - b*d*g*Ei(log(c)/n + a/(b*n) +
 log(x*e + d))*e^(-a/(b*n) + 1)*log(c)/((b^3*n^3*e^3*log(x*e + d) + b^3*n^2
*e^3*log(c) + a*b^2*n^2*e^3)*c^(1/n)) - a*d*g*Ei(log(c)/n + a/(b*n) + log(x
*e + d))*e^(-a/(b*n) + 1)/((b^3*n^3*e^3*log(x*e + d) + b^3*n^2*e^3*log(c) +
 a*b^2*n^2*e^3)*c^(1/n)) + b*f*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/
(b*n) + 2)*log(c)/((b^3*n^3*e^3*log(x*e + d) + b^3*n^2*e^3*log(c) + a*b^2*n
^2*e^3)*c^(1/n)) + 2*b*g*Ei(2*log(c)/n + 2*a/(b*n) + 2*log(x*e + d))*e^(-2*
a/(b*n) + 1)*log(c)/((b^3*n^3*e^3*log(x*e + d) + b^3*n^2*e^3*log(c) + a*b^2
*n^2*e^3)*c^(2/n)) + a*f*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n)
+ 2)/((b^3*n^3*e^3*log(x*e + d) + b^3*n^2*e^3*log(c) + a*b^2*n^2*e^3)*c^(1/
n)) + 2*a*g*Ei(2*log(c)/n + 2*a/(b*n) + 2*log(x*e + d))*e^(-2*a/(b*n) + 1)/
((b^3*n^3*e^3*log(x*e + d) + b^3*n^2*e^3*log(c) + a*b^2*n^2*e^3)*c^(2/n))
```

maple [F] time = 4.83, size = 0, normalized size = 0.00

$$\int \frac{gx + f}{\left(b\ln\left(c\left(ex + d\right)^{n}\right) + a\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$-\frac{egx^2 + df + (ef + dg)x}{b^2en\log\left((ex + d)^n\right) + b^2en\log(c) + aben} + \int \frac{2\,egx + ef + dg}{b^2en\log\left((ex + d)^n\right) + b^2en\log(c) + aben}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\int \frac{f + g\,x}{\left(a + b\,\ln\left(c\,(d + e\,x)^n\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\int \frac{f + gx}{\left(a + b\log\left(c\,(d + ex)^n\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.97 $\int \frac{1}{\left(a+b\log(c(d+ex)^n)\right)^2}\,dx$

Optimal. Leaf size=96

$$\frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{b^2en^2}-\frac{d+ex}{ben\left(a+b\log\left(c(d+ex)^n\right)\right)}$$

```
[Out] (e*x+d)*Ei((a+b*ln(c*(e*x+d)^n))/b/n)/b^2/e/exp(a/b/n)/n^2/((c*(e*x+d)^n)^(
1/n))+(-e*x-d)/b/e/n/(a+b*ln(c*(e*x+d)^n))
```

Rubi [A] time = 0.06, antiderivative size = 96, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {2389, 2297, 2300, 2178}

$$\frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{b^2en^2}-\frac{d+ex}{ben\left(a+b\log\left(c(d+ex)^n\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^(-2),x]
```

```
[Out] ((d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(b^2*e*E^(a/(b*
n))*n^2*(c*(d + e*x)^n)^n^(-1)) - (d + e*x)/(b*e*n*(a + b*Log[c*(d + e*x)^n
]))
```

Rule 2178

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - (c*f)/d))*ExpIntegralEi[(f*g*(c + d*x)*Log[F])/d])/d, x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2297

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[(x*(a + b
*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
gerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rubi steps

$$\int \frac{1}{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}\,dx = \frac{\text{Subst}\left(\int \frac{1}{\left(a+b\log(cx^n)\right)^2}\,dx, x, d+ex\right)}{e}$$

$$= -\frac{d+ex}{ben\left(a+b\log\left(c(d+ex)^n\right)\right)} + \frac{\text{Subst}\left(\int \frac{1}{a+b\log(cx^n)}\,dx, x, d+ex\right)}{ben}$$

$$= -\frac{d+ex}{ben\left(a+b\log\left(c(d+ex)^n\right)\right)} + \frac{\left((d+ex)\left(c(d+ex)^n\right)^{-1/n}\right)\text{Subst}\left(\int \frac{e^{\frac{x}{n}}}{a+bx}\,dx, x, \text{l}\right.}{ben^2}$$

$$= \frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{b^2en^2} - \frac{d+ex}{ben\left(a+b\log\left(c(d+ex)^n\right)\right)}$$

Mathematica [A] time = 0.05, size = 123, normalized size = 1.28

$$-\frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\left(bne^{\frac{a}{bn}}\left(c(d+ex)^n\right)^{\frac{1}{n}}-\left(a+b\log\left(c(d+ex)^n\right)\right)\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)\right)}{b^2en^2\left(a+b\log\left(c(d+ex)^n\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^(-2),x]
```

```
[Out] -(((d + e*x)*(b*E^(a/(b*n))*n*(c*(d + e*x)^n)^n^(-1) - ExpIntegralEi[(a + b
*Log[c*(d + e*x)^n])/(b*n)]*(a + b*Log[c*(d + e*x)^n])))/(b^2*e*E^(a/(b*n))
*n^2*(c*(d + e*x)^n)^n^(-1)*(a + b*Log[c*(d + e*x)^n])))
```

fricas [A] time = 0.44, size = 117, normalized size = 1.22

$$-\frac{\left((benx+bdn)e^{\left(\frac{b\log(c)+a}{bn}\right)}-\left(bn\log(ex+d)+b\log(c)+a\right)\text{log\_integral}\left((ex+d)e^{\left(\frac{b\log(c)+a}{bn}\right)}\right)\right)e^{\left(-\frac{b\log(c)+a}{bn}\right)}}{b^3en^3\log(ex+d)+b^3en^2\log(c)+ab^2en^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="fricas")
```

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

giac [B] time = 0.23, size = 307, normalized size = 3.20

$$\frac{bn\text{Ei}\left(\frac{\log(c)}{n}+\frac{a}{bn}+\log(xe+d)\right)e^{\left(-\frac{a}{bn}\right)}\log(xe+d)}{\left(b^3n^3e\log(xe+d)+b^3n^2e\log(c)+ab^2n^2e\right)c^{\left(\frac{1}{n}\right)}} - \frac{(xe+d)bn}{b^3n^3e\log(xe+d)+b^3n^2e\log(c)+ab^2n^2e} + \frac{b\text{Ei}\left(\frac{\log(c)}{n}+\ldots\right.}{\left(b^3n^3e\log(xe+\ldots\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="giac")
```

```
[Out] b*n*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n))*log(x*e + d)/((b^3*n
^3*e*log(x*e + d) + b^3*n^2*e*log(c) + a*b^2*n^2*e)*c^(1/n)) - (x*e + d)*b*
n/(b^3*n^3*e*log(x*e + d) + b^3*n^2*e*log(c) + a*b^2*n^2*e) + b*Ei(log(c)/n
 + a/(b*n) + log(x*e + d))*e^(-a/(b*n))*log(c)/((b^3*n^3*e*log(x*e + d) + b
```

```
^3*n^2*e*log(c) + a*b^2*n^2*e)*c^(1/n)) + a*Ei(log(c)/n + a/(b*n) + log(x*e
 + d))*e^(-a/(b*n))/((b^3*n^3*e*log(x*e + d) + b^3*n^2*e*log(c) + a*b^2*n^2
*e)*c^(1/n))
```

maple [C] time = 0.09, size = 456, normalized size = 4.75

$$-\frac{(ex+d)\,c^{-\frac{1}{n}}\left((ex+d)^{n}\right)^{-\frac{1}{n}}\,\mathrm{Ei}\left(1,-\ln(ex+d)-\frac{-i\pi b\,\mathrm{csgn}(ic)\mathrm{csgn}\left(i(ex+d)^{n}\right)\mathrm{csgn}\left(ic(ex+d)^{n}\right)+i\pi b\,\mathrm{csgn}(ic)\mathrm{csgn}\left(ic(ex+d)^{n}\right)^{2}+i\pi b}{}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -2/(-I*Pi*b*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*Pi*b*csgn(I*c
)*csgn(I*c*(e*x+d)^n)^2+I*Pi*b*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*Pi
*b*csgn(I*c*(e*x+d)^n)^3+2*b*ln(c)+2*b*ln((e*x+d)^n)+2*a)/b/n/e*(e*x+d)-1/b
^2/n^2/e*(e*x+d)*c^(-1/n)*((e*x+d)^n)^(-1/n)*exp(-1/2*(-I*Pi*b*csgn(I*c)*cs
gn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*Pi*b*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+
I*Pi*b*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*Pi*b*csgn(I*c*(e*x+d)^n)^3
+2*a)/b/n)*Ei(1,-ln(e*x+d)-1/2*(-I*Pi*b*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*
c*(e*x+d)^n)+I*Pi*b*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*Pi*b*csgn(I*(e*x+d)^n
)*csgn(I*c*(e*x+d)^n)^2-I*Pi*b*csgn(I*c*(e*x+d)^n)^3+2*b*ln(c)+2*a+2*(-n*ln
(e*x+d)+ln((e*x+d)^n))*b)/b/n)
```

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

$$-\frac{ex+d}{b^{2}en\log\left((ex+d)^{n}\right)+b^{2}en\log(c)+aben}+\int\frac{1}{b^{2}n\log\left((ex+d)^{n}\right)+b^{2}n\log(c)+abn}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="maxima")
```

```
[Out] -(e*x + d)/(b^2*e*n*log((e*x + d)^n) + b^2*e*n*log(c) + a*b*e*n) + integrat
e(1/(b^2*n*log((e*x + d)^n) + b^2*n*log(c) + a*b*n), x)
```

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

$$\int\frac{1}{\left(a+b\,\ln\left(c\,(d+e\,x)^{n}\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int(1/(a + b*log(c*(d + e*x)^n))^2, x)
```

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

$$\int\frac{1}{\left(a+b\log\left(c\,(d+ex)^{n}\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**(-2), x)
```

3.98 $\int \frac{1}{(f+gx)\left(a+b\log(c(d+ex)^n)\right)^2}\,dx$

Optimal. Leaf size=27

$$\text{Int}\left(\frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^2},x\right)$$

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

Rubi [A] time = 0.03, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^2),x]
[Out] Defer[Int][1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^2), x]
```

Rubi steps

$$\int \frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}\,dx = \int \frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}\,dx$$

Mathematica [A] time = 0.59, size = 0, normalized size = 0.00

$$\int \frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^2),x]
[Out] Integrate[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^2), x]
```

fricas [A] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{1}{a^2gx+a^2f+\left(b^2gx+b^2f\right)\log\left((ex+d)^nc\right)^2+2\left(abgx+abf\right)\log\left((ex+d)^nc\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="fricas")
[Out] integral(1/(a^2*g*x + a^2*f + (b^2*g*x + b^2*f)*log((e*x + d)^n*c)^2 + 2*(a
*b*g*x + a*b*f)*log((e*x + d)^n*c)), x)
```

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

$$\int \frac{1}{(gx+f)\left(b\log\left((ex+d)^nc\right)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="giac")
[Out] integrate(1/((g*x + f)*(b*log((e*x + d)^n*c) + a)^2), x)
```

maple [A] time = 1.93, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(gx+f\right)\left(b\ln\left(c\left(ex+d\right)^{n}\right)+a\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

$$\left(ef-dg\right)\int \frac{1}{b^{2}ef^{2}n\log(c)+abef^{2}n+\left(b^{2}eg^{2}n\log(c)+abeg^{2}n\right)x^{2}+2\left(b^{2}efgn\log(c)+abefgn\right)x+\left(b^{2}eg^{2}nx\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="maxima")
[Out] (e*f - d*g)*integrate(1/(b^2*e*f^2*n*log(c) + a*b*e*f^2*n + (b^2*e*g^2*n*lo
g(c) + a*b*e*g^2*n)*x^2 + 2*(b^2*e*f*g*n*log(c) + a*b*e*f*g*n)*x + (b^2*e*g
^2*n*x^2 + 2*b^2*e*f*g*n*x + b^2*e*f^2*n)*log((e*x + d)^n)), x) - (e*x + d)
/(b^2*e*f*n*log(c) + a*b*e*f*n + (b^2*e*g*n*log(c) + a*b*e*g*n)*x + (b^2*e*
g*n*x + b^2*e*f*n)*log((e*x + d)^n))
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{\left(f+g\,x\right)\,\left(a+b\,\ln\left(c\,\left(d+e\,x\right)^{n}\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

$$\int \frac{1}{\left(a+b\log\left(c\left(d+ex\right)^{n}\right)\right)^{2}\left(f+gx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*ln(c*(e*x+d)**n))**2,x)
[Out] Integral(1/((a + b*log(c*(d + e*x)**n))**2*(f + g*x)), x)
```

3.99 $\int \frac{1}{(f+gx)^2\left(a+b\log(c(d+ex)^n)\right)^2}\,dx$

Optimal. Leaf size=27

$$\text{Int}\left(\frac{1}{(f+gx)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^2},x\right)$$

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

Rubi [A] time = 0.03, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(f+gx)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^2}\,dx$$

Verification is Not applicable to the result.

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

```
[Out] Defer[Int][1/((f + g*x)^2*(a + b*Log[c*(d + e*x)^n])^2), x]
```

Rubi steps

$$\int \frac{1}{(f+gx)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^2}\,dx = \int \frac{1}{(f+gx)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^2}\,dx$$

Mathematica [A] time = 5.03, size = 0, normalized size = 0.00

$$\int \frac{1}{(f+gx)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^2}\,dx$$

Verification is Not applicable to the result.

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

```
[Out] Integrate[1/((f + g*x)^2*(a + b*Log[c*(d + e*x)^n])^2), x]
```

fricas [A] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{1}{a^2g^2x^2+2\,a^2fgx+a^2f^2+\left(b^2g^2x^2+2\,b^2fgx+b^2f^2\right)\log\left((ex+d)^nc\right)^2+2\left(abg^2x^2+2\,abfgx+abf^2\right)\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)^2/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="fricas")
```

```
[Out] integral(1/(a^2*g^2*x^2 + 2*a^2*f*g*x + a^2*f^2 + (b^2*g^2*x^2 + 2*b^2*f*g*
x + b^2*f^2)*log((e*x + d)^n*c)^2 + 2*(a*b*g^2*x^2 + 2*a*b*f*g*x + a*b*f^2)
*log((e*x + d)^n*c)), x)
```

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

$$\int \frac{1}{(gx+f)^2\left(b\log\left((ex+d)^nc\right)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)^2/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="giac")
[Out] integrate(1/((g*x + f)^2*(b*log((e*x + d)^n*c) + a)^2), x)
```

maple [A] time = 4.41, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(gx+f\right)^{2}\left(b\ln\left(c\left(ex+d\right)^{n}\right)+a\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

$$-\frac{ex+d}{b^2ef^2n\log(c)+abef^2n+\left(b^2eg^2n\log(c)+abeg^2n\right)x^2+2\left(b^2efgn\log(c)+abefgn\right)x+\left(b^2eg^2nx^2+2\,b^2efg\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)^2/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="maxima")
[Out] -(e*x + d)/(b^2*e*f^2*n*log(c) + a*b*e*f^2*n + (b^2*e*g^2*n*log(c) + a*b*e*
g^2*n)*x^2 + 2*(b^2*e*f*g*n*log(c) + a*b*e*f*g*n)*x + (b^2*e*g^2*n*x^2 + 2*
b^2*e*f*g*n*x + b^2*e*f^2*n)*log((e*x + d)^n)) - integrate((e*g*x - e*f + 2
*d*g)/(b^2*e*f^3*n*log(c) + a*b*e*f^3*n + (b^2*e*g^3*n*log(c) + a*b*e*g^3*n
)*x^3 + 3*(b^2*e*f*g^2*n*log(c) + a*b*e*f*g^2*n)*x^2 + 3*(b^2*e*f^2*g*n*log
(c) + a*b*e*f^2*g*n)*x + (b^2*e*g^3*n*x^3 + 3*b^2*e*f*g^2*n*x^2 + 3*b^2*e*f
^2*g*n*x + b^2*e*f^3*n)*log((e*x + d)^n)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{{\left(f+g\,x\right)}^2\,{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

$$\int \frac{1}{\left(a+b\log\left(c\left(d+ex\right)^{n}\right)\right)^{2}\left(f+gx\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)**2/(a+b*ln(c*(e*x+d)**n))**2,x)
[Out] Integral(1/((a + b*log(c*(d + e*x)**n))**2*(f + g*x)**2), x)
```

3.100 $\int \frac{(f+gx)^2}{\left(a+b\log(c(d+ex)^n)\right)^3}\,dx$

Optimal. Leaf size=351

$$\frac{4ge^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)\left(c(d+ex)^n\right)^{-2/n}\operatorname{Ei}\left(\frac{2\left(a+b\log(c(d+ex)^n)\right)}{bn}\right)}{b^3e^3n^3}+\frac{e^{-\frac{a}{bn}}(d+ex)(ef-dg)^2\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log}{}\right.}{2b^3e^3n^3}$$

```
[Out] 1/2*(-d*g+e*f)^2*(e*x+d)*Ei((a+b*ln(c*(e*x+d)^n))/b/n)/b^3/e^3/exp(a/b/n)/n
^3/((c*(e*x+d)^n)^(1/n))+4*g*(-d*g+e*f)*(e*x+d)^2*Ei(2*(a+b*ln(c*(e*x+d)^n)
)/b/n)/b^3/e^3/exp(2*a/b/n)/n^3/((c*(e*x+d)^n)^(2/n))+9/2*g^2*(e*x+d)^3*Ei(
3*(a+b*ln(c*(e*x+d)^n))/b/n)/b^3/e^3/exp(3*a/b/n)/n^3/((c*(e*x+d)^n)^(3/n))
-1/2*(e*x+d)*(g*x+f)^2/b/e/n/(a+b*ln(c*(e*x+d)^n))^2+(-d*g+e*f)*(e*x+d)*(g*
x+f)/b^2/e^2/n^2/(a+b*ln(c*(e*x+d)^n))-3/2*(e*x+d)*(g*x+f)^2/b^2/e/n^2/(a+b
*ln(c*(e*x+d)^n))
```

Rubi [A] time = 0.86, antiderivative size = 351, normalized size of antiderivative = 1.00, number of steps used = 33, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.292$, Rules used = {2400, 2399, 2389, 2300, 2178, 2390, 2310}

$$\frac{4ge^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)\left(c(d+ex)^n\right)^{-2/n}\operatorname{Ei}\left(\frac{2\left(a+b\log(c(d+ex)^n)\right)}{bn}\right)}{b^3e^3n^3}+\frac{e^{-\frac{a}{bn}}(d+ex)(ef-dg)^2\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log}{}\right.}{2b^3e^3n^3}$$

Antiderivative was successfully verified.

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

```
[Out] ((e*f - d*g)^2*(d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(
2*b^3*e^3*E^(a/(b*n))*n^3*(c*(d + e*x)^n)^n^(-1)) + (4*g*(e*f - d*g)*(d + e
*x)^2*ExpIntegralEi[(2*(a + b*Log[c*(d + e*x)^n]))/(b*n)])/(b^3*e^3*E^((2*a
)/(b*n))*n^3*(c*(d + e*x)^n)^(2/n)) + (9*g^2*(d + e*x)^3*ExpIntegralEi[(3*(
a + b*Log[c*(d + e*x)^n]))/(b*n)])/(2*b^3*e^3*E^((3*a)/(b*n))*n^3*(c*(d + e
*x)^n)^(3/n)) - ((d + e*x)*(f + g*x)^2)/(2*b*e*n*(a + b*Log[c*(d + e*x)^n])
^2) + ((e*f - d*g)*(d + e*x)*(f + g*x))/(b^2*e^2*n^2*(a + b*Log[c*(d + e*x)
^n])) - (3*(d + e*x)*(f + g*x)^2)/(2*b^2*e*n^2*(a + b*Log[c*(d + e*x)^n]))
```

Rule 2178

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - (c*f)/d))*ExpIntegralEi[(f*g*(c + d*x)*Log[F])/d])/d, x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2390

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

Rule 2399

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

Rule 2400

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

Rubi steps

$$\int \frac{(f+gx)^2}{\left(a+b\log\left(c(d+ex)^n\right)\right)^3}\,dx = -\frac{(d+ex)(f+gx)^2}{2ben\left(a+b\log\left(c(d+ex)^n\right)\right)^2} + \frac{3\int \frac{(f+gx)^2}{\left(a+b\log(c(d+ex)^n)\right)^2}\,dx}{2bn} - \frac{(ef-dg)\int \frac{f}{\left(a+b\log(\right.}}{ben}$$

$$= -\frac{(d+ex)(f+gx)^2}{2ben\left(a+b\log\left(c(d+ex)^n\right)\right)^2} + \frac{(ef-dg)(d+ex)(f+gx)}{b^2e^2n^2\left(a+b\log\left(c(d+ex)^n\right)\right)} - \frac{3(d+}{2b^2en^2\left(a+\right.}$$

$$= -\frac{(d+ex)(f+gx)^2}{2ben\left(a+b\log\left(c(d+ex)^n\right)\right)^2} + \frac{(ef-dg)(d+ex)(f+gx)}{b^2e^2n^2\left(a+b\log\left(c(d+ex)^n\right)\right)} - \frac{3(d+}{2b^2en^2\left(a+\right.}$$

$$= -\frac{(d+ex)(f+gx)^2}{2ben\left(a+b\log\left(c(d+ex)^n\right)\right)^2} + \frac{(ef-dg)(d+ex)(f+gx)}{b^2e^2n^2\left(a+b\log\left(c(d+ex)^n\right)\right)} - \frac{3(d+}{2b^2en^2\left(a+\right.}$$

$$= \frac{e^{-\frac{a}{bn}}(ef-dg)^2(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{b^3e^3n^3} - \frac{(d+ex)(f+}{2ben\left(a+b\log\left(c(\right.\right.}$$

$$= \frac{e^{-\frac{a}{bn}}(ef-dg)^2(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{b^3e^3n^3} - \frac{(d+ex)(f+}{2ben\left(a+b\log\left(c(\right.\right.}$$

$$= \frac{e^{-\frac{a}{bn}}(ef-dg)^2(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{2b^3e^3n^3} + \frac{4e^{-\frac{2a}{bn}}g(ef-dg)(d}{}$$

Mathematica [A] time = 1.60, size = 351, normalized size = 1.00

$$\frac{e^{-\frac{3a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-3/n}\left(e^{\frac{2a}{bn}}(ef-dg)^2\left(c(d+ex)^n\right)^{2/n}\left(a+b\log\left(c(d+ex)^n\right)\right)^2\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)-8ge^{\frac{a}{bn}}(d\right.}{}$$

Antiderivative was successfully verified.

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

```
[Out] ((d + e*x)*(E^((2*a)/(b*n))*(e*f - d*g)^2*(c*(d + e*x)^n)^(2/n)*ExpIntegral
Ei[(a + b*Log[c*(d + e*x)^n])/(b*n)]*(a + b*Log[c*(d + e*x)^n])^2 - 8*E^(a/
(b*n))*g*(-(e*f) + d*g)*(d + e*x)*(c*(d + e*x)^n)^n^(-1)*ExpIntegralEi[(2*(
a + b*Log[c*(d + e*x)^n]))/(b*n)]*(a + b*Log[c*(d + e*x)^n])^2 + 9*g^2*(d +
 e*x)^2*ExpIntegralEi[(3*(a + b*Log[c*(d + e*x)^n]))/(b*n)]*(a + b*Log[c*(d
 + e*x)^n])^2 - b*e*E^((3*a)/(b*n))*n*(c*(d + e*x)^n)^(3/n)*(f + g*x)*(b*e*
n*(f + g*x) + a*(e*f + 2*d*g + 3*e*g*x) + b*(2*d*g + e*(f + 3*g*x))*Log[c*(
d + e*x)^n])))/(2*b^3*e^3*E^((3*a)/(b*n))*n^3*(c*(d + e*x)^n)^(3/n)*(a + b*
Log[c*(d + e*x)^n])^2)
```

fricas [B] time = 0.47, size = 1090, normalized size = 3.11

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2/(a+b*log(c*(e*x+d)^n))^3,x, algorithm="fricas")
```

```
[Out] 1/2*(8*(a^2*e*f*g - a^2*d*g^2 + (b^2*e*f*g - b^2*d*g^2)*n^2*log(e*x + d)^2
+ (b^2*e*f*g - b^2*d*g^2)*log(c)^2 + 2*((b^2*e*f*g - b^2*d*g^2)*n*log(c) +
(a*b*e*f*g - a*b*d*g^2)*n)*log(e*x + d) + 2*(a*b*e*f*g - a*b*d*g^2)*log(c))
*e^((b*log(c) + a)/(b*n))*log_integral((e^2*x^2 + 2*d*e*x + d^2)*e^(2*(b*lo
g(c) + a)/(b*n))) + (a^2*e^2*f^2 - 2*a^2*d*e*f*g + a^2*d^2*g^2 + (b^2*e^2*f
^2 - 2*b^2*d*e*f*g + b^2*d^2*g^2)*n^2*log(e*x + d)^2 + (b^2*e^2*f^2 - 2*b^2
*d*e*f*g + b^2*d^2*g^2)*log(c)^2 + 2*((b^2*e^2*f^2 - 2*b^2*d*e*f*g + b^2*d^
2*g^2)*n*log(c) + (a*b*e^2*f^2 - 2*a*b*d*e*f*g + a*b*d^2*g^2)*n)*log(e*x +
d) + 2*(a*b*e^2*f^2 - 2*a*b*d*e*f*g + a*b*d^2*g^2)*log(c))*e^(2*(b*log(c) +
 a)/(b*n))*log_integral((e*x + d)*e^((b*log(c) + a)/(b*n))) - (b^2*d*e^2*f^
2*n^2 + (b^2*e^3*g^2*n^2 + 3*a*b*e^3*g^2*n)*x^3 + ((2*b^2*e^3*f*g + b^2*d*e
^2*g^2)*n^2 + (4*a*b*e^3*f*g + 5*a*b*d*e^2*g^2)*n)*x^2 + (a*b*d*e^2*f^2 + 2
*a*b*d^2*e*f*g)*n + ((b^2*e^3*f^2 + 2*b^2*d*e^2*f*g)*n^2 + (a*b*e^3*f^2 + 6
*a*b*d*e^2*f*g + 2*a*b*d^2*e*g^2)*n)*x + (3*b^2*e^3*g^2*n^2*x^3 + (4*b^2*e^
3*f*g + 5*b^2*d*e^2*g^2)*n^2*x^2 + (b^2*e^3*f^2 + 6*b^2*d*e^2*f*g + 2*b^2*d
^2*e*g^2)*n^2*x + (b^2*d*e^2*f^2 + 2*b^2*d^2*e*f*g)*n^2)*log(e*x + d) + (3*
b^2*e^3*g^2*n*x^3 + (4*b^2*e^3*f*g + 5*b^2*d*e^2*g^2)*n*x^2 + (b^2*e^3*f^2
+ 6*b^2*d*e^2*f*g + 2*b^2*d^2*e*g^2)*n*x + (b^2*d*e^2*f^2 + 2*b^2*d^2*e*f*g
)*n)*log(c))*e^(3*(b*log(c) + a)/(b*n)) + 9*(b^2*g^2*n^2*log(e*x + d)^2 + b
^2*g^2*log(c)^2 + 2*a*b*g^2*log(c) + a^2*g^2 + 2*(b^2*g^2*n*log(c) + a*b*g^
2*n)*log(e*x + d))*log_integral((e^3*x^3 + 3*d*e^2*x^2 + 3*d^2*e*x + d^3)*e
^(3*(b*log(c) + a)/(b*n))))*e^(-3*(b*log(c) + a)/(b*n))/(b^5*e^3*n^5*log(e*
x + d)^2 + b^5*e^3*n^3*log(c)^2 + 2*a*b^4*e^3*n^3*log(c) + a^2*b^3*e^3*n^3
+ 2*(b^5*e^3*n^4*log(c) + a*b^4*e^3*n^4)*log(e*x + d))
```

giac [B] time = 1.09, size = 8396, normalized size = 23.92

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2/(a+b*log(c*(e*x+d)^n))^3,x, algorithm="giac")
```

```
[Out] -3/2*(x*e + d)^3*b^2*g^2*n^2*e^3*log(x*e + d)/(b^5*n^5*e^6*log(x*e + d)^2 +
 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3
*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6) + 2*(x*e + d)^2*b
^2*d*g^2*n^2*e^3*log(x*e + d)/(b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*l
og(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 +
2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6) - 1/2*(x*e + d)*b^2*d^2*g^2*n^2*e
^3*log(x*e + d)/(b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*lo
g(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^
6*log(c) + a^2*b^3*n^3*e^6) + 1/2*b^2*d^2*g^2*n^2*Ei(log(c)/n + a/(b*n) + l
og(x*e + d))*e^(-a/(b*n) + 3)*log(x*e + d)^2/((b^5*n^5*e^6*log(x*e + d)^2 +
 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3
*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6)*c^(1/n)) - 1/2*(x
*e + d)^3*b^2*g^2*n^2*e^3/(b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x
*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*
b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6) + (x*e + d)^2*b^2*d*g^2*n^2*e^3/(b^5*
n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^
6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^
3*e^6) - 1/2*(x*e + d)*b^2*d^2*g^2*n^2*e^3/(b^5*n^5*e^6*log(x*e + d)^2 + 2*
b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^
6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6) - 2*(x*e + d)^2*b^2*
f*g*n^2*e^4*log(x*e + d)/(b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*
e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b
^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6) + (x*e + d)*b^2*d*f*g*n^2*e^4*log(x*e
+ d)/(b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*
b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) +
a^2*b^3*n^3*e^6) - b^2*d*f*g*n^2*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-
a/(b*n) + 4)*log(x*e + d)^2/((b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*lo
g(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2
```

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*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6)*c^(1/n)) - 4*b^2*d*g^2*n^2*Ei(2*lo
g(c)/n + 2*a/(b*n) + 2*log(x*e + d))*e^(-2*a/(b*n) + 3)*log(x*e + d)^2/((b^
5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*
e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*
n^3*e^6)*c^(2/n)) - 3/2*(x*e + d)^3*b^2*g^2*n*e^3*log(c)/(b^5*n^5*e^6*log(x
*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d
) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6) + 2*(x
*e + d)^2*b^2*d*g^2*n*e^3*log(c)/(b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^
6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2
 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6) - 1/2*(x*e + d)*b^2*d^2*g^2*n*
e^3*log(c)/(b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c)
+ 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log
(c) + a^2*b^3*n^3*e^6) + b^2*d^2*g^2*n*Ei(log(c)/n + a/(b*n) + log(x*e + d)
)*e^(-a/(b*n) + 3)*log(x*e + d)*log(c)/((b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5
*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*l
og(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6)*c^(1/n)) - (x*e + d)^2*
b^2*f*g*n^2*e^4/(b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*lo
g(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^
6*log(c) + a^2*b^3*n^3*e^6) + (x*e + d)*b^2*d*f*g*n^2*e^4/(b^5*n^5*e^6*log(
x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e +
d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6) - 3/2
*(x*e + d)^3*a*b*g^2*n*e^3/(b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(
x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a
*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6) + 2*(x*e + d)^2*a*b*d*g^2*n*e^3/(b^5
*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e
^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n
^3*e^6) - 1/2*(x*e + d)*a*b*d^2*g^2*n*e^3/(b^5*n^5*e^6*log(x*e + d)^2 + 2*b
^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6
*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6) - 1/2*(x*e + d)*b^2*f
^2*n^2*e^5*log(x*e + d)/(b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e
 + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^
4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6) + a*b*d^2*g^2*n*Ei(log(c)/n + a/(b*n) +
 log(x*e + d))*e^(-a/(b*n) + 3)*log(x*e + d)/((b^5*n^5*e^6*log(x*e + d)^2 +
 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3
*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6)*c^(1/n)) + 1/2*b^
2*f^2*n^2*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 5)*log(x*e +
d)^2/((b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a
*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) +
 a^2*b^3*n^3*e^6)*c^(1/n)) + 4*b^2*f*g*n^2*Ei(2*log(c)/n + 2*a/(b*n) + 2*lo
g(x*e + d))*e^(-2*a/(b*n) + 4)*log(x*e + d)^2/((b^5*n^5*e^6*log(x*e + d)^2
+ 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^
3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6)*c^(2/n)) + 9/2*b
^2*g^2*n^2*Ei(3*log(c)/n + 3*a/(b*n) + 3*log(x*e + d))*e^(-3*a/(b*n) + 3)*l
og(x*e + d)^2/((b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log
(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6
*log(c) + a^2*b^3*n^3*e^6)*c^(3/n)) - 2*(x*e + d)^2*b^2*f*g*n*e^4*log(c)/(b
^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4
*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3
*n^3*e^6) + (x*e + d)*b^2*d*f*g*n*e^4*log(c)/(b^5*n^5*e^6*log(x*e + d)^2 +
2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*
e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6) - 2*b^2*d*f*g*n*Ei
(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 4)*log(x*e + d)*log(c)/((
b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^
4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^
3*n^3*e^6)*c^(1/n)) - 8*b^2*d*g^2*n*Ei(2*log(c)/n + 2*a/(b*n) + 2*log(x*e +
 d))*e^(-2*a/(b*n) + 3)*log(x*e + d)*log(c)/((b^5*n^5*e^6*log(x*e + d)^2 +
2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*
e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6)*c^(2/n)) + 1/2*b^2
*d^2*g^2*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 3)*log(c)^2/((
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b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^
4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^
3*n^3*e^6)*c^(1/n)) - 1/2*(x*e + d)*b^2*f^2*n^2*e^5/(b^5*n^5*e^6*log(x*e +
d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b
^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6) - 2*(x*e +
d)^2*a*b*f*g*n*e^4/(b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)
*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3
*e^6*log(c) + a^2*b^3*n^3*e^6) + (x*e + d)*a*b*d*f*g*n*e^4/(b^5*n^5*e^6*log
(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e +
 d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6) - 2*
a*b*d*f*g*n*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 4)*log(x*e
+ d)/((b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a
*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) +
 a^2*b^3*n^3*e^6)*c^(1/n)) - 8*a*b*d*g^2*n*Ei(2*log(c)/n + 2*a/(b*n) + 2*lo
g(x*e + d))*e^(-2*a/(b*n) + 3)*log(x*e + d)/((b^5*n^5*e^6*log(x*e + d)^2 +
2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*
e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6)*c^(2/n)) - 1/2*(x*
e + d)*b^2*f^2*n*e^5*log(c)/(b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log
(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*
a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6) + a*b*d^2*g^2*Ei(log(c)/n + a/(b*n)
 + log(x*e + d))*e^(-a/(b*n) + 3)*log(c)/((b^5*n^5*e^6*log(x*e + d)^2 + 2*b
^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6
*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6)*c^(1/n)) + b^2*f^2*n*
Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 5)*log(x*e + d)*log(c)/
((b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*
n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*
b^3*n^3*e^6)*c^(1/n)) + 8*b^2*f*g*n*Ei(2*log(c)/n + 2*a/(b*n) + 2*log(x*e +
 d))*e^(-2*a/(b*n) + 4)*log(x*e + d)*log(c)/((b^5*n^5*e^6*log(x*e + d)^2 +
2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*
e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6)*c^(2/n)) + 9*b^2*g
^2*n*Ei(3*log(c)/n + 3*a/(b*n) + 3*log(x*e + d))*e^(-3*a/(b*n) + 3)*log(x*e
 + d)*log(c)/((b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(
c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*
log(c) + a^2*b^3*n^3*e^6)*c^(3/n)) - b^2*d*f*g*Ei(log(c)/n + a/(b*n) + log(
x*e + d))*e^(-a/(b*n) + 4)*log(c)^2/((b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^
4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(
c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6)*c^(1/n)) - 4*b^2*d*g^2*Ei(
2*log(c)/n + 2*a/(b*n) + 2*log(x*e + d))*e^(-2*a/(b*n) + 3)*log(c)^2/((b^5*
n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^
6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^
3*e^6)*c^(2/n)) - 1/2*(x*e + d)*a*b*f^2*n*e^5/(b^5*n^5*e^6*log(x*e + d)^2 +
 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3
*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6) + 1/2*a^2*d^2*g^2
*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 3)/((b^5*n^5*e^6*log(x
*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d
) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6)*c^(1/n
)) + a*b*f^2*n*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 5)*log(x
*e + d)/((b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) +
2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c
) + a^2*b^3*n^3*e^6)*c^(1/n)) + 8*a*b*f*g*n*Ei(2*log(c)/n + 2*a/(b*n) + 2*l
og(x*e + d))*e^(-2*a/(b*n) + 4)*log(x*e + d)/((b^5*n^5*e^6*log(x*e + d)^2 +
 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3
*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6)*c^(2/n)) + 9*a*b*
g^2*n*Ei(3*log(c)/n + 3*a/(b*n) + 3*log(x*e + d))*e^(-3*a/(b*n) + 3)*log(x*
e + d)/((b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2
*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c)
 + a^2*b^3*n^3*e^6)*c^(3/n)) - 2*a*b*d*f*g*Ei(log(c)/n + a/(b*n) + log(x*e
+ d))*e^(-a/(b*n) + 4)*log(c)/((b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*
log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 +
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```
 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6)*c^(1/n)) - 8*a*b*d*g^2*Ei(2*log(
c)/n + 2*a/(b*n) + 2*log(x*e + d))*e^(-2*a/(b*n) + 3)*log(c)/((b^5*n^5*e^6*
log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*
e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6)*c
^(2/n)) + 1/2*b^2*f^2*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 5
)*log(c)^2/((b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c)
 + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*lo
g(c) + a^2*b^3*n^3*e^6)*c^(1/n)) + 4*b^2*f*g*Ei(2*log(c)/n + 2*a/(b*n) + 2*
log(x*e + d))*e^(-2*a/(b*n) + 4)*log(c)^2/((b^5*n^5*e^6*log(x*e + d)^2 + 2*
b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^
6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6)*c^(2/n)) + 9/2*b^2*g
^2*Ei(3*log(c)/n + 3*a/(b*n) + 3*log(x*e + d))*e^(-3*a/(b*n) + 3)*log(c)^2/
((b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*
n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*
b^3*n^3*e^6)*c^(3/n)) - a^2*d*f*g*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(
-a/(b*n) + 4)/((b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log
(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6
*log(c) + a^2*b^3*n^3*e^6)*c^(1/n)) - 4*a^2*d*g^2*Ei(2*log(c)/n + 2*a/(b*n)
 + 2*log(x*e + d))*e^(-2*a/(b*n) + 3)/((b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*
n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*lo
g(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6)*c^(2/n)) + a*b*f^2*Ei(lo
g(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 5)*log(c)/((b^5*n^5*e^6*log(
x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e +
d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6)*c^(1/
n)) + 8*a*b*f*g*Ei(2*log(c)/n + 2*a/(b*n) + 2*log(x*e + d))*e^(-2*a/(b*n) +
 4)*log(c)/((b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c)
 + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*lo
g(c) + a^2*b^3*n^3*e^6)*c^(2/n)) + 9*a*b*g^2*Ei(3*log(c)/n + 3*a/(b*n) + 3*
log(x*e + d))*e^(-3*a/(b*n) + 3)*log(c)/((b^5*n^5*e^6*log(x*e + d)^2 + 2*b^
5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*
log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6)*c^(3/n)) + 1/2*a^2*f^2
*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 5)/((b^5*n^5*e^6*log(x
*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d
) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6)*c^(1/n
)) + 4*a^2*f*g*Ei(2*log(c)/n + 2*a/(b*n) + 2*log(x*e + d))*e^(-2*a/(b*n) +
4)/((b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b
^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a
^2*b^3*n^3*e^6)*c^(2/n)) + 9/2*a^2*g^2*Ei(3*log(c)/n + 3*a/(b*n) + 3*log(x*
e + d))*e^(-3*a/(b*n) + 3)/((b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log
(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*
a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6)*c^(3/n))
```

maple [F] time = 3.93, size = 0, normalized size = 0.00

$$\int \frac{\left(gx+f\right)^{2}}{\left(b\ln\left(c\left(ex+d\right)^{n}\right)+a\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int((g*x+f)^2/(b*ln(c*(e*x+d)^n)+a)^3,x)
```

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

$$-\frac{\left(3\,ae^{2}g^{2}+\left(e^{2}g^{2}n+3\,e^{2}g^{2}\log(c)\right)b\right)x^{3}+\left(\left(4\,e^{2}fg+5\,deg^{2}\right)a+\left(2\,e^{2}fgn+deg^{2}n+\left(4\,e^{2}fg+5\,deg^{2}\right)\log(c)\right)b\right)x}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2/(a+b*log(c*(e*x+d)^n))^3,x, algorithm="maxima")
```

```
[Out] -1/2*((3*a*e^2*g^2 + (e^2*g^2*n + 3*e^2*g^2*log(c))*b)*x^3 + ((4*e^2*f*g +
5*d*e*g^2)*a + (2*e^2*f*g*n + d*e*g^2*n + (4*e^2*f*g + 5*d*e*g^2)*log(c))*b
)*x^2 + (d*e*f^2 + 2*d^2*f*g)*a + (d*e*f^2*n + (d*e*f^2 + 2*d^2*f*g)*log(c)
)*b + ((e^2*f^2 + 6*d*e*f*g + 2*d^2*g^2)*a + (e^2*f^2*n + 2*d*e*f*g*n + (e^
2*f^2 + 6*d*e*f*g + 2*d^2*g^2)*log(c))*b)*x + (3*b*e^2*g^2*x^3 + (4*e^2*f*g
 + 5*d*e*g^2)*b*x^2 + (e^2*f^2 + 6*d*e*f*g + 2*d^2*g^2)*b*x + (d*e*f^2 + 2*
d^2*f*g)*b)*log((e*x + d)^n))/(b^4*e^2*n^2*log((e*x + d)^n)^2 + b^4*e^2*n^2
*log(c)^2 + 2*a*b^3*e^2*n^2*log(c) + a^2*b^2*e^2*n^2 + 2*(b^4*e^2*n^2*log(c
) + a*b^3*e^2*n^2)*log((e*x + d)^n)) + integrate(1/2*(9*e^2*g^2*x^2 + e^2*f
^2 + 6*d*e*f*g + 2*d^2*g^2 + 2*(4*e^2*f*g + 5*d*e*g^2)*x)/(b^3*e^2*n^2*log(
(e*x + d)^n) + b^3*e^2*n^2*log(c) + a*b^2*e^2*n^2), x)
```

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

$$\int \frac{\left(f+g\,x\right)^2}{\left(a+b\,\ln\left(c\,\left(d+e\,x\right)^n\right)\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\int \frac{\left(f+gx\right)^{2}}{\left(a+b\log\left(c\left(d+ex\right)^{n}\right)\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.101 $\int \frac{f+gx}{\left(a+b\log(c(d+ex)^n)\right)^3}\,dx$

Optimal. Leaf size=261

$$\frac{e^{-\frac{a}{bn}}(d+ex)(ef-dg)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{2b^3e^2n^3}+\frac{2ge^{-\frac{2a}{bn}}(d+ex)^2\left(c(d+ex)^n\right)^{-2/n}\operatorname{Ei}\left(\frac{2\left(a+b\log(c(d+ex)^n)\right)}{bn}\right)}{b^3e^2n^3}$$

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

Rubi [A] time = 0.36, antiderivative size = 261, normalized size of antiderivative = 1.00, number of steps used = 17, number of rules used = 8, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.364, Rules used = {2400, 2399, 2389, 2300, 2178, 2390, 2310, 2297}

$$\frac{e^{-\frac{a}{bn}}(d+ex)(ef-dg)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{2b^3e^2n^3}+\frac{2ge^{-\frac{2a}{bn}}(d+ex)^2\left(c(d+ex)^n\right)^{-2/n}\operatorname{Ei}\left(\frac{2\left(a+b\log(c(d+ex)^n)\right)}{bn}\right)}{b^3e^2n^3}$$

Antiderivative was successfully verified.

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

```
[Out] ((e*f - d*g)*(d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(2*
b^3*e^2*E^(a/(b*n))*n^3*(c*(d + e*x)^n)^n^(-1)) + (2*g*(d + e*x)^2*ExpInteg
ralEi[(2*(a + b*Log[c*(d + e*x)^n]))/(b*n)])/(b^3*e^2*E^((2*a)/(b*n))*n^3*(
c*(d + e*x)^n)^(2/n)) - ((d + e*x)*(f + g*x))/(2*b*e*n*(a + b*Log[c*(d + e*
x)^n])^2) + ((e*f - d*g)*(d + e*x))/(2*b^2*e^2*n^2*(a + b*Log[c*(d + e*x)^n
])) - ((d + e*x)*(f + g*x))/(b^2*e*n^2*(a + b*Log[c*(d + e*x)^n]))
```

Rule 2178

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - (c*f)/d))*ExpIntegralEi[(f*g*(c + d*x)*Log[F])/d])/d, x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2297

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[(x*(a + b
*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
gerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2390

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

Rule 2399

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

Rule 2400

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

Rubi steps

$$\int \frac{f+gx}{\left(a+b\log\left(c(d+ex)^n\right)\right)^3}\,dx = -\frac{(d+ex)(f+gx)}{2ben\left(a+b\log\left(c(d+ex)^n\right)\right)^2} + \frac{\int \frac{f+gx}{\left(a+b\log(c(d+ex)^n)\right)^2}dx}{bn} - \frac{(ef-dg)\int \frac{1}{\left(a+b\log(c(\right.}}{2ben}$$

$$= -\frac{(d+ex)(f+gx)}{2ben\left(a+b\log\left(c(d+ex)^n\right)\right)^2} - \frac{(d+ex)(f+gx)}{b^2en^2\left(a+b\log\left(c(d+ex)^n\right)\right)} + \frac{2\int \frac{f+gx}{a+b\log(c(d}}{b^2n^2}$$

$$= -\frac{(d+ex)(f+gx)}{2ben\left(a+b\log\left(c(d+ex)^n\right)\right)^2} + \frac{(ef-dg)(d+ex)}{2b^2e^2n^2\left(a+b\log\left(c(d+ex)^n\right)\right)} - \frac{(d+}{b^2en^2\left(a+\right.}$$

$$= -\frac{(d+ex)(f+gx)}{2ben\left(a+b\log\left(c(d+ex)^n\right)\right)^2} + \frac{(ef-dg)(d+ex)}{2b^2e^2n^2\left(a+b\log\left(c(d+ex)^n\right)\right)} - \frac{(d+}{b^2en^2\left(a+\right.}$$

$$= -\frac{3e^{-\frac{a}{bn}}(ef-dg)(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{2b^3e^2n^3} - \frac{(d+ex)(f}{2ben\left(a+b\log(\right.}$$

$$= -\frac{3e^{-\frac{a}{bn}}(ef-dg)(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{2b^3e^2n^3} - \frac{(d+ex)(f}{2ben\left(a+b\log(\right.}$$

$$= \frac{e^{-\frac{a}{bn}}(ef-dg)(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{2b^3e^2n^3} + \frac{2e^{-\frac{2a}{bn}}g(d+ex)^2\left(c(\right.}{}$$

Mathematica [A] time = 0.41, size = 256, normalized size = 0.98

$$-\frac{e^{-\frac{2a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-2/n}\left(-e^{\frac{a}{bn}}(ef-dg)\left(c(d+ex)^n\right)^{\frac{1}{n}}\left(a+b\log\left(c(d+ex)^n\right)\right)^2\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)-4g(d+e\right.}{}$$

Antiderivative was successfully verified.

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

```
[Out] -1/2*((d + e*x)*(-(E^(a/(b*n))*(e*f - d*g)*(c*(d + e*x)^n)^n^(-1)*ExpIntegr
alEi[(a + b*Log[c*(d + e*x)^n])/(b*n)]*(a + b*Log[c*(d + e*x)^n])^2) - 4*g*
(d + e*x)*ExpIntegralEi[(2*(a + b*Log[c*(d + e*x)^n]))/(b*n)]*(a + b*Log[c*
(d + e*x)^n])^2 + b*E^((2*a)/(b*n))*n*(c*(d + e*x)^n)^(2/n)*(b*e*n*(f + g*x
) + a*(e*f + d*g + 2*e*g*x) + b*(d*g + e*(f + 2*g*x))*Log[c*(d + e*x)^n])))
/(b^3*e^2*E^((2*a)/(b*n))*n^3*(c*(d + e*x)^n)^(2/n)*(a + b*Log[c*(d + e*x)^
n])^2)
```

fricas [B] time = 0.49, size = 588, normalized size = 2.25

$$\frac{\left(\left(\left(b^2ef-b^2dg\right)n^2\log\left(ex+d\right)^2+a^2ef-a^2dg+\left(b^2ef-b^2dg\right)\log(c)^2+2\left(\left(b^2ef-b^2dg\right)n\log(c)+\left(abef-abd\right.\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

giac [B] time = 0.62, size = 4114, normalized size = 15.76

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -(x*e + d)^2*b^2*g*n^2*e*log(x*e + d)/(b^5*n^5*e^3*log(x*e + d)^2 + 2*b^5*n
^4*e^3*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^3*log(x*e + d) + b^5*n^3*e^3*log
(c)^2 + 2*a*b^4*n^3*e^3*log(c) + a^2*b^3*n^3*e^3) + 1/2*(x*e + d)*b^2*d*g*n
^2*e*log(x*e + d)/(b^5*n^5*e^3*log(x*e + d)^2 + 2*b^5*n^4*e^3*log(x*e + d)*
log(c) + 2*a*b^4*n^4*e^3*log(x*e + d) + b^5*n^3*e^3*log(c)^2 + 2*a*b^4*n^3*
e^3*log(c) + a^2*b^3*n^3*e^3) - 1/2*b^2*d*g*n^2*Ei(log(c)/n + a/(b*n) + log
(x*e + d))*e^(-a/(b*n) + 1)*log(x*e + d)^2/((b^5*n^5*e^3*log(x*e + d)^2 + 2
*b^5*n^4*e^3*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^3*log(x*e + d) + b^5*n^3*e
^3*log(c)^2 + 2*a*b^4*n^3*e^3*log(c) + a^2*b^3*n^3*e^3)*c^(1/n)) - 1/2*(x*e
 + d)^2*b^2*g*n^2*e/(b^5*n^5*e^3*log(x*e + d)^2 + 2*b^5*n^4*e^3*log(x*e + d
)*log(c) + 2*a*b^4*n^4*e^3*log(x*e + d) + b^5*n^3*e^3*log(c)^2 + 2*a*b^4*n^
3*e^3*log(c) + a^2*b^3*n^3*e^3) + 1/2*(x*e + d)*b^2*d*g*n^2*e/(b^5*n^5*e^3*
log(x*e + d)^2 + 2*b^5*n^4*e^3*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^3*log(x*
e + d) + b^5*n^3*e^3*log(c)^2 + 2*a*b^4*n^3*e^3*log(c) + a^2*b^3*n^3*e^3) -
 1/2*(x*e + d)*b^2*f*n^2*e^2*log(x*e + d)/(b^5*n^5*e^3*log(x*e + d)^2 + 2*b
^5*n^4*e^3*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^3*log(x*e + d) + b^5*n^3*e^3
*log(c)^2 + 2*a*b^4*n^3*e^3*log(c) + a^2*b^3*n^3*e^3) + 1/2*b^2*f*n^2*Ei(lo
g(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 2)*log(x*e + d)^2/((b^5*n^5*
e^3*log(x*e + d)^2 + 2*b^5*n^4*e^3*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^3*lo
g(x*e + d) + b^5*n^3*e^3*log(c)^2 + 2*a*b^4*n^3*e^3*log(c) + a^2*b^3*n^3*e^
3)*c^(1/n)) + 2*b^2*g*n^2*Ei(2*log(c)/n + 2*a/(b*n) + 2*log(x*e + d))*e^(-2
*a/(b*n) + 1)*log(x*e + d)^2/((b^5*n^5*e^3*log(x*e + d)^2 + 2*b^5*n^4*e^3*l
og(x*e + d)*log(c) + 2*a*b^4*n^4*e^3*log(x*e + d) + b^5*n^3*e^3*log(c)^2 +
2*a*b^4*n^3*e^3*log(c) + a^2*b^3*n^3*e^3)*c^(2/n)) - (x*e + d)^2*b^2*g*n*e*
log(c)/(b^5*n^5*e^3*log(x*e + d)^2 + 2*b^5*n^4*e^3*log(x*e + d)*log(c) + 2*
a*b^4*n^4*e^3*log(x*e + d) + b^5*n^3*e^3*log(c)^2 + 2*a*b^4*n^3*e^3*log(c)
+ a^2*b^3*n^3*e^3) + 1/2*(x*e + d)*b^2*d*g*n*e*log(c)/(b^5*n^5*e^3*log(x*e
+ d)^2 + 2*b^5*n^4*e^3*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^3*log(x*e + d) +
 b^5*n^3*e^3*log(c)^2 + 2*a*b^4*n^3*e^3*log(c) + a^2*b^3*n^3*e^3) - b^2*d*g
*n*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 1)*log(x*e + d)*log(
c)/((b^5*n^5*e^3*log(x*e + d)^2 + 2*b^5*n^4*e^3*log(x*e + d)*log(c) + 2*a*b
^4*n^4*e^3*log(x*e + d) + b^5*n^3*e^3*log(c)^2 + 2*a*b^4*n^3*e^3*log(c) + a
^2*b^3*n^3*e^3)*c^(1/n)) - 1/2*(x*e + d)*b^2*f*n^2*e^2/(b^5*n^5*e^3*log(x*e
 + d)^2 + 2*b^5*n^4*e^3*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^3*log(x*e + d)
+ b^5*n^3*e^3*log(c)^2 + 2*a*b^4*n^3*e^3*log(c) + a^2*b^3*n^3*e^3) - (x*e +
 d)^2*a*b*g*n*e/(b^5*n^5*e^3*log(x*e + d)^2 + 2*b^5*n^4*e^3*log(x*e + d)*lo
g(c) + 2*a*b^4*n^4*e^3*log(x*e + d) + b^5*n^3*e^3*log(c)^2 + 2*a*b^4*n^3*e^
3*log(c) + a^2*b^3*n^3*e^3) + 1/2*(x*e + d)*a*b*d*g*n*e/(b^5*n^5*e^3*log(x*
```

```
e + d)^2 + 2*b^5*n^4*e^3*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^3*log(x*e + d)
 + b^5*n^3*e^3*log(c)^2 + 2*a*b^4*n^3*e^3*log(c) + a^2*b^3*n^3*e^3) - a*b*d
*g*n*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 1)*log(x*e + d)/((
b^5*n^5*e^3*log(x*e + d)^2 + 2*b^5*n^4*e^3*log(x*e + d)*log(c) + 2*a*b^4*n^
4*e^3*log(x*e + d) + b^5*n^3*e^3*log(c)^2 + 2*a*b^4*n^3*e^3*log(c) + a^2*b^
3*n^3*e^3)*c^(1/n)) - 1/2*(x*e + d)*b^2*f*n*e^2*log(c)/(b^5*n^5*e^3*log(x*e
 + d)^2 + 2*b^5*n^4*e^3*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^3*log(x*e + d)
+ b^5*n^3*e^3*log(c)^2 + 2*a*b^4*n^3*e^3*log(c) + a^2*b^3*n^3*e^3) + b^2*f*
n*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 2)*log(x*e + d)*log(c
)/((b^5*n^5*e^3*log(x*e + d)^2 + 2*b^5*n^4*e^3*log(x*e + d)*log(c) + 2*a*b^
4*n^4*e^3*log(x*e + d) + b^5*n^3*e^3*log(c)^2 + 2*a*b^4*n^3*e^3*log(c) + a^
2*b^3*n^3*e^3)*c^(1/n)) + 4*b^2*g*n*Ei(2*log(c)/n + 2*a/(b*n) + 2*log(x*e +
 d))*e^(-2*a/(b*n) + 1)*log(x*e + d)*log(c)/((b^5*n^5*e^3*log(x*e + d)^2 +
2*b^5*n^4*e^3*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^3*log(x*e + d) + b^5*n^3*
e^3*log(c)^2 + 2*a*b^4*n^3*e^3*log(c) + a^2*b^3*n^3*e^3)*c^(2/n)) - 1/2*b^2
*d*g*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 1)*log(c)^2/((b^5*
n^5*e^3*log(x*e + d)^2 + 2*b^5*n^4*e^3*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^
3*log(x*e + d) + b^5*n^3*e^3*log(c)^2 + 2*a*b^4*n^3*e^3*log(c) + a^2*b^3*n^
3*e^3)*c^(1/n)) - 1/2*(x*e + d)*a*b*f*n*e^2/(b^5*n^5*e^3*log(x*e + d)^2 + 2
*b^5*n^4*e^3*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^3*log(x*e + d) + b^5*n^3*e
^3*log(c)^2 + 2*a*b^4*n^3*e^3*log(c) + a^2*b^3*n^3*e^3) + a*b*f*n*Ei(log(c)
/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 2)*log(x*e + d)/((b^5*n^5*e^3*lo
g(x*e + d)^2 + 2*b^5*n^4*e^3*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^3*log(x*e
+ d) + b^5*n^3*e^3*log(c)^2 + 2*a*b^4*n^3*e^3*log(c) + a^2*b^3*n^3*e^3)*c^(
1/n)) + 4*a*b*g*n*Ei(2*log(c)/n + 2*a/(b*n) + 2*log(x*e + d))*e^(-2*a/(b*n)
 + 1)*log(x*e + d)/((b^5*n^5*e^3*log(x*e + d)^2 + 2*b^5*n^4*e^3*log(x*e + d
)*log(c) + 2*a*b^4*n^4*e^3*log(x*e + d) + b^5*n^3*e^3*log(c)^2 + 2*a*b^4*n^
3*e^3*log(c) + a^2*b^3*n^3*e^3)*c^(2/n)) - a*b*d*g*Ei(log(c)/n + a/(b*n) +
log(x*e + d))*e^(-a/(b*n) + 1)*log(c)/((b^5*n^5*e^3*log(x*e + d)^2 + 2*b^5*
n^4*e^3*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^3*log(x*e + d) + b^5*n^3*e^3*lo
g(c)^2 + 2*a*b^4*n^3*e^3*log(c) + a^2*b^3*n^3*e^3)*c^(1/n)) + 1/2*b^2*f*Ei(
log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 2)*log(c)^2/((b^5*n^5*e^3*
log(x*e + d)^2 + 2*b^5*n^4*e^3*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^3*log(x*
e + d) + b^5*n^3*e^3*log(c)^2 + 2*a*b^4*n^3*e^3*log(c) + a^2*b^3*n^3*e^3)*c
^(1/n)) + 2*b^2*g*Ei(2*log(c)/n + 2*a/(b*n) + 2*log(x*e + d))*e^(-2*a/(b*n)
 + 1)*log(c)^2/((b^5*n^5*e^3*log(x*e + d)^2 + 2*b^5*n^4*e^3*log(x*e + d)*lo
g(c) + 2*a*b^4*n^4*e^3*log(x*e + d) + b^5*n^3*e^3*log(c)^2 + 2*a*b^4*n^3*e^
3*log(c) + a^2*b^3*n^3*e^3)*c^(2/n)) - 1/2*a^2*d*g*Ei(log(c)/n + a/(b*n) +
log(x*e + d))*e^(-a/(b*n) + 1)/((b^5*n^5*e^3*log(x*e + d)^2 + 2*b^5*n^4*e^3
*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^3*log(x*e + d) + b^5*n^3*e^3*log(c)^2
+ 2*a*b^4*n^3*e^3*log(c) + a^2*b^3*n^3*e^3)*c^(1/n)) + a*b*f*Ei(log(c)/n +
a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 2)*log(c)/((b^5*n^5*e^3*log(x*e + d)^
2 + 2*b^5*n^4*e^3*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^3*log(x*e + d) + b^5*
n^3*e^3*log(c)^2 + 2*a*b^4*n^3*e^3*log(c) + a^2*b^3*n^3*e^3)*c^(1/n)) + 4*a
*b*g*Ei(2*log(c)/n + 2*a/(b*n) + 2*log(x*e + d))*e^(-2*a/(b*n) + 1)*log(c)/
((b^5*n^5*e^3*log(x*e + d)^2 + 2*b^5*n^4*e^3*log(x*e + d)*log(c) + 2*a*b^4*
n^4*e^3*log(x*e + d) + b^5*n^3*e^3*log(c)^2 + 2*a*b^4*n^3*e^3*log(c) + a^2*
b^3*n^3*e^3)*c^(2/n)) + 1/2*a^2*f*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(
-a/(b*n) + 2)/((b^5*n^5*e^3*log(x*e + d)^2 + 2*b^5*n^4*e^3*log(x*e + d)*log
(c) + 2*a*b^4*n^4*e^3*log(x*e + d) + b^5*n^3*e^3*log(c)^2 + 2*a*b^4*n^3*e^3
*log(c) + a^2*b^3*n^3*e^3)*c^(1/n)) + 2*a^2*g*Ei(2*log(c)/n + 2*a/(b*n) + 2
*log(x*e + d))*e^(-2*a/(b*n) + 1)/((b^5*n^5*e^3*log(x*e + d)^2 + 2*b^5*n^4*
e^3*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^3*log(x*e + d) + b^5*n^3*e^3*log(c)
^2 + 2*a*b^4*n^3*e^3*log(c) + a^2*b^3*n^3*e^3)*c^(2/n))
```

maple [F] time = 4.92, size = 0, normalized size = 0.00

$$\int \frac{gx+f}{\left(b\ln\left(c\left(ex+d\right)^{n}\right)+a\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int((g*x+f)/(b*ln(c*(e*x+d)^n)+a)^3,x)
```

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

$$-\frac{\left(2\,ae^2g+\left(e^2gn+2\,e^2g\log(c)\right)b\right)x^2+\left(def+d^2g\right)a+\left(defn+\left(def+d^2g\right)\log(c)\right)b+\left(\left(e^2f+3\,deg\right)a+\left(e^2f\right.\right.}{2\left(b^4e^2n^2\log\left((ex+d)^n\right)^2+b^4e^2n^2\log(c)^2+2\,ab^3e^2n^2\log(c)+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\int \frac{f+g\,x}{{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int((f + g*x)/(a + b*log(c*(d + e*x)^n))^3, x)
```

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

$$\int \frac{f+gx}{\left(a+b\log\left(c\left(d+ex\right)^n\right)\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.102 $\int \frac{1}{\left(a+b\log(c(d+ex)^n)\right)^3} dx$

Optimal. Leaf size=135

$$\frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{2b^3en^3}-\frac{d+ex}{2b^2en^2\left(a+b\log\left(c(d+ex)^n\right)\right)}-\frac{d+ex}{2ben\left(a+b\log\left(c(d+ex)^n\right)\right)^2}$$

```
[Out] 1/2*(e*x+d)*Ei((a+b*ln(c*(e*x+d)^n))/b/n)/b^3/e/exp(a/b/n)/n^3/((c*(e*x+d)^
n)^(1/n))+1/2*(-e*x-d)/b/e/n/(a+b*ln(c*(e*x+d)^n))^2+1/2*(-e*x-d)/b^2/e/n^2
/(a+b*ln(c*(e*x+d)^n))
```

Rubi [A] time = 0.08, antiderivative size = 135, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {2389, 2297, 2300, 2178}

$$\frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{2b^3en^3}-\frac{d+ex}{2b^2en^2\left(a+b\log\left(c(d+ex)^n\right)\right)}-\frac{d+ex}{2ben\left(a+b\log\left(c(d+ex)^n\right)\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^(-3),x]
```

```
[Out] ((d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(2*b^3*e*E^(a/(
b*n))*n^3*(c*(d + e*x)^n)^n^(-1)) - (d + e*x)/(2*b*e*n*(a + b*Log[c*(d + e*
x)^n])^2) - (d + e*x)/(2*b^2*e*n^2*(a + b*Log[c*(d + e*x)^n]))
```

Rule 2178

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - (c*f)/d))*ExpIntegralEi[(f*g*(c + d*x)*Log[F])/d])/d, x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2297

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[(x*(a + b
*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
gerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rubi steps

$$\int \frac{1}{\left(a+b\log\left(c(d+ex)^n\right)\right)^3}\,dx = \frac{\text{Subst}\left(\int \frac{1}{\left(a+b\log(cx^n)\right)^3}\,dx, x, d+ex\right)}{e}$$

$$= -\frac{d+ex}{2ben\left(a+b\log\left(c(d+ex)^n\right)\right)^2} + \frac{\text{Subst}\left(\int \frac{1}{\left(a+b\log(cx^n)\right)^2}\,dx, x, d+ex\right)}{2ben}$$

$$= -\frac{d+ex}{2ben\left(a+b\log\left(c(d+ex)^n\right)\right)^2} - \frac{d+ex}{2b^2en^2\left(a+b\log\left(c(d+ex)^n\right)\right)} + \frac{\text{Subst}\left(\int\right.}{}$$

$$= -\frac{d+ex}{2ben\left(a+b\log\left(c(d+ex)^n\right)\right)^2} - \frac{d+ex}{2b^2en^2\left(a+b\log\left(c(d+ex)^n\right)\right)} + \frac{\left((d+ex\right.}{}$$

$$= \frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{2b^3en^3} - \frac{d+ex}{2ben\left(a+b\log\left(c(d+ex)^n\right.\right.}$$

Mathematica [A] time = 0.08, size = 118, normalized size = 0.87

$$\frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{2b^3en^3} - \frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)+bn\right)}{2b^2en^2\left(a+b\log\left(c(d+ex)^n\right)\right)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^(-3),x]
```

```
[Out] ((d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(2*b^3*e*E^(a/(
b*n))*n^3*(c*(d + e*x)^n)^n^(-1)) - ((d + e*x)*(a + b*n + b*Log[c*(d + e*x)
^n]))/(2*b^2*e*n^2*(a + b*Log[c*(d + e*x)^n])^2)
```

fricas [B] time = 0.49, size = 263, normalized size = 1.95

$$-\frac{\left(\left(b^2dn^2+abdn+\left(b^2en^2+aben\right)x+\left(b^2en^2x+b^2dn^2\right)\log(ex+d)+\left(b^2enx+b^2dn\right)\log(c)\right)e^{\left(\frac{b\log(c)+a}{bn}\right)} - \left(b^2\right.}{2\left(b^5en^5\log(ex+d)^2+b^5en^3\log(c)^2+2\,ab\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^3,x, algorithm="fricas")
```

```
[Out] -1/2*((b^2*d*n^2 + a*b*d*n + (b^2*e*n^2 + a*b*e*n)*x + (b^2*e*n^2*x + b^2*d
*n^2)*log(e*x + d) + (b^2*e*n*x + b^2*d*n)*log(c))*e^((b*log(c) + a)/(b*n))
 - (b^2*n^2*log(e*x + d)^2 + b^2*log(c)^2 + 2*a*b*log(c) + a^2 + 2*(b^2*n*l
og(c) + a*b*n)*log(e*x + d))*log_integral((e*x + d)*e^((b*log(c) + a)/(b*n)
)))*e^(-(b*log(c) + a)/(b*n))/(b^5*e*n^5*log(e*x + d)^2 + b^5*e*n^3*log(c)^
2 + 2*a*b^4*e*n^3*log(c) + a^2*b^3*e*n^3 + 2*(b^5*e*n^4*log(c) + a*b^4*e*n^
4)*log(e*x + d))
```

giac [B] time = 0.26, size = 1322, normalized size = 9.79

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^3,x, algorithm="giac")
```

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

maple [C] time = 0.05, size = 734, normalized size = 5.44

$$-\frac{(ex+d)\,c^{-\frac{1}{n}}\left((ex+d)^{n}\right)^{-\frac{1}{n}}\,\mathrm{Ei}\left(1,-\ln(ex+d)-\frac{-i\pi b\,\mathrm{csgn}(ic)\mathrm{csgn}\left(i(ex+d)^{n}\right)\mathrm{csgn}\left(ic(ex+d)^{n}\right)+i\pi b\,\mathrm{csgn}(ic)\mathrm{csgn}\left(ic(ex+d)^{n}\right)^{2}+i\pi b\,\mathrm{csg}}{}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -(-I*Pi*b*e*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*Pi*b*e*x*cs
gn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*Pi*b*e*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)
^n)^2-I*Pi*b*e*x*csgn(I*c*(e*x+d)^n)^3-I*Pi*b*d*csgn(I*c)*csgn(I*(e*x+d)^n)
*csgn(I*c*(e*x+d)^n)+I*Pi*b*d*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*Pi*b*d*csgn
(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*Pi*b*d*csgn(I*c*(e*x+d)^n)^3+2*b*e*n*
x+2*b*e*x*ln(c)+2*b*e*x*ln((e*x+d)^n)+2*a*e*x+2*b*d*n+2*b*d*ln(c)+2*b*d*ln(
(e*x+d)^n)+2*a*d)/(-I*Pi*b*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+
I*Pi*b*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*Pi*b*csgn(I*(e*x+d)^n)*csgn(I*c*(e
*x+d)^n)^2-I*Pi*b*csgn(I*c*(e*x+d)^n)^3+2*b*ln(c)+2*b*ln((e*x+d)^n)+2*a)^2/
b^2/e/n^2-1/2/b^3/n^3/e*(e*x+d)*c^(-1/n)*((e*x+d)^n)^(-1/n)*exp(-1/2*(-I*Pi
*b*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*Pi*b*csgn(I*c)*csgn(I*
c*(e*x+d)^n)^2+I*Pi*b*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*Pi*b*csgn(I
*c*(e*x+d)^n)^3+2*a)/b/n)*Ei(1,-ln(e*x+d)-1/2*(-I*Pi*b*csgn(I*c)*csgn(I*(e*
x+d)^n)*csgn(I*c*(e*x+d)^n)+I*Pi*b*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*Pi*b*c
sgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*Pi*b*csgn(I*c*(e*x+d)^n)^3+2*b*ln(
c)+2*a+2*(-n*ln(e*x+d)+ln((e*x+d)^n))*b)/b/n)
```

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

$$-\frac{(dn + d\log(c))b + ad + ((en + e\log(c))b + ae)x + (bex + bd)\log((ex + d)^n)}{2\left(b^4en^2\log\left((ex + d)^n\right)^2 + b^4en^2\log(c)^2 + 2\,ab^3en^2\log(c) + a^2b^2en^2 + 2\left(b^4en^2\log(c) + ab^3en^2\right)\log\left((ex + \right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^3,x, algorithm="maxima")
```

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

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

$$\int \frac{1}{\left(a + b\,\ln\left(c\,{\left(d + e\,x\right)}^n\right)\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int(1/(a + b*log(c*(d + e*x)^n))^3, x)
```

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

$$\int \frac{1}{\left(a + b\log\left(c\left(d + ex\right)^n\right)\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**(-3), x)
```

3.103 $\int \frac{1}{(f+gx)\left(a+b\log(c(d+ex)^n)\right)^3}\,dx$

Optimal. Leaf size=27

$$\text{Int}\left(\frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^3},x\right)$$

```
[Out] Unintegrable(1/(g*x+f)/(a+b*ln(c*(e*x+d)^n))^3,x)
```

Rubi [A] time = 0.03, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^3),x]
```

```
[Out] Defer[Int][1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^3), x]
```

Rubi steps

$$\int \frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}\,dx = \int \frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}\,dx$$

Mathematica [A] time = 1.34, size = 0, normalized size = 0.00

$$\int \frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^3),x]
```

```
[Out] Integrate[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^3), x]
```

fricas [A] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{1}{a^3gx + a^3f + \left(b^3gx + b^3f\right)\log\left((ex+d)^nc\right)^3 + 3\left(ab^2gx + ab^2f\right)\log\left((ex+d)^nc\right)^2 + 3\left(a^2bgx + a^2bf\right)\mathrm{l}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n))^3,x, algorithm="fricas")
```

```
[Out] integral(1/(a^3*g*x + a^3*f + (b^3*g*x + b^3*f)*log((e*x + d)^n*c)^3 + 3*(a
*b^2*g*x + a*b^2*f)*log((e*x + d)^n*c)^2 + 3*(a^2*b*g*x + a^2*b*f)*log((e*x
 + d)^n*c)), x)
```

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

$$\int \frac{1}{(gx+f)\left(b\log\left((ex+d)^nc\right)+a\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n))^3,x, algorithm="giac")
```

```
[Out] integrate(1/((g*x + f)*(b*log((e*x + d)^n*c) + a)^3), x)
```

maple [A] time = 4.22, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(gx+f\right)\left(b\ln\left(c\left(ex+d\right)^{n}\right)+a\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int(1/(g*x+f)/(b*ln(c*(e*x+d)^n)+a)^3,x)
```

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

$$-\frac{be^2gnx^2+(a}{2\left(b^4e^2f^2n^2\log(c)^2+2\,ab^3e^2f^2n^2\log(c)+a^2b^2e^2f^2n^2+\left(b^4e^2g^2n^2\log(c)^2+2\,ab^3e^2g^2n^2\log(c)+a^2b^2e^2g^2n\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n))^3,x, algorithm="maxima")
```

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

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{\left(f+g\,x\right)\,{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int(1/((f + g*x)*(a + b*log(c*(d + e*x)^n))^3), x)
```

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

$$\int \frac{1}{\left(a+b\log\left(c\left(d+ex\right)^{n}\right)\right)^{3}\left(f+gx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Integral(1/((a + b*log(c*(d + e*x)**n))**3*(f + g*x)), x)
```

3.104 $\int \frac{1}{(f+gx)^2\left(a+b\log(c(d+ex)^n)\right)^3}\,dx$

Optimal. Leaf size=27

$$\text{Int}\left(\frac{1}{(f+gx)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^3},x\right)$$

```
[Out] Unintegrable(1/(g*x+f)^2/(a+b*ln(c*(e*x+d)^n))^3,x)
```

Rubi [A] time = 0.03, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(f+gx)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^3}\,dx$$

Verification is Not applicable to the result.

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

```
[Out] Defer[Int][1/((f + g*x)^2*(a + b*Log[c*(d + e*x)^n])^3), x]
```

Rubi steps

$$\int \frac{1}{(f+gx)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^3}\,dx=\int \frac{1}{(f+gx)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^3}\,dx$$

Mathematica [A] time = 5.08, size = 0, normalized size = 0.00

$$\int \frac{1}{(f+gx)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^3}\,dx$$

Verification is Not applicable to the result.

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

```
[Out] Integrate[1/((f + g*x)^2*(a + b*Log[c*(d + e*x)^n])^3), x]
```

fricas [A] time = 0.52, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{1}{a^3g^2x^2+2\,a^3fgx+a^3f^2+\left(b^3g^2x^2+2\,b^3fgx+b^3f^2\right)\log\left((ex+d)^nc\right)^3+3\left(ab^2g^2x^2+2\,ab^2fgx+ab^2\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)^2/(a+b*log(c*(e*x+d)^n))^3,x, algorithm="fricas")
```

```
[Out] integral(1/(a^3*g^2*x^2 + 2*a^3*f*g*x + a^3*f^2 + (b^3*g^2*x^2 + 2*b^3*f*g*
x + b^3*f^2)*log((e*x + d)^n*c)^3 + 3*(a*b^2*g^2*x^2 + 2*a*b^2*f*g*x + a*b^
2*f^2)*log((e*x + d)^n*c)^2 + 3*(a^2*b*g^2*x^2 + 2*a^2*b*f*g*x + a^2*b*f^2)
*log((e*x + d)^n*c)), x)
```

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

$$\int \frac{1}{(gx+f)^2\left(b\log\left((ex+d)^nc\right)+a\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)^2/(a+b*log(c*(e*x+d)^n))^3,x, algorithm="giac")
```

```
[Out] integrate(1/((g*x + f)^2*(b*log((e*x + d)^n*c) + a)^3), x)
```

maple [A] time = 9.46, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(gx+f\right)^{2}\left(b\ln\left(c\left(ex+d\right)^{n}\right)+a\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$2\left(b^4e^2f^3n^2\log(c)^2+2\,ab^3e^2f^3n^2\log(c)+a^2b^2e^2f^3n^2+\left(b^4e^2g^3n^2\log(c)^2+2\,ab^3e^2g^3n^2\log(c)+a^2b^2e^2g^3n^2\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)^2/(a+b*log(c*(e*x+d)^n))^3,x, algorithm="maxima")
```

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

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{{\left(f+g\,x\right)}^2\,{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\int \frac{1}{\left(a+b\log\left(c\left(d+ex\right)^{n}\right)\right)^{3}\left(f+gx\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Integral(1/((a + b*log(c*(d + e*x)**n))**3*(f + g*x)**2), x)
```

3.105 $\int (f+gx)^2\sqrt{a+b\log\left(c(d+ex)^n\right)}\,dx$

Optimal. Leaf size=404

$$-\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}\,g\sqrt{n}\,e^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)\left(c(d+ex)^n\right)^{-2/n}\operatorname{erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{2e^3}-\frac{\sqrt{\pi}\sqrt{b}\sqrt{n}\,e^{-\frac{a}{bn}}(d+ex)(ef-d}{}$$

```
[Out] -1/18*g^2*(e*x+d)^3*erfi(3^(1/2)*(a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2
))*b^(1/2)*n^(1/2)*3^(1/2)*Pi^(1/2)/e^3/exp(3*a/b/n)/((c*(e*x+d)^n)^(3/n))-
1/4*g*(-d*g+e*f)*(e*x+d)^2*erfi(2^(1/2)*(a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)
/n^(1/2))*b^(1/2)*n^(1/2)*2^(1/2)*Pi^(1/2)/e^3/exp(2*a/b/n)/((c*(e*x+d)^n)^
(2/n))-1/2*(-d*g+e*f)^2*(e*x+d)*erfi((a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^
(1/2))*b^(1/2)*n^(1/2)*Pi^(1/2)/e^3/exp(a/b/n)/((c*(e*x+d)^n)^(1/n))+(-d*g+
e*f)^2*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^(1/2)/e^3+g*(-d*g+e*f)*(e*x+d)^2*(a+b*
ln(c*(e*x+d)^n))^(1/2)/e^3+1/3*g^2*(e*x+d)^3*(a+b*ln(c*(e*x+d)^n))^(1/2)/e^
3
```

Rubi [A] time = 0.70, antiderivative size = 404, normalized size of antiderivative = 1.00, number of steps used = 17, number of rules used = 9, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.346$, Rules used = {2401, 2389, 2296, 2300, 2180, 2204, 2390, 2305, 2310}

$$-\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}\,g\sqrt{n}\,e^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)\left(c(d+ex)^n\right)^{-2/n}\operatorname{Erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{2e^3}-\frac{\sqrt{\pi}\sqrt{b}\sqrt{n}\,e^{-\frac{a}{bn}}(d+ex)(ef-d}{}$$

Antiderivative was successfully verified.

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

```
[Out] -(Sqrt[b]*(e*f - d*g)^2*Sqrt[n]*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d
 + e*x)^n]]/(Sqrt[b]*Sqrt[n])])/(2*e^3*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1))
- (Sqrt[b]*g*(e*f - d*g)*Sqrt[n]*Sqrt[Pi/2]*(d + e*x)^2*Erfi[(Sqrt[2]*Sqrt[
a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(2*e^3*E^((2*a)/(b*n))*(c*(d
 + e*x)^n)^(2/n)) - (Sqrt[b]*g^2*Sqrt[n]*Sqrt[Pi/3]*(d + e*x)^3*Erfi[(Sqrt[
3]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(6*e^3*E^((3*a)/(b*n
))*(c*(d + e*x)^n)^(3/n)) + ((e*f - d*g)^2*(d + e*x)*Sqrt[a + b*Log[c*(d +
e*x)^n]])/e^3 + (g*(e*f - d*g)*(d + e*x)^2*Sqrt[a + b*Log[c*(d + e*x)^n]])/
e^3 + (g^2*(d + e*x)^3*Sqrt[a + b*Log[c*(d + e*x)^n]])/(3*e^3)
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2390

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

Rule 2401

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

Rubi steps

$$\int (f+gx)^2\sqrt{a+b\log\left(c(d+ex)^n\right)}\,dx = \int\left(\frac{(ef-dg)^2\sqrt{a+b\log\left(c(d+ex)^n\right)}}{e^2}+\frac{2g(ef-dg)(d+ex)\sqrt{a+b\,}}{e^2}\right.$$

$$=\frac{g^2\int(d+ex)^2\sqrt{a+b\log\left(c(d+ex)^n\right)}\,dx}{e^2}+\frac{(2g(ef-dg))\int(d+ex)\sqrt{}}{e^2}$$

$$=\frac{g^2\,\text{Subst}\left(\int x^2\sqrt{a+b\log\left(cx^n\right)}\,dx,x,d+ex\right)}{e^3}+\frac{(2g(ef-dg))\,\text{Subst}}{}$$

$$=\frac{(ef-dg)^2(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{e^3}+\frac{g(ef-dg)(d+ex)^2\sqrt{a}}{e^3}$$

$$=\frac{(ef-dg)^2(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{e^3}+\frac{g(ef-dg)(d+ex)^2\sqrt{a}}{e^3}$$

$$=\frac{(ef-dg)^2(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{e^3}+\frac{g(ef-dg)(d+ex)^2\sqrt{a}}{e^3}$$

$$=-\frac{\sqrt{b}\,e^{-\frac{a}{bn}}(ef-dg)^2\sqrt{n}\,\sqrt{\pi}\,(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{erfi}\left(\frac{\sqrt{a+b\log(c(d+e}}{\sqrt{b}\,\sqrt{n}}\right.}{2e^3}$$

Mathematica [A] time = 0.51, size = 374, normalized size = 0.93

$$\frac{(d+ex)\left(9\sqrt{2\pi}\,\sqrt{b}\,g\sqrt{n}\,e^{-\frac{2a}{bn}}(d+ex)(dg-ef)\left(c(d+ex)^n\right)^{-2/n}\text{erfi}\left(\frac{\sqrt{2}\,\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\,\sqrt{n}}\right)-18\sqrt{\pi}\,\sqrt{b}\,\sqrt{n}\,e^{-\frac{a}{bn}}(ef\right.}{}$$

Antiderivative was successfully verified.

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

```
[Out] ((d + e*x)*((-18*Sqrt[b]*(e*f - d*g)^2*Sqrt[n]*Sqrt[Pi]*Erfi[Sqrt[a + b*Log
[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])])/(E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)) +
 (9*Sqrt[b]*g*(-(e*f) + d*g)*Sqrt[n]*Sqrt[2*Pi]*(d + e*x)*Erfi[(Sqrt[2]*Sqr
t[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(E^((2*a)/(b*n))*(c*(d + e
*x)^n)^(2/n)) - (2*Sqrt[b]*g^2*Sqrt[n]*Sqrt[3*Pi]*(d + e*x)^2*Erfi[(Sqrt[3]
*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(E^((3*a)/(b*n))*(c*(d
 + e*x)^n)^(3/n)) + 36*(e*f - d*g)^2*Sqrt[a + b*Log[c*(d + e*x)^n]] + 36*g*
(e*f - d*g)*(d + e*x)*Sqrt[a + b*Log[c*(d + e*x)^n]] + 12*g^2*(d + e*x)^2*S
qrt[a + b*Log[c*(d + e*x)^n]]))/(36*e^3)
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

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

$$\int\left(gx+f\right)^2\sqrt{b\log\left((ex+d)^n c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="giac")
[Out] integrate((g*x + f)^2*sqrt(b*log((e*x + d)^n*c) + a), x)
```

maple [F] time = 0.53, size = 0, normalized size = 0.00

$$\int \left(gx+f\right)^{2} \sqrt{b\ln\left(c\left(ex+d\right)^{n}\right)+a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

$$\int \left(gx+f\right)^{2} \sqrt{b\log\left(\left(ex+d\right)^{n} c\right)+a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="maxima")
[Out] integrate((g*x + f)^2*sqrt(b*log((e*x + d)^n*c) + a), x)
```

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

$$\int {\left(f+g\,x\right)}^2\,\sqrt{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

$$\int \sqrt{a + b \log{\left(c \left(d + e x\right)^{n} \right)}} \left(f + g x\right)^{2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**2*(a+b*ln(c*(e*x+d)**n))**(1/2),x)
[Out] Integral(sqrt(a + b*log(c*(d + e*x)**n))*(f + g*x)**2, x)
```

3.106 $\int (f+gx)\sqrt{a+b\log\left(c(d+ex)^n\right)}\,dx$

Optimal. Leaf size=255

$$-\frac{\sqrt{\pi}\sqrt{b}\sqrt{n}\,e^{-\frac{a}{bn}}(d+ex)(ef-dg)\left(c(d+ex)^n\right)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{2e^2}-\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}\,g\sqrt{n}\,e^{-\frac{2a}{bn}}(d+ex)^2\left(c(d+ex\right.}{4e^2}$$

```
[Out] -1/8*g*(e*x+d)^2*erfi(2^(1/2)*(a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*
b^(1/2)*n^(1/2)*2^(1/2)*Pi^(1/2)/e^2/exp(2*a/b/n)/((c*(e*x+d)^n)^(2/n))-1/2
*(-d*g+e*f)*(e*x+d)*erfi((a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*b^(1/
2)*n^(1/2)*Pi^(1/2)/e^2/exp(a/b/n)/((c*(e*x+d)^n)^(1/n))+(-d*g+e*f)*(e*x+d)
*(a+b*ln(c*(e*x+d)^n))^(1/2)/e^2+1/2*g*(e*x+d)^2*(a+b*ln(c*(e*x+d)^n))^(1/2
)/e^2
```

Rubi [A] time = 0.34, antiderivative size = 255, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 9, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.375, Rules used = {2401, 2389, 2296, 2300, 2180, 2204, 2390, 2305, 2310}

$$-\frac{\sqrt{\pi}\sqrt{b}\sqrt{n}\,e^{-\frac{a}{bn}}(d+ex)(ef-dg)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{2e^2}-\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}\,g\sqrt{n}\,e^{-\frac{2a}{bn}}(d+ex)^2\left(c(d+ex\right.}{4e^2}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)*Sqrt[a + b*Log[c*(d + e*x)^n]],x]
```

```
[Out] -(Sqrt[b]*(e*f - d*g)*Sqrt[n]*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d +
 e*x)^n]]/(Sqrt[b]*Sqrt[n])])/(2*e^2*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)) -
(Sqrt[b]*g*Sqrt[n]*Sqrt[Pi/2]*(d + e*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d
 + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(4*e^2*E^((2*a)/(b*n))*(c*(d + e*x)^n)^(2/
n)) + ((e*f - d*g)*(d + e*x)*Sqrt[a + b*Log[c*(d + e*x)^n]])/e^2 + (g*(d +
e*x)^2*Sqrt[a + b*Log[c*(d + e*x)^n]])/(2*e^2)
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2390

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

Rule 2401

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

Rubi steps

$$\int (f+gx)\sqrt{a+b\log\left(c(d+ex)^n\right)}\,dx = \int \left(\frac{(ef-dg)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{e} + \frac{g(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{e}\right.$$

$$= \frac{g\int (d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}\,dx}{e} + \frac{(ef-dg)\int \sqrt{a+b\log\left(c(d+e\right.}}{e}$$

$$= \frac{g\,\text{Subst}\left(\int x\sqrt{a+b\log\left(cx^n\right)}\,dx,x,d+ex\right)}{e^2} + \frac{(ef-dg)\,\text{Subst}\left(\int \sqrt{a+b\right.}}{e^2}$$

$$= \frac{(ef-dg)(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{e^2} + \frac{g(d+ex)^2\sqrt{a+b\log\left(c(d+\right.}}{2e^2}$$

$$= \frac{(ef-dg)(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{e^2} + \frac{g(d+ex)^2\sqrt{a+b\log\left(c(d+\right.}}{2e^2}$$

$$= \frac{(ef-dg)(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{e^2} + \frac{g(d+ex)^2\sqrt{a+b\log\left(c(d+\right.}}{2e^2}$$

$$= -\frac{\sqrt{b}\,e^{-\frac{a}{bn}}(ef-dg)\sqrt{n}\,\sqrt{\pi}\,(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\,\sqrt{n}}\right)}{2e^2}$$

Mathematica [A] time = 0.29, size = 235, normalized size = 0.92

$$-\frac{e^{-\frac{2a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-2/n}\left(4\sqrt{\pi}\sqrt{b}\sqrt{n}e^{\frac{a}{bn}}(ef-dg)\left(c(d+ex)^n\right)^{\frac{1}{n}}\operatorname{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)+\sqrt{2\pi}\sqrt{b}g\sqrt{n}(d\cdots}{8e^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)*Sqrt[a + b*Log[c*(d + e*x)^n]],x]
```

```
[Out] -1/8*((d + e*x)*(4*Sqrt[b]*E^(a/(b*n))*(e*f - d*g)*Sqrt[n]*Sqrt[Pi]*(c*(d +
 e*x)^n)^n^(-1)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])] + Sq
rt[b]*g*Sqrt[n]*Sqrt[2*Pi]*(d + e*x)*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d + e*
x)^n]])/(Sqrt[b]*Sqrt[n])] - 4*E^((2*a)/(b*n))*(c*(d + e*x)^n)^(2/n)*(2*e*f
 - d*g + e*g*x)*Sqrt[a + b*Log[c*(d + e*x)^n]]))/(e^2*E^((2*a)/(b*n))*(c*(d
 + e*x)^n)^(2/n))
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

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

$$\int (gx+f)\sqrt{b\log\left((ex+d)^n c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="giac")
```

```
[Out] integrate((g*x + f)*sqrt(b*log((e*x + d)^n*c) + a), x)
```

maple [F] time = 0.39, size = 0, normalized size = 0.00

$$\int (gx+f)\sqrt{b\ln\left(c\,(ex+d)^n\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\int (gx+f)\sqrt{b\log\left((ex+d)^n c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((g*x + f)*sqrt(b*log((e*x + d)^n*c) + a), x)
```

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

$$\int (f+g\,x)\,\sqrt{a+b\,\ln\left(c\,(d+e\,x)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

$$\int \sqrt{a + b \log \left(c \left(d + ex\right)^{n}\right)} \left(f + gx\right) \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*ln(c*(e*x+d)**n))**(1/2),x)
[Out] Integral(sqrt(a + b*log(c*(d + e*x)**n))*(f + g*x), x)
```

3.107 $\int \sqrt{a+b\log\left(c(d+ex)^n\right)}\,dx$

Optimal. Leaf size=111

$$\frac{(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{e}-\frac{\sqrt{\pi}\sqrt{b}\sqrt{n}\,e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{2e}$$

```
[Out] -1/2*(e*x+d)*erfi((a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*b^(1/2)*n^(1
/2)*Pi^(1/2)/e/exp(a/b/n)/((c*(e*x+d)^n)^(1/n))+(e*x+d)*(a+b*ln(c*(e*x+d)^n
))^(1/2)/e
```

Rubi [A] time = 0.09, antiderivative size = 111, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {2389, 2296, 2300, 2180, 2204}

$$\frac{(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{e}-\frac{\sqrt{\pi}\sqrt{b}\sqrt{n}\,e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{2e}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + b*Log[c*(d + e*x)^n]],x]
```

```
[Out] -(Sqrt[b]*Sqrt[n]*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(S
qrt[b]*Sqrt[n])])/(2*e*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)) + ((d + e*x)*Sqr
t[a + b*Log[c*(d + e*x)^n]])/e
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rubi steps

$$\int \sqrt{a+b\log\left(c(d+ex)^n\right)}\,dx = \frac{\text{Subst}\left(\int \sqrt{a+b\log\left(cx^n\right)}\,dx,x,d+ex\right)}{e}$$
$$= \frac{(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{e} - \frac{(bn)\,\text{Subst}\left(\int \frac{1}{\sqrt{a+b\log(cx^n)}}\,dx,x,d+ex\right)}{2e}$$
$$= \frac{(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{e} - \frac{\left(b(d+ex)\left(c(d+ex)^n\right)^{-1/n}\right)\text{Subst}\left(\int \frac{e^{\frac{x}{n}}}{\sqrt{a+bx}}\,dx$$
$$= \frac{(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{e} - \frac{\left((d+ex)\left(c(d+ex)^n\right)^{-1/n}\right)\text{Subst}\left(\int e^{-\frac{a}{bn}+\frac{x^2}{bn}}\,dx}{e}$$
$$= -\frac{\sqrt{b}\,e^{-\frac{a}{bn}}\sqrt{n}\sqrt{\pi}\,(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{2e} + \frac{(d+ex)\sqrt{a+}$$

Mathematica [A] time = 0.05, size = 106, normalized size = 0.95

$$\frac{(d+ex)\left(2\sqrt{a+b\log\left(c(d+ex)^n\right)} - \sqrt{\pi}\sqrt{b}\sqrt{n}\,e^{-\frac{a}{bn}}\left(c(d+ex)^n\right)^{-1/n}\text{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)\right)}{2e}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[a + b*Log[c*(d + e*x)^n]],x]
```

```
[Out] ((d + e*x)*(-((Sqrt[b]*Sqrt[n]*Sqrt[Pi]*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]
/(Sqrt[b]*Sqrt[n])])/(E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1))) + 2*Sqrt[a + b*L
og[c*(d + e*x)^n]]))/(2*e)
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

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

$$\int \sqrt{b\log\left((ex+d)^n c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(b*log((e*x + d)^n*c) + a), x)
```

maple [F] time = 0.04, size = 0, normalized size = 0.00

$$\int \sqrt{b\ln\left(c\,(ex+d)^n\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int((b*ln(c*(e*x+d)^n)+a)^(1/2),x)
```

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

$$\int \sqrt{b \log \left((ex+d)^n c\right)+a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(b*log((e*x + d)^n*c) + a), x)
```

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

$$\int \sqrt{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int((a + b*log(c*(d + e*x)^n))^(1/2), x)
```

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

$$\int \sqrt{a+b \log \left(c (d+ex)^n\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Integral(sqrt(a + b*log(c*(d + e*x)**n)), x)
```

3.108 $\int \frac{\sqrt{a+b\log(c(d+ex)^n)}}{f+gx}\,dx$

Optimal. Leaf size=29

$$\text{Int}\left(\frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{f+gx},x\right)$$

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

Rubi [A] time = 0.05, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{f+gx}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sqrt[a + b*Log[c*(d + e*x)^n]]/(f + g*x),x]
[Out] Defer[Int][Sqrt[a + b*Log[c*(d + e*x)^n]]/(f + g*x), x]
```

Rubi steps

$$\int \frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{f+gx}\,dx=\int \frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{f+gx}\,dx$$

Mathematica [A] time = 1.18, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{f+gx}\,dx$$

Verification is Not applicable to the result.

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

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2)/(g*x+f),x, algorithm="fricas")
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

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

$$\int \frac{\sqrt{b\log\left((ex+d)^n c\right)+a}}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2)/(g*x+f),x, algorithm="giac")
[Out] integrate(sqrt(b*log((e*x + d)^n*c) + a)/(g*x + f), x)
```

maple [A] time = 0.59, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{b\ln\left(c\,(ex+d)^n\right)+a}}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

$$\int \frac{\sqrt{b\log\left((ex+d)^n c\right)+a}}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2)/(g*x+f),x, algorithm="maxima")
[Out] integrate(sqrt(b*log((e*x + d)^n*c) + a)/(g*x + f), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\sqrt{a+b\,\ln\left(c\,(d+e\,x)^n\right)}}{f+g\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

$$\int \frac{\sqrt{a+b\log\left(c\,(d+ex)^n\right)}}{f+gx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**(1/2)/(g*x+f),x)
[Out] Integral(sqrt(a + b*log(c*(d + e*x)**n))/(f + g*x), x)
```

3.109 $\int \frac{\sqrt{a+b\log(c(d+ex)^n)}}{(f+gx)^2}\,dx$

Optimal. Leaf size=88

$$\frac{(d+ex)\sqrt{a+b\log(c(d+ex)^n)}}{(f+gx)(ef-dg)}-\frac{ben\text{Int}\left(\frac{1}{(f+gx)\sqrt{a+b\log(c(d+ex)^n)}},x\right)}{2(ef-dg)}$$

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

Rubi [A] time = 0.10, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sqrt{a+b\log(c(d+ex)^n)}}{(f+gx)^2}\,dx$$

Verification is Not applicable to the result.

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

```
[Out] ((d + e*x)*Sqrt[a + b*Log[c*(d + e*x)^n]])/((e*f - d*g)*(f + g*x)) - (b*e*n
*Defer[Int][1/((f + g*x)*Sqrt[a + b*Log[c*(d + e*x)^n]]), x])/(2*(e*f - d*g
))
```

Rubi steps

$$\int \frac{\sqrt{a+b\log(c(d+ex)^n)}}{(f+gx)^2}\,dx=\frac{(d+ex)\sqrt{a+b\log(c(d+ex)^n)}}{(ef-dg)(f+gx)}-\frac{(ben)\int \frac{1}{(f+gx)\sqrt{a+b\log(c(d+ex)^n)}}\,dx}{2(ef-dg)}$$

Mathematica [A] time = 0.33, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{a+b\log(c(d+ex)^n)}}{(f+gx)^2}\,dx$$

Verification is Not applicable to the result.

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

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

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2)/(g*x+f)^2,x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

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

$$\int \frac{\sqrt{b\log\left((ex+d)^n c\right)+a}}{(gx+f)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2)/(g*x+f)^2,x, algorithm="giac")
[Out] integrate(sqrt(b*log((e*x + d)^n*c) + a)/(g*x + f)^2, x)
```

maple [A] time = 0.55, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{b\ln\left(c\,(ex+d)^n\right)+a}}{\left(gx+f\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)^(1/2)/(g*x+f)^2,x)
[Out] int((b*ln(c*(e*x+d)^n)+a)^(1/2)/(g*x+f)^2,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{b\log\left((ex+d)^n c\right)+a}}{\left(gx+f\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2)/(g*x+f)^2,x, algorithm="maxima")
[Out] integrate(sqrt(b*log((e*x + d)^n*c) + a)/(g*x + f)^2, x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sqrt{a+b\,\ln\left(c\,(d+e\,x)^n\right)}}{\left(f+g\,x\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^(1/2)/(f + g*x)^2,x)
[Out] int((a + b*log(c*(d + e*x)^n))^(1/2)/(f + g*x)^2, x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{a+b\log\left(c\,(d+ex)^n\right)}}{\left(f+gx\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**(1/2)/(g*x+f)**2,x)
[Out] Integral(sqrt(a + b*log(c*(d + e*x)**n))/(f + g*x)**2, x)
```

3.110 $\int \frac{\sqrt{a+b\log(c(d+ex)^n)}}{(f+gx)^3}\,dx$

Optimal. Leaf size=79

$$\frac{ben\text{Int}\left(\frac{1}{(d+ex)(f+gx)^2\sqrt{a+b\log(c(d+ex)^n)}},x\right)}{4g}-\frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{2g(f+gx)^2}$$

```
[Out] -1/2*(a+b*ln(c*(e*x+d)^n))^(1/2)/g/(g*x+f)^2+1/4*b*e*n*Unintegrable(1/(e*x+
d)/(g*x+f)^2/(a+b*ln(c*(e*x+d)^n))^(1/2),x)/g
```

Rubi [A] time = 0.22, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{(f+gx)^3}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sqrt[a + b*Log[c*(d + e*x)^n]]/(f + g*x)^3,x]
```

```
[Out] -Sqrt[a + b*Log[c*(d + e*x)^n]]/(2*g*(f + g*x)^2) + (b*e*n*Defer[Int][1/((d
 + e*x)*(f + g*x)^2*Sqrt[a + b*Log[c*(d + e*x)^n]]), x])/(4*g)
```

Rubi steps

$$\int \frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{(f+gx)^3}\,dx=-\frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{2g(f+gx)^2}+\frac{(ben)\int \frac{1}{(d+ex)(f+gx)^2\sqrt{a+b\log(c(d+ex)^n)}}\,dx}{4g}$$

Mathematica [A] time = 0.41, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{(f+gx)^3}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sqrt[a + b*Log[c*(d + e*x)^n]]/(f + g*x)^3,x]
```

```
[Out] Integrate[Sqrt[a + b*Log[c*(d + e*x)^n]]/(f + g*x)^3, x]
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2)/(g*x+f)^3,x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{b\log\left((ex+d)^n c\right)+a}}{(gx+f)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2)/(g*x+f)^3,x, algorithm="giac")
[Out] integrate(sqrt(b*log((e*x + d)^n*c) + a)/(g*x + f)^3, x)
```

maple [A] time = 0.55, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{b\ln\left(c\,(ex+d)^{n}\right)+a}}{\left(gx+f\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)^(1/2)/(g*x+f)^3,x)
[Out] int((b*ln(c*(e*x+d)^n)+a)^(1/2)/(g*x+f)^3,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{b\log\left((ex+d)^{n}c\right)+a}}{\left(gx+f\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2)/(g*x+f)^3,x, algorithm="maxima")
[Out] integrate(sqrt(b*log((e*x + d)^n*c) + a)/(g*x + f)^3, x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sqrt{a+b\,\ln\left(c\,(d+e\,x)^{n}\right)}}{\left(f+g\,x\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^(1/2)/(f + g*x)^3,x)
[Out] int((a + b*log(c*(d + e*x)^n))^(1/2)/(f + g*x)^3, x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{a+b\log\left(c\,(d+ex)^{n}\right)}}{\left(f+gx\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**(1/2)/(g*x+f)**3,x)
[Out] Integral(sqrt(a + b*log(c*(d + e*x)**n))/(f + g*x)**3, x)
```

3.111 $\int (f+gx)^2 \left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}\,dx$

Optimal. Leaf size=526

$$\frac{3\sqrt{\frac{\pi}{2}}\,b^{3/2}gn^{3/2}e^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)\left(c(d+ex)^n\right)^{-2/n}\operatorname{erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{8e^3}+\frac{3\sqrt{\pi}\,b^{3/2}n^{3/2}e^{-\frac{a}{bn}}(d+ex)(ef-dg}{}$$

```
[Out] (-d*g+e*f)^2*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^(3/2)/e^3+g*(-d*g+e*f)*(e*x+d)^2
*(a+b*ln(c*(e*x+d)^n))^(3/2)/e^3+1/3*g^2*(e*x+d)^3*(a+b*ln(c*(e*x+d)^n))^(3
/2)/e^3+1/36*b^(3/2)*g^2*n^(3/2)*(e*x+d)^3*erfi(3^(1/2)*(a+b*ln(c*(e*x+d)^n
))^(1/2)/b^(1/2)/n^(1/2))*3^(1/2)*Pi^(1/2)/e^3/exp(3*a/b/n)/((c*(e*x+d)^n)^
(3/n))+3/16*b^(3/2)*g*(-d*g+e*f)*n^(3/2)*(e*x+d)^2*erfi(2^(1/2)*(a+b*ln(c*(
e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*2^(1/2)*Pi^(1/2)/e^3/exp(2*a/b/n)/((c*(e*
x+d)^n)^(2/n))+3/4*b^(3/2)*(-d*g+e*f)^2*n^(3/2)*(e*x+d)*erfi((a+b*ln(c*(e*x
+d)^n))^(1/2)/b^(1/2)/n^(1/2))*Pi^(1/2)/e^3/exp(a/b/n)/((c*(e*x+d)^n)^(1/n)
)-3/2*b*(-d*g+e*f)^2*n*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^(1/2)/e^3-3/4*b*g*(-d*
g+e*f)*n*(e*x+d)^2*(a+b*ln(c*(e*x+d)^n))^(1/2)/e^3-1/6*b*g^2*n*(e*x+d)^3*(a
+b*ln(c*(e*x+d)^n))^(1/2)/e^3
```

Rubi [A] time = 0.81, antiderivative size = 526, normalized size of antiderivative = 1.00, number of steps used = 20, number of rules used = 9, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.346, Rules used = {2401, 2389, 2296, 2300, 2180, 2204, 2390, 2305, 2310}

$$\frac{3\sqrt{\frac{\pi}{2}}\,b^{3/2}gn^{3/2}e^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)\left(c(d+ex)^n\right)^{-2/n}\operatorname{Erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{8e^3}+\frac{3\sqrt{\pi}\,b^{3/2}n^{3/2}e^{-\frac{a}{bn}}(d+ex)(ef-dg}{}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^2*(a + b*Log[c*(d + e*x)^n])^(3/2),x]
```

```
[Out] (3*b^(3/2)*(e*f - d*g)^2*n^(3/2)*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(
d + e*x)^n]]/(Sqrt[b]*Sqrt[n])])/(4*e^3*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1))
 + (3*b^(3/2)*g*(e*f - d*g)*n^(3/2)*Sqrt[Pi/2]*(d + e*x)^2*Erfi[(Sqrt[2]*Sq
rt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(8*e^3*E^((2*a)/(b*n))*(c
*(d + e*x)^n)^(2/n)) + (b^(3/2)*g^2*n^(3/2)*Sqrt[Pi/3]*(d + e*x)^3*Erfi[(Sq
rt[3]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(12*e^3*E^((3*a)/
(b*n))*(c*(d + e*x)^n)^(3/n)) - (3*b*(e*f - d*g)^2*n*(d + e*x)*Sqrt[a + b*L
og[c*(d + e*x)^n]])/(2*e^3) - (3*b*g*(e*f - d*g)*n*(d + e*x)^2*Sqrt[a + b*L
og[c*(d + e*x)^n]])/(4*e^3) - (b*g^2*n*(d + e*x)^3*Sqrt[a + b*Log[c*(d + e*
x)^n]])/(6*e^3) + ((e*f - d*g)^2*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^(3/2)
)/e^3 + (g*(e*f - d*g)*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n])^(3/2))/e^3 +
(g^2*(d + e*x)^3*(a + b*Log[c*(d + e*x)^n])^(3/2))/(3*e^3)
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
```

```
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rubi steps

$$\int (f+gx)^2 \left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2} dx = \int \left(\frac{(ef-dg)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}{e^2} + \frac{2g(ef-dg)(d+ex)\left(a+\right.}{e^2}\right.$$

$$= \frac{g^2\int (d+ex)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2} dx}{e^2} + \frac{(2g(ef-dg))\int (d+ex}{}$$

$$= \frac{g^2\,\mathrm{Subst}\left(\int x^2\left(a+b\log\left(cx^n\right)\right)^{3/2} dx, x, d+ex\right)}{e^3} + \frac{(2g(ef-dg))\,\mathrm{Sub}}{}$$

$$= \frac{(ef-dg)^2(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}{e^3} + \frac{g(ef-dg)(d+ex)^2\left(\right.}{}$$

$$= -\frac{3b(ef-dg)^2n(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{2e^3} - \frac{3bg(ef-dg)n(d+}{}$$

$$= -\frac{3b(ef-dg)^2n(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{2e^3} - \frac{3bg(ef-dg)n(d+}{}$$

$$= -\frac{3b(ef-dg)^2n(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{2e^3} - \frac{3bg(ef-dg)n(d+}{}$$

$$= \frac{3b^{3/2}e^{-\frac{a}{bn}}(ef-dg)^2n^{3/2}\sqrt{\pi}\,(d+ex)\left(c(d+ex)^n\right)^{-1/n}\mathrm{erfi}\left(\frac{\sqrt{a+b\log(c(d+e}}{\sqrt{b}\sqrt{n}}\right.}{4e^3}$$

Mathematica [A] time = 1.09, size = 446, normalized size = 0.85

$$\frac{(d+ex)\left(108bn(ef-dg)^2\left(\sqrt{\pi}\sqrt{b}\sqrt{n}\,e^{-\frac{a}{bn}}\left(c(d+ex)^n\right)^{-1/n}\mathrm{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)-2\sqrt{a+b\log\left(c(d+ex)^n\right)}\right)+2\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^2*(a + b*Log[c*(d + e*x)^n])^(3/2),x]
```

```
[Out] ((d + e*x)*(144*(e*f - d*g)^2*(a + b*Log[c*(d + e*x)^n])^(3/2) + 144*g*(e*f
 - d*g)*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^(3/2) + 48*g^2*(d + e*x)^2*(a
+ b*Log[c*(d + e*x)^n])^(3/2) + 4*b*g^2*n*(d + e*x)^2*((Sqrt[b]*Sqrt[n]*Sqr
t[3*Pi]*Erfi[(Sqrt[3]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])]])/(
E^((3*a)/(b*n))*(c*(d + e*x)^n)^(3/n)) - 6*Sqrt[a + b*Log[c*(d + e*x)^n]])
+ 27*b*g*(e*f - d*g)*n*(d + e*x)*((Sqrt[b]*Sqrt[n]*Sqrt[2*Pi]*Erfi[(Sqrt[2]
*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])]])/(E^((2*a)/(b*n))*(c*(d
 + e*x)^n)^(2/n)) - 4*Sqrt[a + b*Log[c*(d + e*x)^n]]) + 108*b*(e*f - d*g)^2
*n*((Sqrt[b]*Sqrt[n]*Sqrt[Pi]*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*
Sqrt[n])]])/(E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)) - 2*Sqrt[a + b*Log[c*(d + e
*x)^n]])))/(144*e^3)
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(gx+f\right)^{2}\left(b\log\left(\left(ex+d\right)^{n}c\right)+a\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="giac")
[Out] integrate((g*x + f)^2*(b*log((e*x + d)^n*c) + a)^(3/2), x)
```

maple [F] time = 0.53, size = 0, normalized size = 0.00

$$\int \left(gx+f\right)^{2}\left(b\ln\left(c\left(ex+d\right)^{n}\right)+a\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^2*(b*ln(c*(e*x+d)^n)+a)^(3/2),x)
[Out] int((g*x+f)^2*(b*ln(c*(e*x+d)^n)+a)^(3/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(gx+f\right)^{2}\left(b\log\left(\left(ex+d\right)^{n}c\right)+a\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="maxima")
[Out] integrate((g*x + f)^2*(b*log((e*x + d)^n*c) + a)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int {\left(f+g\,x\right)}^2\,{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^2*(a + b*log(c*(d + e*x)^n))^(3/2),x)
[Out] int((f + g*x)^2*(a + b*log(c*(d + e*x)^n))^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(a+b\log\left(c\left(d+ex\right)^{n}\right)\right)^{\frac{3}{2}}\left(f+gx\right)^{2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**2*(a+b*ln(c*(e*x+d)**n))**(3/2),x)
[Out] Integral((a + b*log(c*(d + e*x)**n))**(3/2)*(f + g*x)**2, x)
```

3.112 $\int (f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}\,dx$

Optimal. Leaf size=330

$$\frac{3\sqrt{\pi}\,b^{3/2}n^{3/2}e^{-\frac{a}{bn}}(d+ex)(ef-dg)\left(c(d+ex)^n\right)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{4e^2}+\frac{3\sqrt{\frac{\pi}{2}}\,b^{3/2}gn^{3/2}e^{-\frac{2a}{bn}}(d+ex)^2\left(c(d+ex)^n\right.}{16e^2}$$

```
[Out] (-d*g+e*f)*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^(3/2)/e^2+1/2*g*(e*x+d)^2*(a+b*ln(
c*(e*x+d)^n))^(3/2)/e^2+3/32*b^(3/2)*g*n^(3/2)*(e*x+d)^2*erfi(2^(1/2)*(a+b*
ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*2^(1/2)*Pi^(1/2)/e^2/exp(2*a/b/n)/(
(c*(e*x+d)^n)^(2/n))+3/4*b^(3/2)*(-d*g+e*f)*n^(3/2)*(e*x+d)*erfi((a+b*ln(c*
(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*Pi^(1/2)/e^2/exp(a/b/n)/((c*(e*x+d)^n)^(
1/n))-3/2*b*(-d*g+e*f)*n*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^(1/2)/e^2-3/8*b*g*n*
(e*x+d)^2*(a+b*ln(c*(e*x+d)^n))^(1/2)/e^2
```

Rubi [A] time = 0.43, antiderivative size = 330, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 9, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.375, Rules used = {2401, 2389, 2296, 2300, 2180, 2204, 2390, 2305, 2310}

$$\frac{3\sqrt{\pi}\,b^{3/2}n^{3/2}e^{-\frac{a}{bn}}(d+ex)(ef-dg)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{4e^2}+\frac{3\sqrt{\frac{\pi}{2}}\,b^{3/2}gn^{3/2}e^{-\frac{2a}{bn}}(d+ex)^2\left(c(d+ex)\right.}{16e^2}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)*(a + b*Log[c*(d + e*x)^n])^(3/2),x]
```

```
[Out] (3*b^(3/2)*(e*f - d*g)*n^(3/2)*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d
+ e*x)^n]]/(Sqrt[b]*Sqrt[n])])/(4*e^2*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)) +
 (3*b^(3/2)*g*n^(3/2)*Sqrt[Pi/2]*(d + e*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c
*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(16*e^2*E^((2*a)/(b*n))*(c*(d + e*x)^n)
^(2/n)) - (3*b*(e*f - d*g)*n*(d + e*x)*Sqrt[a + b*Log[c*(d + e*x)^n]])/(2*e
^2) - (3*b*g*n*(d + e*x)^2*Sqrt[a + b*Log[c*(d + e*x)^n]])/(8*e^2) + ((e*f
- d*g)*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^(3/2))/e^2 + (g*(d + e*x)^2*(a
+ b*Log[c*(d + e*x)^n])^(3/2))/(2*e^2)
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
```

```
{a, b, c, n, p}, x]
```

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rubi steps

$$\int (f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}dx=\int\left(\frac{(ef-dg)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}{e}+\frac{g(d+ex)\left(a+b\log\left(c(d+\right.\right.}{e}\right.$$

$$=\frac{g\int(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}dx}{e}+\frac{(ef-dg)\int\left(a+b\log\left(c(\right.\right.}{e}$$

$$=\frac{g\,\text{Subst}\left(\int x\left(a+b\log\left(cx^n\right)\right)^{3/2}dx,x,d+ex\right)}{e^2}+\frac{(ef-dg)\,\text{Subst}\left(\int\left(\right.\right.}{}$$

$$=\frac{(ef-dg)(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}{e^2}+\frac{g(d+ex)^2\left(a+b\log\left(c\right.\right.}{2e^2}$$

$$=-\frac{3b(ef-dg)n(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{2e^2}-\frac{3bgn(d+ex)^2\sqrt{a+b}}{8e^2}$$

$$=-\frac{3b(ef-dg)n(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{2e^2}-\frac{3bgn(d+ex)^2\sqrt{a+b}}{8e^2}$$

$$=-\frac{3b(ef-dg)n(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{2e^2}-\frac{3bgn(d+ex)^2\sqrt{a+b}}{8e^2}$$

$$=\frac{3b^{3/2}e^{-\frac{a}{bn}}(ef-dg)n^{3/2}\sqrt{\pi}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n}}{\sqrt{b}\sqrt{n}}\right.}{4e^2}$$

Mathematica [A] time = 0.42, size = 282, normalized size = 0.85

$$\frac{(d+ex)\left(24bn(ef-dg)\left(\sqrt{\pi}\sqrt{b}\sqrt{n}e^{-\frac{a}{bn}}\left(c(d+ex)^n\right)^{-1/n}\text{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)-2\sqrt{a+b\log\left(c(d+ex)^n\right)}\right)+3b\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)*(a + b*Log[c*(d + e*x)^n])^(3/2),x]
```

```
[Out] ((d + e*x)*(32*(e*f - d*g)*(a + b*Log[c*(d + e*x)^n])^(3/2) + 16*g*(d + e*x
)*(a + b*Log[c*(d + e*x)^n])^(3/2) + 3*b*g*n*(d + e*x)*((Sqrt[b]*Sqrt[n]*Sq
rt[2*Pi]*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/
(E^((2*a)/(b*n))*(c*(d + e*x)^n)^(2/n)) - 4*Sqrt[a + b*Log[c*(d + e*x)^n]])
 + 24*b*(e*f - d*g)*n*((Sqrt[b]*Sqrt[n]*Sqrt[Pi]*Erfi[Sqrt[a + b*Log[c*(d +
 e*x)^n]]/(Sqrt[b]*Sqrt[n])])/(E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)) - 2*Sqrt
[a + b*Log[c*(d + e*x)^n]])))/(32*e^2)
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (gx+f)\left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{3}{2}}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="giac")
[Out] integrate((g*x + f)*(b*log((e*x + d)^n*c) + a)^(3/2), x)
```

maple [F] time = 0.38, size = 0, normalized size = 0.00

$$\int \left(gx+f\right)\left(b\ln\left(c\left(ex+d\right)^{n}\right)+a\right)^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(b*ln(c*(e*x+d)^n)+a)^(3/2),x)
[Out] int((g*x+f)*(b*ln(c*(e*x+d)^n)+a)^(3/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(gx+f\right)\left(b\log\left(\left(ex+d\right)^{n}c\right)+a\right)^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="maxima")
[Out] integrate((g*x + f)*(b*log((e*x + d)^n*c) + a)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \left(f+g\,x\right)\,{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^{3/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(a + b*log(c*(d + e*x)^n))^(3/2),x)
[Out] int((f + g*x)*(a + b*log(c*(d + e*x)^n))^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(a+b\log\left(c\left(d+ex\right)^{n}\right)\right)^{\frac{3}{2}}\left(f+gx\right)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*ln(c*(e*x+d)**n))**(3/2),x)
[Out] Integral((a + b*log(c*(d + e*x)**n))**(3/2)*(f + g*x), x)
```

3.113 $\int \left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}\,dx$

Optimal. Leaf size=143

$$\frac{3\sqrt{\pi}\,b^{3/2}n^{3/2}e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{4e}+\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}{e}-\frac{3bn(d+ex)}{}$$

```
[Out] (e*x+d)*(a+b*ln(c*(e*x+d)^n))^(3/2)/e+3/4*b^(3/2)*n^(3/2)*(e*x+d)*erfi((a+b
*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*Pi^(1/2)/e/exp(a/b/n)/((c*(e*x+d)^
n)^(1/n))-3/2*b*n*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^(1/2)/e
```

Rubi [A] time = 0.11, antiderivative size = 143, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.278$, Rules used = {2389, 2296, 2300, 2180, 2204}

$$\frac{3\sqrt{\pi}\,b^{3/2}n^{3/2}e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{4e}+\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}{e}-\frac{3bn(d+ex)}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^(3/2),x]
```

```
[Out] (3*b^(3/2)*n^(3/2)*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(
Sqrt[b]*Sqrt[n])])/(4*e*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)) - (3*b*n*(d + e
*x)*Sqrt[a + b*Log[c*(d + e*x)^n]])/(2*e) + ((d + e*x)*(a + b*Log[c*(d + e*
x)^n])^(3/2))/e
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rubi steps

$$\int \left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2} dx = \frac{\text{Subst}\left(\int \left(a+b\log\left(cx^n\right)\right)^{3/2} dx, x, d+ex\right)}{e}$$

$$= \frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}{e} - \frac{(3bn)\,\text{Subst}\left(\int \sqrt{a+b\log\left(cx^n\right)}\, dx, x,\right.}{2e}$$

$$= -\frac{3bn(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{2e} + \frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}{e}$$

$$= -\frac{3bn(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{2e} + \frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}{e}$$

$$= -\frac{3bn(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{2e} + \frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}{e}$$

$$= \frac{3b^{3/2}e^{-\frac{a}{bn}}n^{3/2}\sqrt{\pi}\,(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{4e} - \frac{3bn(d+}{}$$

Mathematica [A] time = 0.01, size = 127, normalized size = 0.89

$$\frac{(d+ex)\left(3\sqrt{\pi}\,b^{3/2}n^{3/2}e^{-\frac{a}{bn}}\left(c(d+ex)^n\right)^{-1/n}\text{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)+2\sqrt{a+b\log\left(c(d+ex)^n\right)}\left(2a+2b\log\left(c(d\right.\right.}{4e}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^(3/2),x]
```

```
[Out] ((d + e*x)*((3*b^(3/2)*n^(3/2)*Sqrt[Pi]*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]
/(Sqrt[b]*Sqrt[n])])/(E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)) + 2*Sqrt[a + b*Lo
g[c*(d + e*x)^n]]*(2*a - 3*b*n + 2*b*Log[c*(d + e*x)^n])))/(4*e)
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{3}{2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^(3/2), x)
```

maple [F] time = 0.04, size = 0, normalized size = 0.00

$$\int \left(b\ln\left(c\,(ex+d)^n\right)+a\right)^{\frac{3}{2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)^(3/2),x)
```

```
[Out] int((b*ln(c*(e*x+d)^n)+a)^(3/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b \log\left((ex+d)^n c\right) + a\right)^{\frac{3}{2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \left(a + b \ln\left(c\,(d + e\,x)^n\right)\right)^{3/2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^(3/2),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(a + b \log\left(c\,(d + ex)^n\right)\right)^{\frac{3}{2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**(3/2),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**(3/2), x)
```

3.114 $\int \frac{(a+b\log(c(d+ex)^n))^{3/2}}{f+gx} dx$

Optimal. Leaf size=29

$$\text{Int}\left(\frac{(a+b\log(c(d+ex)^n))^{3/2}}{f+gx},x\right)$$

```
[Out] Unintegrable((a+b*ln(c*(e*x+d)^n))^(3/2)/(g*x+f),x)
```

Rubi [A] time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(a+b\log(c(d+ex)^n))^{3/2}}{f+gx} dx$$

Verification is Not applicable to the result.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^(3/2)/(f + g*x),x]
[Out] Defer[Int][(a + b*Log[c*(d + e*x)^n])^(3/2)/(f + g*x), x]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^{3/2}}{f+gx} dx = \int \frac{(a+b\log(c(d+ex)^n))^{3/2}}{f+gx} dx$$

Mathematica [A] time = 2.13, size = 0, normalized size = 0.00

$$\int \frac{(a+b\log(c(d+ex)^n))^{3/2}}{f+gx} dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^(3/2)/(f + g*x),x]
[Out] Integrate[(a + b*Log[c*(d + e*x)^n])^(3/2)/(f + g*x), x]
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(3/2)/(g*x+f),x, algorithm="fricas")
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b\log((ex+d)^n c)+a)^{\frac{3}{2}}}{gx+f} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(3/2)/(g*x+f),x, algorithm="giac")
```

[Out] integrate((b*log((e*x + d)^n*c) + a)^(3/2)/(g*x + f), x)

maple [A] time = 0.59, size = 0, normalized size = 0.00

$$\int \frac{\left(b \ln \left(c \left(ex + d\right)^{n}\right) + a\right)^{\frac{3}{2}}}{gx + f}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*ln(c*(e*x+d)^n)+a)^(3/2)/(g*x+f),x)

[Out] int((b*ln(c*(e*x+d)^n)+a)^(3/2)/(g*x+f),x)

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b \log \left(\left(ex + d\right)^{n} c\right) + a\right)^{\frac{3}{2}}}{gx + f}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((a+b*log(c*(e*x+d)^n))^(3/2)/(g*x+f),x, algorithm="maxima")

[Out] integrate((b*log((e*x + d)^n*c) + a)^(3/2)/(g*x + f), x)

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\left(a + b\, \ln \left(c\, \left(d + e\, x\right)^{n}\right)\right)^{3/2}}{f + g\, x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((a + b*log(c*(d + e*x)^n))^(3/2)/(f + g*x),x)

[Out] int((a + b*log(c*(d + e*x)^n))^(3/2)/(f + g*x), x)

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a + b \log \left(c \left(d + ex\right)^{n}\right)\right)^{\frac{3}{2}}}{f + gx}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((a+b*ln(c*(e*x+d)**n))**(3/2)/(g*x+f),x)

[Out] Integral((a + b*log(c*(d + e*x)**n))**(3/2)/(f + g*x), x)

3.115 $\int \frac{(a+b\log(c(d+ex)^n))^{3/2}}{(f+gx)^2} dx$

Optimal. Leaf size=88

$$\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}{(f+gx)(ef-dg)} - \frac{3ben\text{Int}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{f+gx},x\right)}{2(ef-dg)}$$

```
[Out] (e*x+d)*(a+b*ln(c*(e*x+d)^n))^(3/2)/(-d*g+e*f)/(g*x+f)-3/2*b*e*n*Unintegrab
le((a+b*ln(c*(e*x+d)^n))^(1/2)/(g*x+f),x)/(-d*g+e*f)
```

Rubi [A] time = 0.11, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}{(f+gx)^2} dx$$

Verification is Not applicable to the result.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^(3/2)/(f + g*x)^2,x]
```

```
[Out] ((d + e*x)*(a + b*Log[c*(d + e*x)^n])^(3/2))/((e*f - d*g)*(f + g*x)) - (3*b
*e*n*Defer[Int][Sqrt[a + b*Log[c*(d + e*x)^n]]/(f + g*x), x])/(2*(e*f - d*g
))
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}{(f+gx)^2} dx = \frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}{(ef-dg)(f+gx)} - \frac{(3ben)\int \frac{\sqrt{a+b\log(c(d+ex)^n)}}{f+gx} dx}{2(ef-dg)}$$

Mathematica [A] time = 0.85, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}{(f+gx)^2} dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^(3/2)/(f + g*x)^2,x]
```

```
[Out] Integrate[(a + b*Log[c*(d + e*x)^n])^(3/2)/(f + g*x)^2, x]
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(3/2)/(g*x+f)^2,x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{3}{2}}}{(gx+f)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(3/2)/(g*x+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^(3/2)/(g*x + f)^2, x)
```

maple [A]   time = 0.59, size = 0, normalized size = 0.00

$$\int \frac{\left(b\ln\left(c\left(ex+d\right)^{n}\right)+a\right)^{\frac{3}{2}}}{\left(gx+f\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)^(3/2)/(g*x+f)^2,x)
```

```
[Out] int((b*ln(c*(e*x+d)^n)+a)^(3/2)/(g*x+f)^2,x)
```

maxima [A]   time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\log\left(\left(ex+d\right)^{n}c\right)+a\right)^{\frac{3}{2}}}{\left(gx+f\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(3/2)/(g*x+f)^2,x, algorithm="maxima")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^(3/2)/(g*x + f)^2, x)
```

mupad [A]   time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(a+b\,\ln\left(c\,\left(d+e\,x\right)^{n}\right)\right)^{3/2}}{\left(f+g\,x\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^(3/2)/(f + g*x)^2,x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))^(3/2)/(f + g*x)^2, x)
```

sympy [F(-2)]   time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**(3/2)/(g*x+f)**2,x)
```

```
[Out] Exception raised: HeuristicGCDFailed
```

3.116 $\int \frac{\left(a+b\log(c(d+ex)^n)\right)^{3/2}}{(f+gx)^3}\,dx$

Optimal. Leaf size=79

$$\frac{3ben\mathrm{Int}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{(d+ex)(f+gx)^2},x\right)}{4g}-\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}{2g(f+gx)^2}$$

```
[Out] -1/2*(a+b*ln(c*(e*x+d)^n))^(3/2)/g/(g*x+f)^2+3/4*b*e*n*Unintegrable((a+b*ln
(c*(e*x+d)^n))^(1/2)/(e*x+d)/(g*x+f)^2,x)/g
```

Rubi [A] time = 0.21, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}{(f+gx)^3}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^(3/2)/(f + g*x)^3,x]
```

```
[Out] -(a + b*Log[c*(d + e*x)^n])^(3/2)/(2*g*(f + g*x)^2) + (3*b*e*n*Defer[Int][S
qrt[a + b*Log[c*(d + e*x)^n]]/((d + e*x)*(f + g*x)^2), x])/(4*g)
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}{(f+gx)^3}\,dx=-\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}{2g(f+gx)^2}+\frac{(3ben)\int \frac{\sqrt{a+b\log(c(d+ex)^n)}}{(d+ex)(f+gx)^2}\,dx}{4g}$$

Mathematica [A] time = 0.81, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}{(f+gx)^3}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^(3/2)/(f + g*x)^3,x]
```

```
[Out] Integrate[(a + b*Log[c*(d + e*x)^n])^(3/2)/(f + g*x)^3, x]
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(3/2)/(g*x+f)^3,x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{3}{2}}}{\left(gx+f\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(3/2)/(g*x+f)^3,x, algorithm="giac")
[Out] integrate((b*log((e*x + d)^n*c) + a)^(3/2)/(g*x + f)^3, x)
```

maple [A] time = 0.55, size = 0, normalized size = 0.00

$$\int \frac{\left(b \ln \left(c \left(e x+d\right)^{n}\right)+a\right)^{\frac{3}{2}}}{\left(g x+f\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)^(3/2)/(g*x+f)^3,x)
[Out] int((b*ln(c*(e*x+d)^n)+a)^(3/2)/(g*x+f)^3,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b \log \left(\left(e x+d\right)^{n} c\right)+a\right)^{\frac{3}{2}}}{\left(g x+f\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(3/2)/(g*x+f)^3,x, algorithm="maxima")
[Out] integrate((b*log((e*x + d)^n*c) + a)^(3/2)/(g*x + f)^3, x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)^{3/2}}{{\left(f+g\,x\right)}^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^(3/2)/(f + g*x)^3,x)
[Out] int((a + b*log(c*(d + e*x)^n))^(3/2)/(f + g*x)^3, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**(3/2)/(g*x+f)**3,x)
[Out] Timed out
```

3.117 $\int (f+gx)^2 \left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2} dx$

Optimal. Leaf size=660

$$-\frac{15\sqrt{\frac{\pi}{2}}\, b^{5/2} g n^{5/2} e^{-\frac{2a}{bn}} (d+ex)^2 (ef-dg) \left(c(d+ex)^n\right)^{-2/n} \operatorname{erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{32e^3} - \frac{15\sqrt{\pi}\, b^{5/2} n^{5/2} e^{-\frac{a}{bn}} (d+ex)(e}{}$$

```
[Out] -5/2*b*(-d*g+e*f)^2*n*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^(3/2)/e^3-5/4*b*g*(-d*g
+e*f)*n*(e*x+d)^2*(a+b*ln(c*(e*x+d)^n))^(3/2)/e^3-5/18*b*g^2*n*(e*x+d)^3*(a
+b*ln(c*(e*x+d)^n))^(3/2)/e^3+(-d*g+e*f)^2*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^(5
/2)/e^3+g*(-d*g+e*f)*(e*x+d)^2*(a+b*ln(c*(e*x+d)^n))^(5/2)/e^3+1/3*g^2*(e*x
+d)^3*(a+b*ln(c*(e*x+d)^n))^(5/2)/e^3-5/216*b^(5/2)*g^2*n^(5/2)*(e*x+d)^3*e
rfi(3^(1/2)*(a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*3^(1/2)*Pi^(1/2)/e
^3/exp(3*a/b/n)/((c*(e*x+d)^n)^(3/n))-15/64*b^(5/2)*g*(-d*g+e*f)*n^(5/2)*(e
*x+d)^2*erfi(2^(1/2)*(a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*2^(1/2)*P
i^(1/2)/e^3/exp(2*a/b/n)/((c*(e*x+d)^n)^(2/n))-15/8*b^(5/2)*(-d*g+e*f)^2*n^
(5/2)*(e*x+d)*erfi((a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*Pi^(1/2)/e^
3/exp(a/b/n)/((c*(e*x+d)^n)^(1/n))+15/4*b^2*(-d*g+e*f)^2*n^2*(e*x+d)*(a+b*l
n(c*(e*x+d)^n))^(1/2)/e^3+15/16*b^2*g*(-d*g+e*f)*n^2*(e*x+d)^2*(a+b*ln(c*(e
*x+d)^n))^(1/2)/e^3+5/36*b^2*g^2*n^2*(e*x+d)^3*(a+b*ln(c*(e*x+d)^n))^(1/2)/
e^3
```

Rubi [A] time = 0.98, antiderivative size = 660, normalized size of antiderivative = 1.00, number of steps used = 23, number of rules used = 9, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.346, Rules used = {2401, 2389, 2296, 2300, 2180, 2204, 2390, 2305, 2310}

$$-\frac{15\sqrt{\frac{\pi}{2}}\, b^{5/2} g n^{5/2} e^{-\frac{2a}{bn}} (d+ex)^2 (ef-dg) \left(c(d+ex)^n\right)^{-2/n} \operatorname{Erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{32e^3} - \frac{15\sqrt{\pi}\, b^{5/2} n^{5/2} e^{-\frac{a}{bn}} (d+ex)(}{}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^2*(a + b*Log[c*(d + e*x)^n])^(5/2),x]
```

```
[Out] (-15*b^(5/2)*(e*f - d*g)^2*n^(5/2)*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c
*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])])/(8*e^3*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1
)) - (15*b^(5/2)*g*(e*f - d*g)*n^(5/2)*Sqrt[Pi/2]*(d + e*x)^2*Erfi[(Sqrt[2]
*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(32*e^3*E^((2*a)/(b*n)
)*(c*(d + e*x)^n)^(2/n)) - (5*b^(5/2)*g^2*n^(5/2)*Sqrt[Pi/3]*(d + e*x)^3*Er
fi[(Sqrt[3]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(72*e^3*E^(
(3*a)/(b*n))*(c*(d + e*x)^n)^(3/n)) + (15*b^2*(e*f - d*g)^2*n^2*(d + e*x)*S
qrt[a + b*Log[c*(d + e*x)^n]])/(4*e^3) + (15*b^2*g*(e*f - d*g)*n^2*(d + e*x
)^2*Sqrt[a + b*Log[c*(d + e*x)^n]])/(16*e^3) + (5*b^2*g^2*n^2*(d + e*x)^3*S
qrt[a + b*Log[c*(d + e*x)^n]])/(36*e^3) - (5*b*(e*f - d*g)^2*n*(d + e*x)*(a
 + b*Log[c*(d + e*x)^n])^(3/2))/(2*e^3) - (5*b*g*(e*f - d*g)*n*(d + e*x)^2*
(a + b*Log[c*(d + e*x)^n])^(3/2))/(4*e^3) - (5*b*g^2*n*(d + e*x)^3*(a + b*L
og[c*(d + e*x)^n])^(3/2))/(18*e^3) + ((e*f - d*g)^2*(d + e*x)*(a + b*Log[c*
(d + e*x)^n])^(5/2))/e^3 + (g*(e*f - d*g)*(d + e*x)^2*(a + b*Log[c*(d + e*x
)^n])^(5/2))/e^3 + (g^2*(d + e*x)^3*(a + b*Log[c*(d + e*x)^n])^(5/2))/(3*e^
3)
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rubi steps

$$\int (f+gx)^2 \left(a+b\log \left(c(d+ex)^n\right)\right)^{5/2} dx = \int \left(\frac{(ef-dg)^2 \left(a+b\log \left(c(d+ex)^n\right)\right)^{5/2}}{e^2} + \frac{2g(ef-dg)(d+ex) (a}{e}\right.$$

$$= \frac{g^2 \int (d+ex)^2 \left(a+b\log \left(c(d+ex)^n\right)\right)^{5/2} dx}{e^2} + \frac{(2g(ef-dg)) \int (d+}{}$$

$$= \frac{g^2 \text{Subst}\left(\int x^2 \left(a+b\log \left(cx^n\right)\right)^{5/2} dx, x, d+ex\right)}{e^3} + \frac{(2g(ef-dg))}{}$$

$$= \frac{(ef-dg)^2(d+ex) \left(a+b\log \left(c(d+ex)^n\right)\right)^{5/2}}{e^3} + \frac{g(ef-dg)(d+ex)}{}$$

$$= -\frac{5b(ef-dg)^2n(d+ex) \left(a+b\log \left(c(d+ex)^n\right)\right)^{3/2}}{2e^3} - \frac{5bg(ef-dg)}{}$$

$$= \frac{15b^2(ef-dg)^2n^2(d+ex)\sqrt{a+b\log \left(c(d+ex)^n\right)}}{4e^3} + \frac{15b^2g(ef-dg}{}$$

$$= \frac{15b^2(ef-dg)^2n^2(d+ex)\sqrt{a+b\log \left(c(d+ex)^n\right)}}{4e^3} + \frac{15b^2g(ef-dg}{}$$

$$= \frac{15b^2(ef-dg)^2n^2(d+ex)\sqrt{a+b\log \left(c(d+ex)^n\right)}}{4e^3} + \frac{15b^2g(ef-dg}{}$$

$$= -\frac{15b^{5/2}e^{-\frac{a}{bn}}(ef-dg)^2n^{5/2}\sqrt{\pi}\,(d+ex)\left(c(d+ex)^n\right)^{-1/n} \text{erfi}\left(\frac{\sqrt{a+b\log}}{\sqrt{}}\right.}{8e^3}$$

Mathematica [A] time = 1.82, size = 511, normalized size = 0.77

$$(d+ex)\left(-1080bn(ef-dg)^2 \left(3\sqrt{\pi}\,b^{3/2}n^{3/2}e^{-\frac{a}{bn}} \left(c(d+ex)^n\right)^{-1/n} \text{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right) + 2\sqrt{a+b\log \left(c(d+ex\right.}\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^2*(a + b*Log[c*(d + e*x)^n])^(5/2),x]
```

```
[Out] ((d + e*x)*(1728*(e*f - d*g)^2*(a + b*Log[c*(d + e*x)^n])^(5/2) + 1728*g*(e
*f - d*g)*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^(5/2) + 576*g^2*(d + e*x)^2*
(a + b*Log[c*(d + e*x)^n])^(5/2) - 1080*b*(e*f - d*g)^2*n*((3*b^(3/2)*n^(3/
2)*Sqrt[Pi]*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])])/(E^(a/(
b*n))*(c*(d + e*x)^n)^n^(-1)) + 2*Sqrt[a + b*Log[c*(d + e*x)^n]]*(2*a - 3*b
*n + 2*b*Log[c*(d + e*x)^n])) - 40*b*g^2*n*(d + e*x)^2*((b^(3/2)*n^(3/2)*Sq
rt[3*Pi]*Erfi[(Sqrt[3]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/
(E^((3*a)/(b*n))*(c*(d + e*x)^n)^(3/n)) + 6*Sqrt[a + b*Log[c*(d + e*x)^n]]*
(2*a - b*n + 2*b*Log[c*(d + e*x)^n])) - 135*b*g*(e*f - d*g)*n*(d + e*x)*((3
*b^(3/2)*n^(3/2)*Sqrt[2*Pi]*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(
Sqrt[b]*Sqrt[n])])/(E^((2*a)/(b*n))*(c*(d + e*x)^n)^(2/n)) + 4*Sqrt[a + b*L
og[c*(d + e*x)^n]]*(4*a - 3*b*n + 4*b*Log[c*(d + e*x)^n]))))/(1728*e^3)
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(gx+f\right)^{2}\left(b\log\left(\left(ex+d\right)^{n}c\right)+a\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((g*x + f)^2*(b*log((e*x + d)^n*c) + a)^(5/2), x)
```

maple [F] time = 0.55, size = 0, normalized size = 0.00

$$\int \left(gx+f\right)^{2}\left(b\ln\left(c\left(ex+d\right)^{n}\right)+a\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^2*(b*ln(c*(e*x+d)^n)+a)^(5/2),x)
```

```
[Out] int((g*x+f)^2*(b*ln(c*(e*x+d)^n)+a)^(5/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(gx+f\right)^{2}\left(b\log\left(\left(ex+d\right)^{n}c\right)+a\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((g*x + f)^2*(b*log((e*x + d)^n*c) + a)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int {\left(f+g\,x\right)}^2\,{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^{5/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^2*(a + b*log(c*(d + e*x)^n))^(5/2),x)
```

```
[Out] int((f + g*x)^2*(a + b*log(c*(d + e*x)^n))^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**2*(a+b*ln(c*(e*x+d)**n))**(5/2),x)
```

```
[Out] Timed out
```

3.118 $\int (f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}\,dx$

Optimal. Leaf size=413

$$-\frac{15\sqrt{\pi}\,b^{5/2}n^{5/2}e^{-\frac{a}{bn}}(d+ex)(ef-dg)\left(c(d+ex)^n\right)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{8e^2}-\frac{15\sqrt{\frac{\pi}{2}}\,b^{5/2}gn^{5/2}e^{-\frac{2a}{bn}}(d+ex)^2\left(c(d\right.}{}$$

```
[Out] -5/2*b*(-d*g+e*f)*n*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^(3/2)/e^2-5/8*b*g*n*(e*x+
d)^2*(a+b*ln(c*(e*x+d)^n))^(3/2)/e^2+(-d*g+e*f)*(e*x+d)*(a+b*ln(c*(e*x+d)^n
))^(5/2)/e^2+1/2*g*(e*x+d)^2*(a+b*ln(c*(e*x+d)^n))^(5/2)/e^2-15/128*b^(5/2)
*g*n^(5/2)*(e*x+d)^2*erfi(2^(1/2)*(a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/
2))*2^(1/2)*Pi^(1/2)/e^2/exp(2*a/b/n)/((c*(e*x+d)^n)^(2/n))-15/8*b^(5/2)*(-
d*g+e*f)*n^(5/2)*(e*x+d)*erfi((a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*
Pi^(1/2)/e^2/exp(a/b/n)/((c*(e*x+d)^n)^(1/n))+15/4*b^2*(-d*g+e*f)*n^2*(e*x+
d)*(a+b*ln(c*(e*x+d)^n))^(1/2)/e^2+15/32*b^2*g*n^2*(e*x+d)^2*(a+b*ln(c*(e*x
+d)^n))^(1/2)/e^2
```

Rubi [A] time = 0.51, antiderivative size = 413, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 9, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.375$, Rules used = {2401, 2389, 2296, 2300, 2180, 2204, 2390, 2305, 2310}

$$-\frac{15\sqrt{\pi}\,b^{5/2}n^{5/2}e^{-\frac{a}{bn}}(d+ex)(ef-dg)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{8e^2}-\frac{15\sqrt{\frac{\pi}{2}}\,b^{5/2}gn^{5/2}e^{-\frac{2a}{bn}}(d+ex)^2\left(c(d\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)*(a + b*Log[c*(d + e*x)^n])^(5/2),x]
```

```
[Out] (-15*b^(5/2)*(e*f - d*g)*n^(5/2)*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(
d + e*x)^n]]/(Sqrt[b]*Sqrt[n])])/(8*e^2*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1))
 - (15*b^(5/2)*g*n^(5/2)*Sqrt[Pi/2]*(d + e*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Lo
g[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(64*e^2*E^((2*a)/(b*n))*(c*(d + e*x)
^n)^(2/n)) + (15*b^2*(e*f - d*g)*n^2*(d + e*x)*Sqrt[a + b*Log[c*(d + e*x)^n
]])/(4*e^2) + (15*b^2*g*n^2*(d + e*x)^2*Sqrt[a + b*Log[c*(d + e*x)^n]])/(32
*e^2) - (5*b*(e*f - d*g)*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^(3/2))/(2*e
^2) - (5*b*g*n*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n])^(3/2))/(8*e^2) + ((e*
f - d*g)*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^(5/2))/e^2 + (g*(d + e*x)^2*(
a + b*Log[c*(d + e*x)^n])^(5/2))/(2*e^2)
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rubi steps

$$\int (f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}\,dx=\int\left(\frac{(ef-dg)\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}}{e}+\frac{g(d+ex)\left(a+b\log\left(c(d\right.\right.}{e}\right.$$

$$=\frac{g\int(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}dx}{e}+\frac{(ef-dg)\int\left(a+b\log\right.}{e}$$

$$=\frac{g\,\mathrm{Subst}\left(\int x\left(a+b\log\left(cx^n\right)\right)^{5/2}dx,x,d+ex\right)}{e^2}+\frac{(ef-dg)\,\mathrm{Subst}\left(\right.}{}$$

$$=\frac{(ef-dg)(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}}{e^2}+\frac{g(d+ex)^2\left(a+b\log\right.}{2e^2}$$

$$=-\frac{5b(ef-dg)n(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}{2e^2}-\frac{5bgn(d+ex)^2\left(\right.}{}$$

$$=\frac{15b^2(ef-dg)n^2(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{4e^2}+\frac{15b^2gn^2(d+ex}{}$$

$$=\frac{15b^2(ef-dg)n^2(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{4e^2}+\frac{15b^2gn^2(d+ex}{}$$

$$=\frac{15b^2(ef-dg)n^2(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{4e^2}+\frac{15b^2gn^2(d+ex}{}$$

$$=-\frac{15b^{5/2}e^{-\frac{a}{bn}}(ef-dg)n^{5/2}\sqrt{\pi}\,(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log(c}}{\sqrt{b}}\right.}{8e^2}$$

Mathematica [A] time = 0.67, size = 326, normalized size = 0.79

$$\frac{(d+ex)\left(-80bn(ef-dg)\left(3\sqrt{\pi}\,b^{3/2}n^{3/2}e^{-\frac{a}{bn}}\left(c(d+ex)^n\right)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)+2\sqrt{a+b\log\left(c(d+ex)^n\right)}\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)*(a + b*Log[c*(d + e*x)^n])^(5/2),x]
```

```
[Out] ((d + e*x)*(128*(e*f - d*g)*(a + b*Log[c*(d + e*x)^n])^(5/2) + 64*g*(d + e*
x)*(a + b*Log[c*(d + e*x)^n])^(5/2) - 80*b*(e*f - d*g)*n*((3*b^(3/2)*n^(3/2
)*Sqrt[Pi]*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])])/(E^(a/(b
*n))*(c*(d + e*x)^n)^n^(-1)) + 2*Sqrt[a + b*Log[c*(d + e*x)^n]]*(2*a - 3*b*
n + 2*b*Log[c*(d + e*x)^n])) - 5*b*g*n*(d + e*x)*((3*b^(3/2)*n^(3/2)*Sqrt[2
*Pi]*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(E^(
(2*a)/(b*n))*(c*(d + e*x)^n)^(2/n)) + 4*Sqrt[a + b*Log[c*(d + e*x)^n]]*(4*a
 - 3*b*n + 4*b*Log[c*(d + e*x)^n]))))/(128*e^2)
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >> Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(gx+f\right)\left(b\log\left(\left(ex+d\right)^{n}c\right)+a\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="giac")
[Out] integrate((g*x + f)*(b*log((e*x + d)^n*c) + a)^(5/2), x)
```

maple [F] time = 0.39, size = 0, normalized size = 0.00

$$\int \left(gx+f\right)\left(b\ln\left(c\left(ex+d\right)^{n}\right)+a\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(b*ln(c*(e*x+d)^n)+a)^(5/2),x)
[Out] int((g*x+f)*(b*ln(c*(e*x+d)^n)+a)^(5/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(gx+f\right)\left(b\log\left(\left(ex+d\right)^{n}c\right)+a\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="maxima")
[Out] integrate((g*x + f)*(b*log((e*x + d)^n*c) + a)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \left(f+g\,x\right)\,{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(a + b*log(c*(d + e*x)^n))^(5/2),x)
[Out] int((f + g*x)*(a + b*log(c*(d + e*x)^n))^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*ln(c*(e*x+d)**n))**(5/2),x)
[Out] Timed out
```

3.119 $\int \left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}\,dx$

Optimal. Leaf size=179

$$-\frac{15\sqrt{\pi}\,b^{5/2}n^{5/2}e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\,\sqrt{n}}\right)}{8e}+\frac{15b^2n^2(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{4e}+$$

```
[Out] -5/2*b*n*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^(3/2)/e+(e*x+d)*(a+b*ln(c*(e*x+d)^n)
)^(5/2)/e-15/8*b^(5/2)*n^(5/2)*(e*x+d)*erfi((a+b*ln(c*(e*x+d)^n))^(1/2)/b^(
1/2)/n^(1/2))*Pi^(1/2)/e/exp(a/b/n)/((c*(e*x+d)^n)^(1/n))+15/4*b^2*n^2*(e*x
+d)*(a+b*ln(c*(e*x+d)^n))^(1/2)/e
```

Rubi [A] time = 0.13, antiderivative size = 179, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.278$, Rules used = {2389, 2296, 2300, 2180, 2204}

$$-\frac{15\sqrt{\pi}\,b^{5/2}n^{5/2}e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\,\sqrt{n}}\right)}{8e}+\frac{15b^2n^2(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{4e}+$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^(5/2),x]
```

```
[Out] (-15*b^(5/2)*n^(5/2)*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]
/(Sqrt[b]*Sqrt[n])])/(8*e*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)) + (15*b^2*n^2
*(d + e*x)*Sqrt[a + b*Log[c*(d + e*x)^n]])/(4*e) - (5*b*n*(d + e*x)*(a + b*
Log[c*(d + e*x)^n])^(3/2))/(2*e) + ((d + e*x)*(a + b*Log[c*(d + e*x)^n])^(5
/2))/e
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rubi steps

$$\int \left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}\,dx = \frac{\text{Subst}\left(\int\left(a+b\log\left(cx^n\right)\right)^{5/2}\,dx,x,d+ex\right)}{e}$$

$$= \frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}}{e} - \frac{(5bn)\,\text{Subst}\left(\int\left(a+b\log\left(cx^n\right)\right)^{3/2}\,dx,x,\right.}{2e}$$

$$= -\frac{5bn(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}{2e} + \frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}}{e}$$

$$= \frac{15b^2n^2(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{4e} - \frac{5bn(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3}}{2e}$$

$$= \frac{15b^2n^2(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{4e} - \frac{5bn(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3}}{2e}$$

$$= \frac{15b^2n^2(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{4e} - \frac{5bn(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3}}{2e}$$

$$= -\frac{15b^{5/2}e^{-\frac{a}{bn}}n^{5/2}\sqrt{\pi}\,(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{8e} + \frac{15b^2n^2(d}{}$$

Mathematica [A] time = 0.17, size = 152, normalized size = 0.85

$$\frac{(d+ex)\left(8\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2} - 5bn\left(3\sqrt{\pi}\,b^{3/2}n^{3/2}e^{-\frac{a}{bn}}\left(c(d+ex)^n\right)^{-1/n}\text{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right) + 2\sqrt{a+b\log}\right.\right.}{8e}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^(5/2),x]
```

```
[Out] ((d + e*x)*(8*(a + b*Log[c*(d + e*x)^n])^(5/2) - 5*b*n*((3*b^(3/2)*n^(3/2)*
Sqrt[Pi]*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])])/(E^(a/(b*n
))*(c*(d + e*x)^n)^n^(-1)) + 2*Sqrt[a + b*Log[c*(d + e*x)^n]]*(2*a - 3*b*n
+ 2*b*Log[c*(d + e*x)^n]))))/(8*e)
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^(5/2), x)
```

maple [F] time = 0.04, size = 0, normalized size = 0.00

$$\int \left(b\ln\left(c\,(ex+d)^{n}\right)+a\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)^(5/2),x)
[Out] int((b*ln(c*(e*x+d)^n)+a)^(5/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b\log\left((ex+d)^{n}c\right)+a\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="maxima")
[Out] integrate((b*log((e*x + d)^n*c) + a)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \left(a+b\,\ln\left(c\,(d+e\,x)^{n}\right)\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^(5/2),x)
[Out] int((a + b*log(c*(d + e*x)^n))^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(a+b\log\left(c\,(d+ex)^{n}\right)\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**(5/2),x)
[Out] Integral((a + b*log(c*(d + e*x)**n))**(5/2), x)
```

3.120 $\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}}{f+gx}\,dx$

Optimal. Leaf size=29

$$\mathrm{Int}\left(\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}}{f+gx},x\right)$$

```
[Out] Unintegrable((a+b*ln(c*(e*x+d)^n))^(5/2)/(g*x+f),x)
```

Rubi [A] time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}}{f+gx}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^(5/2)/(f + g*x),x]
[Out] Defer[Int][(a + b*Log[c*(d + e*x)^n])^(5/2)/(f + g*x), x]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}}{f+gx}\,dx=\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}}{f+gx}\,dx$$

Mathematica [A] time = 2.15, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}}{f+gx}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^(5/2)/(f + g*x),x]
[Out] Integrate[(a + b*Log[c*(d + e*x)^n])^(5/2)/(f + g*x), x]
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(5/2)/(g*x+f),x, algorithm="fricas")
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{5}{2}}}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(5/2)/(g*x+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^(5/2)/(g*x + f), x)
```

maple [A] time = 0.56, size = 0, normalized size = 0.00

$$\int \frac{\left(b\ln\left(c\,(ex+d)^{n}\right)+a\right)^{\frac{5}{2}}}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)^(5/2)/(g*x+f),x)
[Out] int((b*ln(c*(e*x+d)^n)+a)^(5/2)/(g*x+f),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\log\left((ex+d)^{n}c\right)+a\right)^{\frac{5}{2}}}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(5/2)/(g*x+f),x, algorithm="maxima")
[Out] integrate((b*log((e*x + d)^n*c) + a)^(5/2)/(g*x + f), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^{5/2}}{f+g\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^(5/2)/(f + g*x),x)
[Out] int((a + b*log(c*(d + e*x)^n))^(5/2)/(f + g*x), x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**(5/2)/(g*x+f),x)
[Out] Exception raised: HeuristicGCDFailed
```

3.121 $\int \frac{\left(a+b\log(c(d+ex)^n)\right)^{5/2}}{(f+gx)^2}\,dx$

Optimal. Leaf size=88

$$\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}}{(f+gx)(ef-dg)}-\frac{5ben\text{Int}\left(\frac{\left(a+b\log(c(d+ex)^n)\right)^{3/2}}{f+gx},x\right)}{2(ef-dg)}$$

```
[Out] (e*x+d)*(a+b*ln(c*(e*x+d)^n))^(5/2)/(-d*g+e*f)/(g*x+f)-5/2*b*e*n*Unintegrab
le((a+b*ln(c*(e*x+d)^n))^(3/2)/(g*x+f),x)/(-d*g+e*f)
```

Rubi [A] time = 0.11, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}}{(f+gx)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^(5/2)/(f + g*x)^2,x]
```

```
[Out] ((d + e*x)*(a + b*Log[c*(d + e*x)^n])^(5/2))/((e*f - d*g)*(f + g*x)) - (5*b
*e*n*Defer[Int][(a + b*Log[c*(d + e*x)^n])^(3/2)/(f + g*x), x])/(2*(e*f - d
*g))
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}}{(f+gx)^2}\,dx=\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}}{(ef-dg)(f+gx)}-\frac{(5ben)\int \frac{\left(a+b\log(c(d+ex)^n)\right)^{3/2}}{f+gx}\,dx}{2(ef-dg)}$$

Mathematica [A] time = 7.06, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}}{(f+gx)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^(5/2)/(f + g*x)^2,x]
```

```
[Out] Integrate[(a + b*Log[c*(d + e*x)^n])^(5/2)/(f + g*x)^2, x]
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(5/2)/(g*x+f)^2,x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >> Error detected within library code: integ
rate: implementation incomplete (constant residues)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{5}{2}}}{\left(gx+f\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(5/2)/(g*x+f)^2,x, algorithm="giac")
[Out] integrate((b*log((e*x + d)^n*c) + a)^(5/2)/(g*x + f)^2, x)
```

maple [A] time = 0.55, size = 0, normalized size = 0.00

$$\int \frac{\left(b\ln\left(c\,(ex+d)^{n}\right)+a\right)^{\frac{5}{2}}}{\left(gx+f\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)^(5/2)/(g*x+f)^2,x)
[Out] int((b*ln(c*(e*x+d)^n)+a)^(5/2)/(g*x+f)^2,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\log\left((ex+d)^{n}c\right)+a\right)^{\frac{5}{2}}}{\left(gx+f\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(5/2)/(g*x+f)^2,x, algorithm="maxima")
[Out] integrate((b*log((e*x + d)^n*c) + a)^(5/2)/(g*x + f)^2, x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(a+b\,\ln\left(c\,(d+e\,x)^{n}\right)\right)^{5/2}}{\left(f+g\,x\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^(5/2)/(f + g*x)^2,x)
[Out] int((a + b*log(c*(d + e*x)^n))^(5/2)/(f + g*x)^2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**(5/2)/(g*x+f)**2,x)
[Out] Timed out
```

3.122 $\int \frac{\left(a+b\log(c(d+ex)^n)\right)^{5/2}}{(f+gx)^3}\,dx$

Optimal. Leaf size=79

$$\frac{5ben\text{Int}\left(\frac{\left(a+b\log(c(d+ex)^n)\right)^{3/2}}{(d+ex)(f+gx)^2},x\right)}{4g}-\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}}{2g(f+gx)^2}$$

```
[Out] -1/2*(a+b*ln(c*(e*x+d)^n))^(5/2)/g/(g*x+f)^2+5/4*b*e*n*Unintegrable((a+b*ln
(c*(e*x+d)^n))^(3/2)/(e*x+d)/(g*x+f)^2,x)/g
```

Rubi [A] time = 0.23, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}}{(f+gx)^3}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^(5/2)/(f + g*x)^3,x]
```

```
[Out] -(a + b*Log[c*(d + e*x)^n])^(5/2)/(2*g*(f + g*x)^2) + (5*b*e*n*Defer[Int][(
a + b*Log[c*(d + e*x)^n])^(3/2)/((d + e*x)*(f + g*x)^2), x])/(4*g)
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}}{(f+gx)^3}\,dx=-\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}}{2g(f+gx)^2}+\frac{(5ben)\int \frac{\left(a+b\log(c(d+ex)^n)\right)^{3/2}}{(d+ex)(f+gx)^2}\,dx}{4g}$$

Mathematica [A] time = 6.48, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}}{(f+gx)^3}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^(5/2)/(f + g*x)^3,x]
```

```
[Out] Integrate[(a + b*Log[c*(d + e*x)^n])^(5/2)/(f + g*x)^3, x]
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(5/2)/(g*x+f)^3,x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{5}{2}}}{\left(gx+f\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(5/2)/(g*x+f)^3,x, algorithm="giac")
[Out] integrate((b*log((e*x + d)^n*c) + a)^(5/2)/(g*x + f)^3, x)
```

maple [A] time = 0.62, size = 0, normalized size = 0.00

$$\int \frac{\left(b \ln \left(c \left(ex+d\right)^{n}\right)+a\right)^{\frac{5}{2}}}{\left(gx+f\right)^{3}}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)^(5/2)/(g*x+f)^3,x)
[Out] int((b*ln(c*(e*x+d)^n)+a)^(5/2)/(g*x+f)^3,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b \log \left(\left(ex+d\right)^{n}c\right)+a\right)^{\frac{5}{2}}}{\left(gx+f\right)^{3}}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(5/2)/(g*x+f)^3,x, algorithm="maxima")
[Out] integrate((b*log((e*x + d)^n*c) + a)^(5/2)/(g*x + f)^3, x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)^{5/2}}{\left(f+g\,x\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^(5/2)/(f + g*x)^3,x)
[Out] int((a + b*log(c*(d + e*x)^n))^(5/2)/(f + g*x)^3, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**(5/2)/(g*x+f)**3,x)
[Out] Timed out
```

3.123 $\int \frac{(f+gx)^3}{\sqrt{a+b\log(c(d+ex)^n)}}\,dx$

Optimal. Leaf size=383

$$\frac{\sqrt{3\pi}\,g^2e^{-\frac{3a}{bn}}(d+ex)^3(ef-dg)\,(c(d+ex)^n)^{-3/n}\,\text{erfi}\left(\frac{\sqrt{3}\,\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\,\sqrt{n}}\right)}{\sqrt{b}\,e^4\sqrt{n}}+\frac{3\sqrt{\frac{\pi}{2}}\,ge^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)^2\,(c(d+ex}{\sqrt{b}\,e^4\sqrt{n}}$$

```
[Out] 3/2*g*(-d*g+e*f)^2*(e*x+d)^2*erfi(2^(1/2)*(a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/
2)/n^(1/2))*2^(1/2)*Pi^(1/2)/e^4/exp(2*a/b/n)/((c*(e*x+d)^n)^(2/n))/b^(1/2)
/n^(1/2)+(-d*g+e*f)^3*(e*x+d)*erfi((a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1
/2))*Pi^(1/2)/e^4/exp(a/b/n)/((c*(e*x+d)^n)^(1/n))/b^(1/2)/n^(1/2)+1/2*g^3*
(e*x+d)^4*erfi(2*(a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*Pi^(1/2)/e^4/
exp(4*a/b/n)/((c*(e*x+d)^n)^(4/n))/b^(1/2)/n^(1/2)+g^2*(-d*g+e*f)*(e*x+d)^3
*erfi(3^(1/2)*(a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*3^(1/2)*Pi^(1/2)
/e^4/exp(3*a/b/n)/((c*(e*x+d)^n)^(3/n))/b^(1/2)/n^(1/2)
```

Rubi [A] time = 0.73, antiderivative size = 383, normalized size of antiderivative = 1.00, number of steps used = 18, number of rules used = 7, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.269, Rules used = {2401, 2389, 2300, 2180, 2204, 2390, 2310}

$$\frac{\sqrt{3\pi}\,g^2e^{-\frac{3a}{bn}}(d+ex)^3(ef-dg)\,(c(d+ex)^n)^{-3/n}\,\text{Erfi}\left(\frac{\sqrt{3}\,\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\,\sqrt{n}}\right)}{\sqrt{b}\,e^4\sqrt{n}}+\frac{3\sqrt{\frac{\pi}{2}}\,ge^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)^2\,(c(d+ex}{\sqrt{b}\,e^4\sqrt{n}}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^3/Sqrt[a + b*Log[c*(d + e*x)^n]],x]
```

```
[Out] ((e*f - d*g)^3*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt
[b]*Sqrt[n])])/(Sqrt[b]*e^4*E^(a/(b*n))*Sqrt[n]*(c*(d + e*x)^n)^n^(-1)) + (
g^3*Sqrt[Pi]*(d + e*x)^4*Erfi[(2*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*S
qrt[n])])/(2*Sqrt[b]*e^4*E^((4*a)/(b*n))*Sqrt[n]*(c*(d + e*x)^n)^(4/n)) + (
3*g*(e*f - d*g)^2*Sqrt[Pi/2]*(d + e*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d
+ e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(Sqrt[b]*e^4*E^((2*a)/(b*n))*Sqrt[n]*(c*(d
+ e*x)^n)^(2/n)) + (g^2*(e*f - d*g)*Sqrt[3*Pi]*(d + e*x)^3*Erfi[(Sqrt[3]*Sq
rt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(Sqrt[b]*e^4*E^((3*a)/(b*
n))*Sqrt[n]*(c*(d + e*x)^n)^(3/n))
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rubi steps

$$\int \frac{(f+gx)^3}{\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx = \int \left(\frac{(ef-dg)^3}{e^3\sqrt{a+b\log\left(c(d+ex)^n\right)}} + \frac{3g(ef-dg)^2(d+ex)}{e^3\sqrt{a+b\log\left(c(d+ex)^n\right)}} + \frac{3g^2(ef-dg)(}{e^3\sqrt{a+b\log\left(c\right.}}\right.$$

$$= \frac{g^3\int \frac{(d+ex)^3}{\sqrt{a+b\log(c(d+ex)^n)}}\,dx}{e^3} + \frac{\left(3g^2(ef-dg)\right)\int \frac{(d+ex)^2}{\sqrt{a+b\log(c(d+ex)^n)}}\,dx}{e^3} + \frac{\left(3g(ef-d\right.}{}$$

$$= \frac{g^3\,\text{Subst}\left(\int \frac{x^3}{\sqrt{a+b\log(cx^n)}}\,dx, x, d+ex\right)}{e^4} + \frac{\left(3g^2(ef-dg)\right)\text{Subst}\left(\int \frac{x^2}{\sqrt{a+b\log(cx^n}}\right.}{e^4}$$

$$= \frac{\left(g^3(d+ex)^4\left(c(d+ex)^n\right)^{-4/n}\right)\text{Subst}\left(\int \frac{e^{\frac{4x}{n}}}{\sqrt{a+bx}}\,dx, x, \log\left(c(d+ex)^n\right)\right)}{e^4 n} + \frac{\left(3g^2(\right.}{}$$

$$= \frac{\left(2g^3(d+ex)^4\left(c(d+ex)^n\right)^{-4/n}\right)\text{Subst}\left(\int e^{-\frac{4a}{bn}+\frac{4x^2}{bn}}\,dx, x, \sqrt{a+b\log\left(c(d+ex)^n\right.}\right.}{be^4 n}$$

$$= \frac{e^{-\frac{a}{bn}}(ef-dg)^3\sqrt{\pi}\,(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{\sqrt{b}\,e^4\sqrt{n}} + \frac{e^{-\frac{4a}{bn}}g^3\sqrt{\pi}}{}$$

Mathematica [A] time = 0.45, size = 331, normalized size = 0.86

$$\frac{\sqrt{\pi}\,e^{-\frac{4a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-4/n}\left(2\sqrt{3}\,g^2 e^{\frac{a}{bn}}(d+ex)^2(ef-dg)\left(c(d+ex)^n\right)^{\frac{1}{n}}\text{erfi}\left(\frac{\sqrt{3}\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)+3\sqrt{2}\,g\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^3/Sqrt[a + b*Log[c*(d + e*x)^n]],x]
```

```
[Out] (Sqrt[Pi]*(d + e*x)*(2*E^((3*a)/(b*n))*(e*f - d*g)^3*(c*(d + e*x)^n)^(3/n)*
Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])] + g^3*(d + e*x)^3*Er
fi[(2*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])] + 3*Sqrt[2]*E^((2*
a)/(b*n))*g*(e*f - d*g)^2*(d + e*x)*(c*(d + e*x)^n)^(2/n)*Erfi[(Sqrt[2]*Sqr
t[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])] + 2*Sqrt[3]*E^(a/(b*n))*g^2
*(e*f - d*g)*(d + e*x)^2*(c*(d + e*x)^n)^n^(-1)*Erfi[(Sqrt[3]*Sqrt[a + b*Lo
g[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])]))/(2*Sqrt[b]*e^4*E^((4*a)/(b*n))*Sqrt
[n]*(c*(d + e*x)^n)^(4/n))
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(gx+f\right)^3}{\sqrt{b\log\left(\left(ex+d\right)^n c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="giac")
```

```
[Out] integrate((g*x + f)^3/sqrt(b*log((e*x + d)^n*c) + a), x)
```

maple [F] time = 0.53, size = 0, normalized size = 0.00

$$\int \frac{\left(gx+f\right)^3}{\sqrt{b\ln\left(c\left(ex+d\right)^n\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^3/(b*ln(c*(e*x+d)^n)+a)^(1/2),x)
```

```
[Out] int((g*x+f)^3/(b*ln(c*(e*x+d)^n)+a)^(1/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(gx+f\right)^3}{\sqrt{b\log\left(\left(ex+d\right)^n c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((g*x + f)^3/sqrt(b*log((e*x + d)^n*c) + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(f+g\,x\right)}^3}{\sqrt{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^3/(a + b*log(c*(d + e*x)^n))^(1/2),x)
[Out] int((f + g*x)^3/(a + b*log(c*(d + e*x)^n))^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(f+gx)^3}{\sqrt{a+b\log\left(c\left(d+ex\right)^n\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**3/(a+b*ln(c*(e*x+d)**n))**(1/2),x)
[Out] Integral((f + g*x)**3/sqrt(a + b*log(c*(d + e*x)**n)), x)
```

3.124 $\int \frac{(f+gx)^2}{\sqrt{a+b\log(c(d+ex)^n)}}\,dx$

Optimal. Leaf size=283

$$\frac{\sqrt{2\pi}\,ge^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)\,(c(d+ex)^n)^{-2/n}\operatorname{erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{\sqrt{b}\,e^3\sqrt{n}}+\frac{\sqrt{\pi}\,e^{-\frac{a}{bn}}(d+ex)(ef-dg)^2\,(c(d+ex)^n)^{-1/}}{\sqrt{b}\,e^3\sqrt{n}}$$

```
[Out] 1/3*g^2*(e*x+d)^3*erfi(3^(1/2)*(a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))
*3^(1/2)*Pi^(1/2)/e^3/exp(3*a/b/n)/((c*(e*x+d)^n)^(3/n))/b^(1/2)/n^(1/2)+(-
d*g+e*f)^2*(e*x+d)*erfi((a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*Pi^(1/
2)/e^3/exp(a/b/n)/((c*(e*x+d)^n)^(1/n))/b^(1/2)/n^(1/2)+g*(-d*g+e*f)*(e*x+d
)^2*erfi(2^(1/2)*(a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*2^(1/2)*Pi^(1
/2)/e^3/exp(2*a/b/n)/((c*(e*x+d)^n)^(2/n))/b^(1/2)/n^(1/2)
```

Rubi [A] time = 0.52, antiderivative size = 283, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 7, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.269, Rules used = {2401, 2389, 2300, 2180, 2204, 2390, 2310}

$$\frac{\sqrt{2\pi}\,ge^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)\,(c(d+ex)^n)^{-2/n}\operatorname{Erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{\sqrt{b}\,e^3\sqrt{n}}+\frac{\sqrt{\pi}\,e^{-\frac{a}{bn}}(d+ex)(ef-dg)^2\,(c(d+ex)^n)^{-1}}{\sqrt{b}\,e^3\sqrt{n}}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^2/Sqrt[a + b*Log[c*(d + e*x)^n]],x]
```

```
[Out] ((e*f - d*g)^2*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt
[b]*Sqrt[n])])/(Sqrt[b]*e^3*E^(a/(b*n))*Sqrt[n]*(c*(d + e*x)^n)^n^(-1)) + (
g*(e*f - d*g)*Sqrt[2*Pi]*(d + e*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d + e*
x)^n]])/(Sqrt[b]*Sqrt[n])])/(Sqrt[b]*e^3*E^((2*a)/(b*n))*Sqrt[n]*(c*(d + e*
x)^n)^(2/n)) + (g^2*Sqrt[Pi/3]*(d + e*x)^3*Erfi[(Sqrt[3]*Sqrt[a + b*Log[c*(
d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(Sqrt[b]*e^3*E^((3*a)/(b*n))*Sqrt[n]*(c*(
d + e*x)^n)^(3/n))
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rubi steps

$$\int \frac{(f+gx)^2}{\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx = \int \left(\frac{(ef-dg)^2}{e^2\sqrt{a+b\log\left(c(d+ex)^n\right)}} + \frac{2g(ef-dg)(d+ex)}{e^2\sqrt{a+b\log\left(c(d+ex)^n\right)}} + \frac{g^2(d+e}{e^2\sqrt{a+b\log\left(c\right.}}\right.$$

$$= \frac{g^2\int \frac{(d+ex)^2}{\sqrt{a+b\log(c(d+ex)^n)}}\,dx}{e^2} + \frac{(2g(ef-dg))\int \frac{d+ex}{\sqrt{a+b\log(c(d+ex)^n)}}\,dx}{e^2} + \frac{(ef-dg)^2\int}{}$$

$$= \frac{g^2\,\text{Subst}\left(\int \frac{x^2}{\sqrt{a+b\log(cx^n)}}\,dx, x, d+ex\right)}{e^3} + \frac{(2g(ef-dg))\,\text{Subst}\left(\int \frac{x}{\sqrt{a+b\log(cx^n)}}\right.}{e^3}$$

$$= \frac{\left(g^2(d+ex)^3\left(c(d+ex)^n\right)^{-3/n}\right)\text{Subst}\left(\int \frac{e^{\frac{3x}{n}}}{\sqrt{a+bx}}\,dx, x, \log\left(c(d+ex)^n\right)\right)}{e^3 n} + \frac{\left(2g(e\right.}{}$$

$$= \frac{\left(2g^2(d+ex)^3\left(c(d+ex)^n\right)^{-3/n}\right)\text{Subst}\left(\int e^{-\frac{3a}{bn}+\frac{3x^2}{bn}}\,dx, x, \sqrt{a+b\log\left(c(d+ex)^n\right.}\right.}{be^3 n}$$

$$= \frac{e^{-\frac{a}{bn}}(ef-dg)^2\sqrt{\pi}\,(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\,\sqrt{n}}\right)}{\sqrt{b}\,e^3\sqrt{n}} + \frac{e^{-\frac{2a}{bn}}g(ef}{}$$

Mathematica [A] time = 0.28, size = 252, normalized size = 0.89

$$\frac{\sqrt{\pi}\,e^{-\frac{3a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-3/n}\left(3e^{\frac{2a}{bn}}(ef-dg)^2\left(c(d+ex)^n\right)^{2/n}\text{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\,\sqrt{n}}\right)+3\sqrt{2}\,ge^{\frac{a}{bn}}(d+ex)(ef-\right.}{3\sqrt{b}\,e^3\sqrt{n}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^2/Sqrt[a + b*Log[c*(d + e*x)^n]],x]
```

```
[Out] (Sqrt[Pi]*(d + e*x)*(3*E^((2*a)/(b*n))*(e*f - d*g)^2*(c*(d + e*x)^n)^(2/n)*
Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])] + 3*Sqrt[2]*E^(a/(b*
n))*g*(e*f - d*g)*(d + e*x)*(c*(d + e*x)^n)^n^(-1)*Erfi[(Sqrt[2]*Sqrt[a + b
*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])] + Sqrt[3]*g^2*(d + e*x)^2*Erfi[(Sq
```

```
rt[3]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])]))/(3*Sqrt[b]*e^3*E
^((3*a)/(b*n))*Sqrt[n]*(c*(d + e*x)^n)^(3/n))
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="fricas")
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(gx+f)^2}{\sqrt{b\log\left((ex+d)^n c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="giac")
[Out] integrate((g*x + f)^2/sqrt(b*log((e*x + d)^n*c) + a), x)
```

maple [F] time = 0.58, size = 0, normalized size = 0.00

$$\int \frac{(gx+f)^2}{\sqrt{b\ln\left(c\,(ex+d)^n\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^2/(b*ln(c*(e*x+d)^n)+a)^(1/2),x)
[Out] int((g*x+f)^2/(b*ln(c*(e*x+d)^n)+a)^(1/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(gx+f)^2}{\sqrt{b\log\left((ex+d)^n c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="maxima")
[Out] integrate((g*x + f)^2/sqrt(b*log((e*x + d)^n*c) + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(f+g\,x)^2}{\sqrt{a+b\,\ln\left(c\,(d+e\,x)^n\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^2/(a + b*log(c*(d + e*x)^n))^(1/2),x)
[Out] int((f + g*x)^2/(a + b*log(c*(d + e*x)^n))^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(f+gx)^2}{\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**2/(a+b*ln(c*(e*x+d)**n))**(1/2),x)
```

```
[Out] Integral((f + g*x)**2/sqrt(a + b*log(c*(d + e*x)**n)), x)
```

3.125 $\int \frac{f+gx}{\sqrt{a+b\log(c(d+ex)^n)}} dx$

Optimal. Leaf size=181

$$\frac{\sqrt{\pi}e^{-\frac{a}{bn}}(d+ex)(ef-dg)\left(c(d+ex)^n\right)^{-1/n}\text{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{\sqrt{b}e^2\sqrt{n}}+\frac{\sqrt{\frac{\pi}{2}}ge^{-\frac{2a}{bn}}(d+ex)^2\left(c(d+ex)^n\right)^{-2/n}\text{erfi}\left(\frac{\sqrt{2}\sqrt{a+b}}{}\right.}{\sqrt{b}e^2\sqrt{n}}$$

```
[Out] 1/2*g*(e*x+d)^2*erfi(2^(1/2)*(a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*2
^(1/2)*Pi^(1/2)/e^2/exp(2*a/b/n)/((c*(e*x+d)^n)^(2/n))/b^(1/2)/n^(1/2)+(-d*
g+e*f)*(e*x+d)*erfi((a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*Pi^(1/2)/e
^2/exp(a/b/n)/((c*(e*x+d)^n)^(1/n))/b^(1/2)/n^(1/2)
```

Rubi [A] time = 0.27, antiderivative size = 181, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.292, Rules used = {2401, 2389, 2300, 2180, 2204, 2390, 2310}

$$\frac{\sqrt{\pi}e^{-\frac{a}{bn}}(d+ex)(ef-dg)\left(c(d+ex)^n\right)^{-1/n}\text{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{\sqrt{b}e^2\sqrt{n}}+\frac{\sqrt{\frac{\pi}{2}}ge^{-\frac{2a}{bn}}(d+ex)^2\left(c(d+ex)^n\right)^{-2/n}\text{Erfi}\left(\frac{\sqrt{2}\sqrt{a+}}{}\right.}{\sqrt{b}e^2\sqrt{n}}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)/Sqrt[a + b*Log[c*(d + e*x)^n]],x]
```

```
[Out] ((e*f - d*g)*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b
]*Sqrt[n])])/(Sqrt[b]*e^2*E^(a/(b*n))*Sqrt[n]*(c*(d + e*x)^n)^n^(-1)) + (g*
Sqrt[Pi/2]*(d + e*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[
b]*Sqrt[n])])/(Sqrt[b]*e^2*E^((2*a)/(b*n))*Sqrt[n]*(c*(d + e*x)^n)^(2/n))
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] && !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
```

```
, b, c, d, e, n, p}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rubi steps

$$\int \frac{f+gx}{\sqrt{a+b\log(c(d+ex)^n)}}\,dx = \int \left(\frac{ef-dg}{e\sqrt{a+b\log(c(d+ex)^n)}} + \frac{g(d+ex)}{e\sqrt{a+b\log(c(d+ex)^n)}}\right)dx$$

$$= \frac{g\int \frac{d+ex}{\sqrt{a+b\log(c(d+ex)^n)}}\,dx}{e} + \frac{(ef-dg)\int \frac{1}{\sqrt{a+b\log(c(d+ex)^n)}}\,dx}{e}$$

$$= \frac{g\,\mathrm{Subst}\left(\int \frac{x}{\sqrt{a+b\log(cx^n)}}\,dx, x, d+ex\right)}{e^2} + \frac{(ef-dg)\,\mathrm{Subst}\left(\int \frac{1}{\sqrt{a+b\log(cx^n)}}\,dx, x, \right.}{e^2}$$

$$= \frac{\left(g(d+ex)^2\left(c(d+ex)^n\right)^{-2/n}\right)\mathrm{Subst}\left(\int \frac{e^{\frac{2x}{n}}}{\sqrt{a+bx}}\,dx, x, \log\left(c(d+ex)^n\right)\right)}{e^2n} + \frac{((ef-}{}$$

$$= \frac{\left(2g(d+ex)^2\left(c(d+ex)^n\right)^{-2/n}\right)\mathrm{Subst}\left(\int e^{-\frac{2a}{bn}+\frac{2x^2}{bn}}\,dx, x, \sqrt{a+b\log\left(c(d+ex)^n\right)}\right.}{be^2n}$$

$$= \frac{e^{-\frac{a}{bn}}(ef-dg)\sqrt{\pi}\,(d+ex)\left(c(d+ex)^n\right)^{-1/n}\mathrm{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{\sqrt{b}\,e^2\sqrt{n}} + \frac{e^{-\frac{2a}{bn}}g\sqrt{\frac{\pi}{2}}}{}$$

Mathematica [A] time = 0.16, size = 164, normalized size = 0.91

$$\frac{\sqrt{\pi}\,e^{-\frac{2a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-2/n}\left(2e^{\frac{a}{bn}}(ef-dg)\left(c(d+ex)^n\right)^{\frac{1}{n}}\mathrm{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)+\sqrt{2}\,g(d+ex)\mathrm{erfi}\left(\frac{\sqrt{2}\sqrt{a+}}{}\right.\right.}{2\sqrt{b}\,e^2\sqrt{n}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)/Sqrt[a + b*Log[c*(d + e*x)^n]],x]
```

```
[Out] (Sqrt[Pi]*(d + e*x)*(2*E^(a/(b*n))*(e*f - d*g)*(c*(d + e*x)^n)^n^(-1)*Erfi[
Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])] + Sqrt[2]*g*(d + e*x)*Erf
i[(Sqrt[2]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])]))/(2*Sqrt[b]*
e^2*E^((2*a)/(b*n))*Sqrt[n]*(c*(d + e*x)^n)^(2/n))
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{gx+f}{\sqrt{b\log\left((ex+d)^n c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="giac")
```

```
[Out] integrate((g*x + f)/sqrt(b*log((e*x + d)^n*c) + a), x)
```

maple [F] time = 0.38, size = 0, normalized size = 0.00

$$\int \frac{gx+f}{\sqrt{b\ln\left(c\,(ex+d)^n\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)/(b*ln(c*(e*x+d)^n)+a)^(1/2),x)
```

```
[Out] int((g*x+f)/(b*ln(c*(e*x+d)^n)+a)^(1/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{gx+f}{\sqrt{b\log\left((ex+d)^n c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((g*x + f)/sqrt(b*log((e*x + d)^n*c) + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{f+g\,x}{\sqrt{a+b\,\ln\left(c\,(d+e\,x)^n\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)/(a + b*log(c*(d + e*x)^n))^(1/2),x)
```

```
[Out] int((f + g*x)/(a + b*log(c*(d + e*x)^n))^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{f+gx}{\sqrt{a+b\log\left(c\,(d+ex)^n\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(a+b*ln(c*(e*x+d)**n))**(1/2),x)
```

```
[Out] Integral((f + g*x)/sqrt(a + b*log(c*(d + e*x)**n)), x)
```

3.126 $\int \frac{1}{\sqrt{a+b\log(c(d+ex)^n)}}\,dx$

Optimal. Leaf size=80

$$\frac{\sqrt{\pi}\,e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{\sqrt{b}\,e\sqrt{n}}$$

```
[Out] (e*x+d)*erfi((a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*Pi^(1/2)/e/exp(a/
b/n)/((c*(e*x+d)^n)^(1/n))/b^(1/2)/n^(1/2)
```

Rubi [A] time = 0.07, antiderivative size = 80, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {2389, 2300, 2180, 2204}

$$\frac{\sqrt{\pi}\,e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{\sqrt{b}\,e\sqrt{n}}$$

Antiderivative was successfully verified.

```
[In] Int[1/Sqrt[a + b*Log[c*(d + e*x)^n]],x]
```

```
[Out] (Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])])
/(Sqrt[b]*e*E^(a/(b*n))*Sqrt[n]*(c*(d + e*x)^n)^n^(-1))
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rubi steps

$$\int \frac{1}{\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx=\frac{\text{Subst}\left(\int \frac{1}{\sqrt{a+b\log(cx^n)}}\,dx,x,d+ex\right)}{e}$$
$$=\frac{\left((d+ex)\left(c(d+ex)^n\right)^{-1/n}\right)\text{Subst}\left(\int \frac{e^{\frac{x}{n}}}{\sqrt{a+bx}}\,dx,x,\log\left(c(d+ex)^n\right)\right)}{en}$$
$$=\frac{\left(2(d+ex)\left(c(d+ex)^n\right)^{-1/n}\right)\text{Subst}\left(\int e^{-\frac{a}{bn}+\frac{x^2}{bn}}\,dx,x,\sqrt{a+b\log\left(c(d+ex)^n\right)}\right)}{ben}$$
$$=\frac{e^{-\frac{a}{bn}}\sqrt{\pi}\,(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{\sqrt{b}\,e\sqrt{n}}$$

Mathematica [A] time = 0.02, size = 80, normalized size = 1.00

$$\frac{\sqrt{\pi}\,e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{\sqrt{b}\,e\sqrt{n}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/Sqrt[a + b*Log[c*(d + e*x)^n]],x]
```

```
[Out] (Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])])
/(Sqrt[b]*e*E^(a/(b*n))*Sqrt[n]*(c*(d + e*x)^n)^n^(-1))
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{b\log\left((ex+d)^n c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(1/sqrt(b*log((e*x + d)^n*c) + a), x)
```

maple [F] time = 0.04, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{b\ln\left(c\,(ex+d)^n\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*ln(c*(e*x+d)^n)+a)^(1/2),x)
```

```
[Out] int(1/(b*ln(c*(e*x+d)^n)+a)^(1/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{b \log\left((ex+d)^n c\right)+a}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="maxima")
[Out] integrate(1/sqrt(b*log((e*x + d)^n*c) + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{\sqrt{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*log(c*(d + e*x)^n))^(1/2),x)
[Out] int(1/(a + b*log(c*(d + e*x)^n))^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{a+b \log\left(c\left(d+ex\right)^n\right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(e*x+d)**n))**(1/2),x)
[Out] Integral(1/sqrt(a + b*log(c*(d + e*x)**n)), x)
```

3.127 $\int \frac{1}{(f+gx)\sqrt{a+b\log(c(d+ex)^n)}}\,dx$

Optimal. Leaf size=29

$$\mathrm{Int}\left(\frac{1}{(f+gx)\sqrt{a+b\log\left(c(d+ex)^n\right)}},x\right)$$

```
[Out] Unintegrable(1/(g*x+f)/(a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

Rubi [A] time = 0.05, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(f+gx)\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((f + g*x)*Sqrt[a + b*Log[c*(d + e*x)^n]]),x]
```

```
[Out] Defer[Int][1/((f + g*x)*Sqrt[a + b*Log[c*(d + e*x)^n]]), x]
```

Rubi steps

$$\int \frac{1}{(f+gx)\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx=\int \frac{1}{(f+gx)\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx$$

Mathematica [A] time = 0.08, size = 0, normalized size = 0.00

$$\int \frac{1}{(f+gx)\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((f + g*x)*Sqrt[a + b*Log[c*(d + e*x)^n]]),x]
```

```
[Out] Integrate[1/((f + g*x)*Sqrt[a + b*Log[c*(d + e*x)^n]]), x]
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(gx+f)\sqrt{b\log\left((ex+d)^n c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(1/((g*x + f)*sqrt(b*log((e*x + d)^n*c) + a)), x)
```

maple [A] time = 0.57, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(gx+f\right)\sqrt{b\ln\left(c\left(ex+d\right)^{n}\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(g*x+f)/(b*ln(c*(e*x+d)^n)+a)^(1/2),x)
[Out] int(1/(g*x+f)/(b*ln(c*(e*x+d)^n)+a)^(1/2),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(gx+f\right)\sqrt{b\log\left(\left(ex+d\right)^{n}c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="maxima")
[Out] integrate(1/((g*x + f)*sqrt(b*log((e*x + d)^n*c) + a)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{\left(f+g\,x\right)\,\sqrt{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((f + g*x)*(a + b*log(c*(d + e*x)^n))^(1/2)),x)
[Out] int(1/((f + g*x)*(a + b*log(c*(d + e*x)^n))^(1/2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{a+b\log\left(c\left(d+ex\right)^{n}\right)}\left(f+gx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*ln(c*(e*x+d)**n))**(1/2),x)
[Out] Integral(1/(sqrt(a + b*log(c*(d + e*x)**n))*(f + g*x)), x)
```

3.128 $\int \frac{(f+gx)^3}{\left(a+b\log(c(d+ex)^n)\right)^{3/2}}\,dx$

Optimal. Leaf size=422

$$\frac{6\sqrt{3\pi}\,g^2e^{-\frac{3a}{bn}}(d+ex)^3(ef-dg)\left(c(d+ex)^n\right)^{-3/n}\operatorname{erfi}\left(\frac{\sqrt{3}\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{b^{3/2}e^4n^{3/2}}+\frac{6\sqrt{2\pi}\,ge^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)^2\left(c(d+\right.}{b^{3/2}e^4n}$$

```
[Out] 2*(-d*g+e*f)^3*(e*x+d)*erfi((a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*Pi
^(1/2)/b^(3/2)/e^4/exp(a/b/n)/n^(3/2)/((c*(e*x+d)^n)^(1/n))+4*g^3*(e*x+d)^4
*erfi(2*(a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*Pi^(1/2)/b^(3/2)/e^4/e
xp(4*a/b/n)/n^(3/2)/((c*(e*x+d)^n)^(4/n))+6*g*(-d*g+e*f)^2*(e*x+d)^2*erfi(2
^(1/2)*(a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*2^(1/2)*Pi^(1/2)/b^(3/2
)/e^4/exp(2*a/b/n)/n^(3/2)/((c*(e*x+d)^n)^(2/n))+6*g^2*(-d*g+e*f)*(e*x+d)^3
*erfi(3^(1/2)*(a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*3^(1/2)*Pi^(1/2)
/b^(3/2)/e^4/exp(3*a/b/n)/n^(3/2)/((c*(e*x+d)^n)^(3/n))-2*(e*x+d)*(g*x+f)^3
/b/e/n/(a+b*ln(c*(e*x+d)^n))^(1/2)
```

Rubi [A] time = 1.32, antiderivative size = 422, normalized size of antiderivative = 1.00, number of steps used = 33, number of rules used = 8, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308, Rules used = {2400, 2401, 2389, 2300, 2180, 2204, 2390, 2310}

$$\frac{6\sqrt{3\pi}\,g^2e^{-\frac{3a}{bn}}(d+ex)^3(ef-dg)\left(c(d+ex)^n\right)^{-3/n}\operatorname{Erfi}\left(\frac{\sqrt{3}\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{b^{3/2}e^4n^{3/2}}+\frac{6\sqrt{2\pi}\,ge^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)^2\left(c(d+\right.}{b^{3/2}e^4n}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^3/(a + b*Log[c*(d + e*x)^n])^(3/2),x]
```

```
[Out] (2*(e*f - d*g)^3*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sq
rt[b]*Sqrt[n])])/(b^(3/2)*e^4*E^(a/(b*n))*n^(3/2)*(c*(d + e*x)^n)^n^(-1)) +
 (4*g^3*Sqrt[Pi]*(d + e*x)^4*Erfi[(2*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[
b]*Sqrt[n])])/(b^(3/2)*e^4*E^((4*a)/(b*n))*n^(3/2)*(c*(d + e*x)^n)^(4/n)) +
 (6*g*(e*f - d*g)^2*Sqrt[2*Pi]*(d + e*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(
d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(b^(3/2)*e^4*E^((2*a)/(b*n))*n^(3/2)*(c*(
d + e*x)^n)^(2/n)) + (6*g^2*(e*f - d*g)*Sqrt[3*Pi]*(d + e*x)^3*Erfi[(Sqrt[3
]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(b^(3/2)*e^4*E^((3*a)
/(b*n))*n^(3/2)*(c*(d + e*x)^n)^(3/n)) - (2*(d + e*x)*(f + g*x)^3)/(b*e*n*S
qrt[a + b*Log[c*(d + e*x)^n]])
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2400

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((d + e*x)*(f + g*x)^q*(a + b*Log[c*(d + e
*x)^n])^(p + 1))/(b*e*n*(p + 1)), x] + (-Dist[(q + 1)/(b*n*(p + 1)), Int[(f
 + g*x)^q*(a + b*Log[c*(d + e*x)^n])^(p + 1), x], x] + Dist[(q*(e*f - d*g))
/(b*e*n*(p + 1)), Int[(f + g*x)^(q - 1)*(a + b*Log[c*(d + e*x)^n])^(p + 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] && LtQ[
p, -1] && GtQ[q, 0]
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rubi steps

$$\int \frac{(f+gx)^3}{\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}\,dx = -\frac{2(d+ex)(f+gx)^3}{ben\sqrt{a+b\log\left(c(d+ex)^n\right)}} + \frac{8\int \frac{(f+gx)^3}{\sqrt{a+b\log(c(d+ex)^n)}}\,dx}{bn} - \frac{(6(ef-dg))\int \frac{(}{\sqrt{a+b\,l}}}{ben}$$

$$= -\frac{2(d+ex)(f+gx)^3}{ben\sqrt{a+b\log\left(c(d+ex)^n\right)}} + \frac{8\int \left(\frac{(ef-dg)^3}{e^3\sqrt{a+b\log(c(d+ex)^n)}} + \frac{3g(ef-dg)^2(d+ex)}{e^3\sqrt{a+b\log(c(d+ex)^n)}} + \right.}{bn}$$

$$= -\frac{2(d+ex)(f+gx)^3}{ben\sqrt{a+b\log\left(c(d+ex)^n\right)}} + \frac{\left(8g^3\right)\int \frac{(d+ex)^3}{\sqrt{a+b\log(c(d+ex)^n)}}\,dx}{be^3n} - \frac{\left(6g^2(ef-dg)\right)}{}$$

$$= -\frac{2(d+ex)(f+gx)^3}{ben\sqrt{a+b\log\left(c(d+ex)^n\right)}} + \frac{\left(8g^3\right)\text{Subst}\left(\int \frac{x^3}{\sqrt{a+b\log(cx^n)}}\,dx, x, d+ex\right)}{be^4n} - \frac{(6}{}$$

$$= -\frac{2(d+ex)(f+gx)^3}{ben\sqrt{a+b\log\left(c(d+ex)^n\right)}} + \frac{\left(8g^3(d+ex)^4\left(c(d+ex)^n\right)^{-4/n}\right)\text{Subst}\left(\int \frac{e^{\frac{4x}{n}}}{\sqrt{a+bx}}\right.}{be^4n^2}$$

$$= -\frac{2(d+ex)(f+gx)^3}{ben\sqrt{a+b\log\left(c(d+ex)^n\right)}} + \frac{\left(16g^3(d+ex)^4\left(c(d+ex)^n\right)^{-4/n}\right)\text{Subst}\left(\int e^{-\frac{4a}{bn}}\right.}{b^2e^4n^2}$$

$$= \frac{2e^{-\frac{a}{bn}}(ef-dg)^3\sqrt{\pi}\,(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{b^{3/2}e^4n^{3/2}} + \frac{4e^{-\frac{4a}{bn}}g^3\sqrt{}}{}$$

Mathematica [B] time = 2.84, size = 1281, normalized size = 3.04

$$\frac{2\left(2e^{-\frac{4a}{bn}}g^3\sqrt{\pi}\,(d+ex)^4\text{erfi}\left(\frac{2\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)\sqrt{a+b\log\left(c(d+ex)^n\right)}\left(c(d+ex)^n\right)^{-4/n} - 3de^{-\frac{3a}{bn}}g^3\sqrt{3\pi}\,(d+ex)^3e\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^3/(a + b*Log[c*(d + e*x)^n])^(3/2),x]
```

```
[Out] (2*(-(Sqrt[b]*d*e^3*f^3*Sqrt[n]) - Sqrt[b]*e^4*f^3*Sqrt[n]*x - 3*Sqrt[b]*d*
e^3*f^2*g*Sqrt[n]*x - 3*Sqrt[b]*e^4*f^2*g*Sqrt[n]*x^2 - 3*Sqrt[b]*d*e^3*f*g
^2*Sqrt[n]*x^2 - 3*Sqrt[b]*e^4*f*g^2*Sqrt[n]*x^3 - Sqrt[b]*d*e^3*g^3*Sqrt[n
]*x^3 - Sqrt[b]*e^4*g^3*Sqrt[n]*x^4 - (6*d*e^2*f^2*g*Sqrt[Pi]*(d + e*x)*Erf
i[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])]*Sqrt[a + b*Log[c*(d + e
*x)^n]])/(E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)) + (3*d^2*e*f*g^2*Sqrt[Pi]*(d
+ e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])]*Sqrt[a + b*Lo
g[c*(d + e*x)^n]])/(E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)) - (d^3*g^3*Sqrt[Pi]
*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])]*Sqrt[a +
b*Log[c*(d + e*x)^n]])/(E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)) + (2*g^3*Sqrt[P
i]*(d + e*x)^4*Erfi[(2*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])]*S
qrt[a + b*Log[c*(d + e*x)^n]])/(E^((4*a)/(b*n))*(c*(d + e*x)^n)^(4/n)) + (3
*e^2*f^2*g*Sqrt[2*Pi]*(d + e*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d + e*x)^
n]])/(Sqrt[b]*Sqrt[n])]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(E^((2*a)/(b*n))*(c
*(d + e*x)^n)^(2/n)) - (6*d*e*f*g^2*Sqrt[2*Pi]*(d + e*x)^2*Erfi[(Sqrt[2]*Sq
rt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])]*Sqrt[a + b*Log[c*(d + e*x)
^n]])/(E^((2*a)/(b*n))*(c*(d + e*x)^n)^(2/n)) + (3*d^2*g^3*Sqrt[2*Pi]*(d +
e*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])]*Sqr
t[a + b*Log[c*(d + e*x)^n]])/(E^((2*a)/(b*n))*(c*(d + e*x)^n)^(2/n)) + (3*e
*f*g^2*Sqrt[3*Pi]*(d + e*x)^3*Erfi[(Sqrt[3]*Sqrt[a + b*Log[c*(d + e*x)^n]])
```

```
/(Sqrt[b]*Sqrt[n])]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(E^((3*a)/(b*n))*(c*(d
+ e*x)^n)^(3/n)) - (3*d*g^3*Sqrt[3*Pi]*(d + e*x)^3*Erfi[(Sqrt[3]*Sqrt[a + b
*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(E
^((3*a)/(b*n))*(c*(d + e*x)^n)^(3/n)) + (Sqrt[b]*e^3*f^3*Sqrt[n]*(d + e*x)*
Gamma[1/2, -((a + b*Log[c*(d + e*x)^n])/(b*n))]*Sqrt[-((a + b*Log[c*(d + e*
x)^n])/(b*n))])/(E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)) + (3*Sqrt[b]*d*e^2*f^2
*g*Sqrt[n]*(d + e*x)*Gamma[1/2, -((a + b*Log[c*(d + e*x)^n])/(b*n))]*Sqrt[-
((a + b*Log[c*(d + e*x)^n])/(b*n))])/(E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1))))
/(b^(3/2)*e^4*n^(3/2)*Sqrt[a + b*Log[c*(d + e*x)^n]])
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="fricas")
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(gx+f)^3}{\left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="giac")
[Out] integrate((g*x + f)^3/(b*log((e*x + d)^n*c) + a)^(3/2), x)
```

maple [F] time = 0.52, size = 0, normalized size = 0.00

$$\int \frac{(gx+f)^3}{\left(b\ln\left(c\,(ex+d)^n\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^3/(b*ln(c*(e*x+d)^n)+a)^(3/2),x)
[Out] int((g*x+f)^3/(b*ln(c*(e*x+d)^n)+a)^(3/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(gx+f)^3}{\left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="maxima")
[Out] integrate((g*x + f)^3/(b*log((e*x + d)^n*c) + a)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(f+g\,x)^3}{\left(a+b\,\ln\left(c\,(d+e\,x)^n\right)\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^3/(a + b*log(c*(d + e*x)^n))^(3/2),x)
[Out] int((f + g*x)^3/(a + b*log(c*(d + e*x)^n))^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(f+gx\right)^{3}}{\left(a+b\log\left(c\left(d+ex\right)^{n}\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**3/(a+b*ln(c*(e*x+d)**n))**(3/2),x)
[Out] Integral((f + g*x)**3/(a + b*log(c*(d + e*x)**n))**(3/2), x)
```

3.129 $\int \frac{(f+gx)^2}{\left(a+b\log(c(d+ex)^n)\right)^{3/2}}\,dx$

Optimal. Leaf size=325

$$\frac{4\sqrt{2\pi}\,ge^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)\left(c(d+ex)^n\right)^{-2/n}\operatorname{erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{b^{3/2}e^3n^{3/2}}+\frac{2\sqrt{\pi}\,e^{-\frac{a}{bn}}(d+ex)(ef-dg)^2\left(c(d+e\right.}{b^{3/2}e^3n^{3/}}$$

```
[Out] 2*(-d*g+e*f)^2*(e*x+d)*erfi((a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*Pi
^(1/2)/b^(3/2)/e^3/exp(a/b/n)/n^(3/2)/((c*(e*x+d)^n)^(1/n))+4*g*(-d*g+e*f)*
(e*x+d)^2*erfi(2^(1/2)*(a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*2^(1/2)
*Pi^(1/2)/b^(3/2)/e^3/exp(2*a/b/n)/n^(3/2)/((c*(e*x+d)^n)^(2/n))+2*g^2*(e*x
+d)^3*erfi(3^(1/2)*(a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*3^(1/2)*Pi^
(1/2)/b^(3/2)/e^3/exp(3*a/b/n)/n^(3/2)/((c*(e*x+d)^n)^(3/n))-2*(e*x+d)*(g*x
+f)^2/b/e/n/(a+b*ln(c*(e*x+d)^n))^(1/2)
```

Rubi [A] time = 0.87, antiderivative size = 325, normalized size of antiderivative = 1.00, number of steps used = 25, number of rules used = 8, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308, Rules used = {2400, 2401, 2389, 2300, 2180, 2204, 2390, 2310}

$$\frac{4\sqrt{2\pi}\,ge^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)\left(c(d+ex)^n\right)^{-2/n}\operatorname{Erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{b^{3/2}e^3n^{3/2}}+\frac{2\sqrt{\pi}\,e^{-\frac{a}{bn}}(d+ex)(ef-dg)^2\left(c(d+e\right.}{b^{3/2}e^3n^3}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^2/(a + b*Log[c*(d + e*x)^n])^(3/2),x]
```

```
[Out] (2*(e*f - d*g)^2*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sq
rt[b]*Sqrt[n])])/(b^(3/2)*e^3*E^(a/(b*n))*n^(3/2)*(c*(d + e*x)^n)^n^(-1)) +
 (4*g*(e*f - d*g)*Sqrt[2*Pi]*(d + e*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d
+ e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(b^(3/2)*e^3*E^((2*a)/(b*n))*n^(3/2)*(c*(d
+ e*x)^n)^(2/n)) + (2*g^2*Sqrt[3*Pi]*(d + e*x)^3*Erfi[(Sqrt[3]*Sqrt[a + b*L
og[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(b^(3/2)*e^3*E^((3*a)/(b*n))*n^(3/2
)*(c*(d + e*x)^n)^(3/n)) - (2*(d + e*x)*(f + g*x)^2)/(b*e*n*Sqrt[a + b*Log[
c*(d + e*x)^n]])
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
```

```
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2400

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((d + e*x)*(f + g*x)^q*(a + b*Log[c*(d + e
*x)^n])^(p + 1))/(b*e*n*(p + 1)), x] + (-Dist[(q + 1)/(b*n*(p + 1)), Int[(f
 + g*x)^q*(a + b*Log[c*(d + e*x)^n])^(p + 1), x], x] + Dist[(q*(e*f - d*g))
/(b*e*n*(p + 1)), Int[(f + g*x)^(q - 1)*(a + b*Log[c*(d + e*x)^n])^(p + 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] && LtQ[
p, -1] && GtQ[q, 0]
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rubi steps

$$\int \frac{(f+gx)^2}{\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}\,dx = -\frac{2(d+ex)(f+gx)^2}{ben\sqrt{a+b\log\left(c(d+ex)^n\right)}} + \frac{6\int \frac{(f+gx)^2}{\sqrt{a+b\log(c(d+ex)^n)}}\,dx}{bn} - \frac{(4(ef-dg))\int \frac{}{\sqrt{a}}}{be}$$

$$= -\frac{2(d+ex)(f+gx)^2}{ben\sqrt{a+b\log\left(c(d+ex)^n\right)}} + \frac{6\int\left(\frac{(ef-dg)^2}{e^2\sqrt{a+b\log(c(d+ex)^n)}} + \frac{2g(ef-dg)(d+ex)}{e^2\sqrt{a+b\log(c(d+ex)^n)}}\right.}{bn}$$

$$= -\frac{2(d+ex)(f+gx)^2}{ben\sqrt{a+b\log\left(c(d+ex)^n\right)}} + \frac{\left(6g^2\right)\int \frac{(d+ex)^2}{\sqrt{a+b\log(c(d+ex)^n)}}\,dx}{be^2n} - \frac{(4g(ef-dg)}{}$$

$$= -\frac{2(d+ex)(f+gx)^2}{ben\sqrt{a+b\log\left(c(d+ex)^n\right)}} + \frac{\left(6g^2\right)\text{Subst}\left(\int \frac{x^2}{\sqrt{a+b\log(cx^n)}}\,dx, x, d+ex\right)}{be^3n} -$$

$$= -\frac{2(d+ex)(f+gx)^2}{ben\sqrt{a+b\log\left(c(d+ex)^n\right)}} + \frac{\left(6g^2(d+ex)^3\left(c(d+ex)^n\right)^{-3/n}\right)\text{Subst}\left(\int \frac{e}{\sqrt{a}}\right.}{be^3n^2}$$

$$= -\frac{2(d+ex)(f+gx)^2}{ben\sqrt{a+b\log\left(c(d+ex)^n\right)}} + \frac{\left(12g^2(d+ex)^3\left(c(d+ex)^n\right)^{-3/n}\right)\text{Subst}\left(\int e\right.}{b^2e^3n^2}$$

$$= \frac{2e^{-\frac{a}{bn}}(ef-dg)^2\sqrt{\pi}\,(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{b^{3/2}e^3n^{3/2}} + \frac{4e^{-\frac{2a}{bn}}}{}$$

Mathematica [B] time = 1.43, size = 828, normalized size = 2.55

$$\frac{2\left(e^{-\frac{3a}{bn}}g^2\sqrt{3\pi}\,(d+ex)^3\text{erfi}\left(\frac{\sqrt{3}\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)\sqrt{a+b\log\left(c(d+ex)^n\right)}\left(c(d+ex)^n\right)^{-3/n} - 2de^{-\frac{2a}{bn}}g^2\sqrt{2\pi}\,(d+\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^2/(a + b*Log[c*(d + e*x)^n])^(3/2),x]
```

```
[Out] (2*(-(Sqrt[b]*d*e^2*f^2*Sqrt[n]) - Sqrt[b]*e^3*f^2*Sqrt[n]*x - 2*Sqrt[b]*d*
e^2*f*g*Sqrt[n]*x - 2*Sqrt[b]*e^3*f*g*Sqrt[n]*x^2 - Sqrt[b]*d*e^2*g^2*Sqrt[
n]*x^2 - Sqrt[b]*e^3*g^2*Sqrt[n]*x^3 - (4*d*e*f*g*Sqrt[Pi]*(d + e*x)*Erfi[S
qrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])]*Sqrt[a + b*Log[c*(d + e*x)
^n]])/(E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)) + (d^2*g^2*Sqrt[Pi]*(d + e*x)*Er
fi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])]*Sqrt[a + b*Log[c*(d +
e*x)^n]])/(E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)) + (2*e*f*g*Sqrt[2*Pi]*(d + e
*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])]*Sqrt
[a + b*Log[c*(d + e*x)^n]])/(E^((2*a)/(b*n))*(c*(d + e*x)^n)^(2/n)) - (2*d*
g^2*Sqrt[2*Pi]*(d + e*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(S
qrt[b]*Sqrt[n])]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(E^((2*a)/(b*n))*(c*(d + e
*x)^n)^(2/n)) + (g^2*Sqrt[3*Pi]*(d + e*x)^3*Erfi[(Sqrt[3]*Sqrt[a + b*Log[c*
(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(E^((3*a)
/(b*n))*(c*(d + e*x)^n)^(3/n)) + (Sqrt[b]*e^2*f^2*Sqrt[n]*(d + e*x)*Gamma[1
/2, -((a + b*Log[c*(d + e*x)^n])/(b*n))]*Sqrt[-((a + b*Log[c*(d + e*x)^n])/
(b*n))])/(E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)) + (2*Sqrt[b]*d*e*f*g*Sqrt[n]*
(d + e*x)*Gamma[1/2, -((a + b*Log[c*(d + e*x)^n])/(b*n))]*Sqrt[-((a + b*Log
[c*(d + e*x)^n])/(b*n))])/(E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1))))/(b^(3/2)*e
^3*n^(3/2)*Sqrt[a + b*Log[c*(d + e*x)^n]])
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(gx+f)^2}{\left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((g*x + f)^2/(b*log((e*x + d)^n*c) + a)^(3/2), x)
```

maple [F] time = 0.54, size = 0, normalized size = 0.00

$$\int \frac{(gx+f)^2}{\left(b\ln\left(c\,(ex+d)^n\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^2/(b*ln(c*(e*x+d)^n)+a)^(3/2),x)
```

```
[Out] int((g*x+f)^2/(b*ln(c*(e*x+d)^n)+a)^(3/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(gx+f)^2}{\left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((g*x + f)^2/(b*log((e*x + d)^n*c) + a)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(f+g\,x)^2}{\left(a+b\,\ln\left(c\,(d+e\,x)^n\right)\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^2/(a + b*log(c*(d + e*x)^n))^(3/2),x)
```

```
[Out] int((f + g*x)^2/(a + b*log(c*(d + e*x)^n))^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(f+gx)^2}{\left(a+b\log\left(c\,(d+ex)^n\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**2/(a+b*ln(c*(e*x+d)**n))**(3/2),x)
```

```
[Out] Integral((f + g*x)**2/(a + b*log(c*(d + e*x)**n))**(3/2), x)
```

3.130 $\int \frac{f+gx}{\left(a+b\log(c(d+ex)^n)\right)^{3/2}}\,dx$

Optimal. Leaf size=220

$$\frac{2\sqrt{\pi}\,e^{-\frac{a}{bn}}(d+ex)(ef-dg)\,(c(d+ex)^n)^{-1/n}\,\mathrm{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\,\sqrt{n}}\right)}{b^{3/2}e^2n^{3/2}}+\frac{2\sqrt{2\pi}\,ge^{-\frac{2a}{bn}}(d+ex)^2\,(c(d+ex)^n)^{-2/n}\,\mathrm{erfi}\left(\cdot\right.}{b^{3/2}e^2n^{3/2}}$$

```
[Out] 2*(-d*g+e*f)*(e*x+d)*erfi((a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*Pi^(
1/2)/b^(3/2)/e^2/exp(a/b/n)/n^(3/2)/((c*(e*x+d)^n)^(1/n))+2*g*(e*x+d)^2*erf
i(2^(1/2)*(a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*2^(1/2)*Pi^(1/2)/b^(
3/2)/e^2/exp(2*a/b/n)/n^(3/2)/((c*(e*x+d)^n)^(2/n))-2*(e*x+d)*(g*x+f)/b/e/n
/(a+b*ln(c*(e*x+d)^n))^(1/2)
```

Rubi [A] time = 0.40, antiderivative size = 220, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 8, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {2400, 2401, 2389, 2300, 2180, 2204, 2390, 2310}

$$\frac{2\sqrt{\pi}\,e^{-\frac{a}{bn}}(d+ex)(ef-dg)\,(c(d+ex)^n)^{-1/n}\,\mathrm{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\,\sqrt{n}}\right)}{b^{3/2}e^2n^{3/2}}+\frac{2\sqrt{2\pi}\,ge^{-\frac{2a}{bn}}(d+ex)^2\,(c(d+ex)^n)^{-2/n}\,\mathrm{Erfi}\left(\right.}{b^{3/2}e^2n^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)/(a + b*Log[c*(d + e*x)^n])^(3/2),x]
```

```
[Out] (2*(e*f - d*g)*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt
[b]*Sqrt[n])])/(b^(3/2)*e^2*E^(a/(b*n))*n^(3/2)*(c*(d + e*x)^n)^n^(-1)) + (
2*g*Sqrt[2*Pi]*(d + e*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(S
qrt[b]*Sqrt[n])])/(b^(3/2)*e^2*E^((2*a)/(b*n))*n^(3/2)*(c*(d + e*x)^n)^(2/n
)) - (2*(d + e*x)*(f + g*x))/(b*e*n*Sqrt[a + b*Log[c*(d + e*x)^n]])
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2400

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((d + e*x)*(f + g*x)^q*(a + b*Log[c*(d + e
*x)^n])^(p + 1))/(b*e*n*(p + 1)), x] + (-Dist[(q + 1)/(b*n*(p + 1)), Int[(f
 + g*x)^q*(a + b*Log[c*(d + e*x)^n])^(p + 1), x], x] + Dist[(q*(e*f - d*g))
/(b*e*n*(p + 1)), Int[(f + g*x)^(q - 1)*(a + b*Log[c*(d + e*x)^n])^(p + 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] && LtQ[
p, -1] && GtQ[q, 0]
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rubi steps

$$\int \frac{f+gx}{\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}\,dx = -\frac{2(d+ex)(f+gx)}{ben\sqrt{a+b\log\left(c(d+ex)^n\right)}} + \frac{4\int\frac{f+gx}{\sqrt{a+b\log(c(d+ex)^n)}}\,dx}{bn} - \frac{(2(ef-dg))\int\frac{}{\sqrt{a+b\,}}}{ben}$$

$$= -\frac{2(d+ex)(f+gx)}{ben\sqrt{a+b\log\left(c(d+ex)^n\right)}} + \frac{4\int\left(\frac{ef-dg}{e\sqrt{a+b\log(c(d+ex)^n)}}+\frac{g(d+ex)}{e\sqrt{a+b\log(c(d+ex)^n)}}\right)dx}{bn}$$

$$= -\frac{2(d+ex)(f+gx)}{ben\sqrt{a+b\log\left(c(d+ex)^n\right)}} + \frac{(4g)\int\frac{d+ex}{\sqrt{a+b\log(c(d+ex)^n)}}\,dx}{ben} + \frac{(4(ef-dg))\int\frac{}{\sqrt{a}}}{be}$$

$$= -\frac{2(d+ex)(f+gx)}{ben\sqrt{a+b\log\left(c(d+ex)^n\right)}} + \frac{(4g)\,\mathrm{Subst}\left(\int\frac{x}{\sqrt{a+b\log(cx^n)}}\,dx,x,d+ex\right)}{be^2n} + \frac{(4(}{}$$

$$= -\frac{2e^{-\frac{a}{bn}}(ef-dg)\sqrt{\pi}\,(d+ex)\left(c(d+ex)^n\right)^{-1/n}\,\mathrm{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{b^{3/2}e^2n^{3/2}} - \frac{2(d}{ben\sqrt{a+}}$$

$$= -\frac{2e^{-\frac{a}{bn}}(ef-dg)\sqrt{\pi}\,(d+ex)\left(c(d+ex)^n\right)^{-1/n}\,\mathrm{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{b^{3/2}e^2n^{3/2}} - \frac{2(d}{ben\sqrt{a+}}$$

$$= \frac{2e^{-\frac{a}{bn}}(ef-dg)\sqrt{\pi}\,(d+ex)\left(c(d+ex)^n\right)^{-1/n}\,\mathrm{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{b^{3/2}e^2n^{3/2}} + \frac{2e^{-\frac{2a}{bn}}g\sqrt{2}}{}$$

Mathematica [A] time = 0.84, size = 338, normalized size = 1.54

$$\frac{2e^{-\frac{2a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-2/n}\left(-2\sqrt{\pi}dge^{\frac{a}{bn}}\left(c(d+ex)^n\right)^{\frac{1}{n}}\sqrt{a+b\log\left(c(d+ex)^n\right)}\,\text{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)+\sqrt{2\pi}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)/(a + b*Log[c*(d + e*x)^n])^(3/2),x]
```

```
[Out] (2*(d + e*x)*(-2*d*E^(a/(b*n))*g*Sqrt[Pi]*(c*(d + e*x)^n)^n^(-1)*Erfi[Sqrt[
a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])]*Sqrt[a + b*Log[c*(d + e*x)^n]]
 + g*Sqrt[2*Pi]*(d + e*x)*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sq
rt[b]*Sqrt[n])]*Sqrt[a + b*Log[c*(d + e*x)^n]] + Sqrt[b]*E^(a/(b*n))*Sqrt[n
]*(c*(d + e*x)^n)^n^(-1)*(-(e*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)*(f + g*x))
 + (e*f + d*g)*Gamma[1/2, -((a + b*Log[c*(d + e*x)^n])/(b*n))]*Sqrt[-((a +
b*Log[c*(d + e*x)^n])/(b*n))])))/(b^(3/2)*e^2*E^((2*a)/(b*n))*n^(3/2)*(c*(d
 + e*x)^n)^(2/n)*Sqrt[a + b*Log[c*(d + e*x)^n]])
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{gx+f}{\left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((g*x + f)/(b*log((e*x + d)^n*c) + a)^(3/2), x)
```

maple [F] time = 0.38, size = 0, normalized size = 0.00

$$\int \frac{gx+f}{\left(b\ln\left(c\,(ex+d)^n\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)/(b*ln(c*(e*x+d)^n)+a)^(3/2),x)
```

```
[Out] int((g*x+f)/(b*ln(c*(e*x+d)^n)+a)^(3/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{gx+f}{\left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((g*x + f)/(b*log((e*x + d)^n*c) + a)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{f + g\,x}{\left(a + b\,\ln\left(c\,{\left(d + e\,x\right)}^n\right)\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)/(a + b*log(c*(d + e*x)^n))^(3/2),x)
[Out] int((f + g*x)/(a + b*log(c*(d + e*x)^n))^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{f + gx}{\left(a + b\log\left(c\left(d + ex\right)^{n}\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(a+b*ln(c*(e*x+d)**n))**(3/2),x)
[Out] Integral((f + g*x)/(a + b*log(c*(d + e*x)**n))**(3/2), x)
```

3.131 $\int \frac{1}{\left(a+b\log(c(d+ex)^n)\right)^{3/2}}\,dx$

Optimal. Leaf size=116

$$\frac{2\sqrt{\pi}\,e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{b^{3/2}en^{3/2}}-\frac{2(d+ex)}{ben\sqrt{a+b\log\left(c(d+ex)^n\right)}}$$

```
[Out] 2*(e*x+d)*erfi((a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*Pi^(1/2)/b^(3/2
)/e/exp(a/b/n)/n^(3/2)/((c*(e*x+d)^n)^(1/n))-2*(e*x+d)/b/e/n/(a+b*ln(c*(e*x
+d)^n))^(1/2)
```

Rubi [A] time = 0.10, antiderivative size = 116, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {2389, 2297, 2300, 2180, 2204}

$$\frac{2\sqrt{\pi}\,e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{b^{3/2}en^{3/2}}-\frac{2(d+ex)}{ben\sqrt{a+b\log\left(c(d+ex)^n\right)}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^(-3/2),x]
```

```
[Out] (2*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])
])/(b^(3/2)*e*E^(a/(b*n))*n^(3/2)*(c*(d + e*x)^n)^n^(-1)) - (2*(d + e*x))/(
b*e*n*Sqrt[a + b*Log[c*(d + e*x)^n]])
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2297

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[(x*(a + b
*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
gerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rubi steps

$$\int \frac{1}{\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}\,dx = \frac{\text{Subst}\left(\int \frac{1}{\left(a+b\log(cx^n)\right)^{3/2}}\,dx,x,d+ex\right)}{e}$$

$$= -\frac{2(d+ex)}{ben\sqrt{a+b\log\left(c(d+ex)^n\right)}} + \frac{2\,\text{Subst}\left(\int \frac{1}{\sqrt{a+b\log(cx^n)}}\,dx,x,d+ex\right)}{ben}$$

$$= -\frac{2(d+ex)}{ben\sqrt{a+b\log\left(c(d+ex)^n\right)}} + \frac{\left(2(d+ex)\left(c(d+ex)^n\right)^{-1/n}\right)\text{Subst}\left(\int \frac{e^{\frac{x}{n}}}{\sqrt{a+bx}}\,dx\right.}{ben^2}$$

$$= -\frac{2(d+ex)}{ben\sqrt{a+b\log\left(c(d+ex)^n\right)}} + \frac{\left(4(d+ex)\left(c(d+ex)^n\right)^{-1/n}\right)\text{Subst}\left(\int e^{-\frac{a}{bn}+\frac{x^2}{bn}}\,d\right.}{b^2en^2}$$

$$= \frac{2e^{-\frac{a}{bn}}\sqrt{\pi}\,(d+ex)\left(c(d+ex)^n\right)^{-1/n}\,\text{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\,\sqrt{n}}\right)}{b^{3/2}en^{3/2}} - \frac{2(d+ex)}{ben\sqrt{a+b\log\left(c(d\right.}}$$

Mathematica [A] time = 0.13, size = 139, normalized size = 1.20

$$-\frac{2e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\left(e^{\frac{a}{bn}}\left(c(d+ex)^n\right)^{\frac{1}{n}}-\sqrt{-\frac{a+b\log(c(d+ex)^n)}{bn}}\,\Gamma\left(\frac{1}{2},-\frac{a+b\log(c(d+ex)^n)}{bn}\right)\right)}{ben\sqrt{a+b\log\left(c(d+ex)^n\right)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^(-3/2),x]
```

```
[Out] (-2*(d + e*x)*(E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1) - Gamma[1/2, -((a + b*Log
[c*(d + e*x)^n])/(b*n))]*Sqrt[-((a + b*Log[c*(d + e*x)^n])/(b*n))]))/(b*e*E
^(a/(b*n))*n*(c*(d + e*x)^n)^n^(-1)*Sqrt[a + b*Log[c*(d + e*x)^n]])
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^(-3/2), x)
```

maple [F] time = 0.04, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(b\ln\left(c\left(ex+d\right)^{n}\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*ln(c*(e*x+d)^n)+a)^(3/2),x)
[Out] int(1/(b*ln(c*(e*x+d)^n)+a)^(3/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(b\log\left(\left(ex+d\right)^{n}c\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="maxima")
[Out] integrate((b*log((e*x + d)^n*c) + a)^(-3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*log(c*(d + e*x)^n))^(3/2),x)
[Out] int(1/(a + b*log(c*(d + e*x)^n))^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\log\left(c\left(d+ex\right)^{n}\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(e*x+d)**n))**(3/2),x)
[Out] Integral((a + b*log(c*(d + e*x)**n))**(-3/2), x)
```

3.132 $\int \frac{1}{(f+gx)\left(a+b\log(c(d+ex)^n)\right)^{3/2}}\,dx$

Optimal. Leaf size=29

$$\text{Int}\left(\frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}},x\right)$$

[Out] Unintegrable(1/(g*x+f)/(a+b*ln(c*(e*x+d)^n))^(3/2),x)

Rubi [A] time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}\,dx$$

Verification is Not applicable to the result.

[In] Int[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^(3/2)),x]

[Out] Defer[Int][1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^(3/2)), x]

Rubi steps

$$\int \frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}\,dx=\int \frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}\,dx$$

Mathematica [A] time = 0.26, size = 0, normalized size = 0.00

$$\int \frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}\,dx$$

Verification is Not applicable to the result.

[In] Integrate[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^(3/2)),x]

[Out] Integrate[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^(3/2)), x]

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="fricas")

[Out] Exception raised: TypeError >> Error detected within library code: integrate: implementation incomplete (constant residues)

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(gx+f)\left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="giac")
[Out] integrate(1/((g*x + f)*(b*log((e*x + d)^n*c) + a)^(3/2)), x)
```

maple [A] time = 0.55, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(gx+f\right)\left(b\ln\left(c\left(ex+d\right)^{n}\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(g*x+f)/(b*ln(c*(e*x+d)^n)+a)^(3/2),x)
[Out] int(1/(g*x+f)/(b*ln(c*(e*x+d)^n)+a)^(3/2),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(gx+f\right)\left(b\log\left(\left(ex+d\right)^{n}c\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="maxima")
[Out] integrate(1/((g*x + f)*(b*log((e*x + d)^n*c) + a)^(3/2)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{\left(f+g\,x\right)\,{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((f + g*x)*(a + b*log(c*(d + e*x)^n))^(3/2)),x)
[Out] int(1/((f + g*x)*(a + b*log(c*(d + e*x)^n))^(3/2)), x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*ln(c*(e*x+d)**n))**(3/2),x)
[Out] Exception raised: HeuristicGCDFailed
```

3.133 $\int \frac{(f+gx)^3}{\left(a+b\log(c(d+ex)^n)\right)^{5/2}}\,dx$

Optimal. Leaf size=520

$$\frac{12\sqrt{3\pi}\,g^2e^{-\frac{3a}{bn}}(d+ex)^3(ef-dg)\left(c(d+ex)^n\right)^{-3/n}\operatorname{erfi}\left(\frac{\sqrt{3}\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{b^{5/2}e^4n^{5/2}}+\frac{8\sqrt{2\pi}\,ge^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)^2\left(c(d+\right.}{b^{5/2}e^4}$$

```
[Out] -2/3*(e*x+d)*(g*x+f)^3/b/e/n/(a+b*ln(c*(e*x+d)^n))^(3/2)+4/3*(-d*g+e*f)^3*(
e*x+d)*erfi((a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*Pi^(1/2)/b^(5/2)/e
^4/exp(a/b/n)/n^(5/2)/((c*(e*x+d)^n)^(1/n))+32/3*g^3*(e*x+d)^4*erfi(2*(a+b*
ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*Pi^(1/2)/b^(5/2)/e^4/exp(4*a/b/n)/n
^(5/2)/((c*(e*x+d)^n)^(4/n))+8*g*(-d*g+e*f)^2*(e*x+d)^2*erfi(2^(1/2)*(a+b*l
n(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*2^(1/2)*Pi^(1/2)/b^(5/2)/e^4/exp(2*a
/b/n)/n^(5/2)/((c*(e*x+d)^n)^(2/n))+12*g^2*(-d*g+e*f)*(e*x+d)^3*erfi(3^(1/2
)*(a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*3^(1/2)*Pi^(1/2)/b^(5/2)/e^4
/exp(3*a/b/n)/n^(5/2)/((c*(e*x+d)^n)^(3/n))+4*(-d*g+e*f)*(e*x+d)*(g*x+f)^2/
b^2/e^2/n^2/(a+b*ln(c*(e*x+d)^n))^(1/2)-16/3*(e*x+d)*(g*x+f)^3/b^2/e/n^2/(a
+b*ln(c*(e*x+d)^n))^(1/2)
```

Rubi [A] time = 2.33, antiderivative size = 520, normalized size of antiderivative = 1.00, number of steps used = 59, number of rules used = 8, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.308$, Rules used = {2400, 2401, 2389, 2300, 2180, 2204, 2390, 2310}

$$\frac{12\sqrt{3\pi}\,g^2e^{-\frac{3a}{bn}}(d+ex)^3(ef-dg)\left(c(d+ex)^n\right)^{-3/n}\operatorname{Erfi}\left(\frac{\sqrt{3}\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{b^{5/2}e^4n^{5/2}}+\frac{8\sqrt{2\pi}\,ge^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)^2\left(c(d+\right.}{b^{5/2}e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^3/(a + b*Log[c*(d + e*x)^n])^(5/2),x]
```

```
[Out] (4*(e*f - d*g)^3*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sq
rt[b]*Sqrt[n])])/(3*b^(5/2)*e^4*E^(a/(b*n))*n^(5/2)*(c*(d + e*x)^n)^n^(-1))
 + (32*g^3*Sqrt[Pi]*(d + e*x)^4*Erfi[(2*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sq
rt[b]*Sqrt[n])])/(3*b^(5/2)*e^4*E^((4*a)/(b*n))*n^(5/2)*(c*(d + e*x)^n)^(4/
n)) + (8*g*(e*f - d*g)^2*Sqrt[2*Pi]*(d + e*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Lo
g[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(b^(5/2)*e^4*E^((2*a)/(b*n))*n^(5/2)
*(c*(d + e*x)^n)^(2/n)) + (12*g^2*(e*f - d*g)*Sqrt[3*Pi]*(d + e*x)^3*Erfi[(
Sqrt[3]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(b^(5/2)*e^4*E^
((3*a)/(b*n))*n^(5/2)*(c*(d + e*x)^n)^(3/n)) - (2*(d + e*x)*(f + g*x)^3)/(3
*b*e*n*(a + b*Log[c*(d + e*x)^n])^(3/2)) + (4*(e*f - d*g)*(d + e*x)*(f + g*
x)^2)/(b^2*e^2*n^2*Sqrt[a + b*Log[c*(d + e*x)^n]]) - (16*(d + e*x)*(f + g*x
)^3)/(3*b^2*e*n^2*Sqrt[a + b*Log[c*(d + e*x)^n]])
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2400

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((d + e*x)*(f + g*x)^q*(a + b*Log[c*(d + e
*x)^n])^(p + 1))/(b*e*n*(p + 1)), x] + (-Dist[(q + 1)/(b*n*(p + 1)), Int[(f
 + g*x)^q*(a + b*Log[c*(d + e*x)^n])^(p + 1), x], x] + Dist[(q*(e*f - d*g))
/(b*e*n*(p + 1)), Int[(f + g*x)^(q - 1)*(a + b*Log[c*(d + e*x)^n])^(p + 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] && LtQ[
p, -1] && GtQ[q, 0]
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rubi steps

$$\int \frac{(f+gx)^3}{\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}}\,dx = -\frac{2(d+ex)(f+gx)^3}{3ben\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}} + \frac{8\int \frac{(f+gx)^3}{\left(a+b\log(c(d+ex)^n)\right)^{3/2}}\,dx}{3bn} - \frac{(2(ef-dg))\int}{}$$

$$= -\frac{2(d+ex)(f+gx)^3}{3ben\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}} + \frac{4(ef-dg)(d+ex)(f+gx)^2}{b^2e^2n^2\sqrt{a+b\log\left(c(d+ex)^n\right)}} - \frac{16(}{3b^2en^2\sqrt{}}$$

$$= -\frac{2(d+ex)(f+gx)^3}{3ben\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}} + \frac{4(ef-dg)(d+ex)(f+gx)^2}{b^2e^2n^2\sqrt{a+b\log\left(c(d+ex)^n\right)}} - \frac{16(}{3b^2en^2\sqrt{}}$$

$$= -\frac{2(d+ex)(f+gx)^3}{3ben\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}} + \frac{4(ef-dg)(d+ex)(f+gx)^2}{b^2e^2n^2\sqrt{a+b\log\left(c(d+ex)^n\right)}} - \frac{16(}{3b^2en^2\sqrt{}}$$

$$= -\frac{2(d+ex)(f+gx)^3}{3ben\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}} + \frac{4(ef-dg)(d+ex)(f+gx)^2}{b^2e^2n^2\sqrt{a+b\log\left(c(d+ex)^n\right)}} - \frac{16(}{3b^2en^2\sqrt{}}$$

$$= -\frac{2(d+ex)(f+gx)^3}{3ben\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}} + \frac{4(ef-dg)(d+ex)(f+gx)^2}{b^2e^2n^2\sqrt{a+b\log\left(c(d+ex)^n\right)}} - \frac{16(}{3b^2en^2\sqrt{}}$$

$$= -\frac{2(d+ex)(f+gx)^3}{3ben\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}} + \frac{4(ef-dg)(d+ex)(f+gx)^2}{b^2e^2n^2\sqrt{a+b\log\left(c(d+ex)^n\right)}} - \frac{16(}{3b^2en^2\sqrt{}}$$

$$= \frac{4e^{-\frac{a}{bn}}(ef-dg)^3\sqrt{\pi}\,(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{3b^{5/2}e^4n^{5/2}} + \frac{32e^{-\frac{4a}{bn}}g^3}{}$$

Mathematica [B] time = 7.08, size = 2647, normalized size = 5.09

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^3/(a + b*Log[c*(d + e*x)^n])^(5/2),x]
```

```
[Out] (8*f^2*g*Sqrt[Pi]*(-2*d*E^((a + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n]))
/(b*n))*Erfi[Sqrt[a + b*n*Log[d + e*x] + b*(-(n*Log[d + e*x]) + Log[c*(d +
e*x)^n])]/(Sqrt[b]*Sqrt[n])] + Sqrt[2]*Erfi[(Sqrt[2]*Sqrt[a + b*n*Log[d + e
*x] + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n])])/(Sqrt[b]*Sqrt[n])])*Sqrt
[a + b*Log[c*(d + e*x)^n]])/(b^(5/2)*e^2*E^((2*(a + b*(-(n*Log[d + e*x]) +
Log[c*(d + e*x)^n])))/(b*n))*n^(5/2)*Sqrt[a + b*n*Log[d + e*x] + b*(-(n*Log
[d + e*x]) + Log[c*(d + e*x)^n])]) + (20*d*f*g^2*Sqrt[Pi]*(-2*d*E^((a + b*(
-(n*Log[d + e*x]) + Log[c*(d + e*x)^n]))/(b*n))*Erfi[Sqrt[a + b*n*Log[d + e
*x] + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n])]/(Sqrt[b]*Sqrt[n])] + Sqrt
[2]*Erfi[(Sqrt[2]*Sqrt[a + b*n*Log[d + e*x] + b*(-(n*Log[d + e*x]) + Log[c*
(d + e*x)^n])])/(Sqrt[b]*Sqrt[n])])*Sqrt[a + b*Log[c*(d + e*x)^n]])/(b^(5/2
)*e^3*E^((2*(a + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n])))/(b*n))*n^(5/2
)*Sqrt[a + b*n*Log[d + e*x] + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n])])
+ (4*d^2*g^3*Sqrt[Pi]*(-2*d*E^((a + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^
n]))/(b*n))*Erfi[Sqrt[a + b*n*Log[d + e*x] + b*(-(n*Log[d + e*x]) + Log[c*(
d + e*x)^n])]/(Sqrt[b]*Sqrt[n])] + Sqrt[2]*Erfi[(Sqrt[2]*Sqrt[a + b*n*Log[d
 + e*x] + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n])])/(Sqrt[b]*Sqrt[n])])*
```

```
Sqrt[a + b*Log[c*(d + e*x)^n]])/(b^(5/2)*e^4*E^((2*(a + b*(-(n*Log[d + e*x]
) + Log[c*(d + e*x)^n])))/(b*n))*n^(5/2)*Sqrt[a + b*n*Log[d + e*x] + b*(-(n
*Log[d + e*x]) + Log[c*(d + e*x)^n])]) + (12*f*g^2*Sqrt[Pi]*(3*d^2*E^((2*(a
 + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n])))/(b*n))*Erfi[Sqrt[a + b*n*Lo
g[d + e*x] + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n])]/(Sqrt[b]*Sqrt[n])]
 - 3*Sqrt[2]*d*E^((a + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n]))/(b*n))*E
rfi[(Sqrt[2]*Sqrt[a + b*n*Log[d + e*x] + b*(-(n*Log[d + e*x]) + Log[c*(d +
e*x)^n])])/(Sqrt[b]*Sqrt[n])] + Sqrt[3]*Erfi[(Sqrt[3]*Sqrt[a + b*n*Log[d +
e*x] + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n])])/(Sqrt[b]*Sqrt[n])])*Sqr
t[a + b*Log[c*(d + e*x)^n]])/(b^(5/2)*e^3*E^((3*(a + b*(-(n*Log[d + e*x]) +
 Log[c*(d + e*x)^n])))/(b*n))*n^(5/2)*Sqrt[a + b*n*Log[d + e*x] + b*(-(n*Lo
g[d + e*x]) + Log[c*(d + e*x)^n])]) + (28*d*g^3*Sqrt[Pi]*(3*d^2*E^((2*(a +
b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n])))/(b*n))*Erfi[Sqrt[a + b*n*Log[d
 + e*x] + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n])]/(Sqrt[b]*Sqrt[n])] -
3*Sqrt[2]*d*E^((a + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n]))/(b*n))*Erfi
[(Sqrt[2]*Sqrt[a + b*n*Log[d + e*x] + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x
)^n])])/(Sqrt[b]*Sqrt[n])] + Sqrt[3]*Erfi[(Sqrt[3]*Sqrt[a + b*n*Log[d + e*x
] + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n])])/(Sqrt[b]*Sqrt[n])])*Sqrt[a
 + b*Log[c*(d + e*x)^n]])/(3*b^(5/2)*e^4*E^((3*(a + b*(-(n*Log[d + e*x]) +
Log[c*(d + e*x)^n])))/(b*n))*n^(5/2)*Sqrt[a + b*n*Log[d + e*x] + b*(-(n*Log
[d + e*x]) + Log[c*(d + e*x)^n])]) + (32*g^3*Sqrt[Pi]*(-2*d^3*E^((3*(a + b*
(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n])))/(b*n))*Erfi[Sqrt[a + b*n*Log[d +
 e*x] + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n])]/(Sqrt[b]*Sqrt[n])] + Er
fi[(2*Sqrt[a + b*n*Log[d + e*x] + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n]
)])/(Sqrt[b]*Sqrt[n])] + d*E^((a + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n
]))/(b*n))*(3*Sqrt[2]*d*E^((a + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n]))
/(b*n))*Erfi[(Sqrt[2]*Sqrt[a + b*n*Log[d + e*x] + b*(-(n*Log[d + e*x]) + Lo
g[c*(d + e*x)^n])])/(Sqrt[b]*Sqrt[n])] - 2*Sqrt[3]*Erfi[(Sqrt[3]*Sqrt[a + b
*n*Log[d + e*x] + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n])])/(Sqrt[b]*Sqr
t[n])]))*Sqrt[a + b*Log[c*(d + e*x)^n]])/(3*b^(5/2)*e^4*E^((4*(a + b*(-(n*L
og[d + e*x]) + Log[c*(d + e*x)^n])))/(b*n))*n^(5/2)*Sqrt[a + b*n*Log[d + e*
x] + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n])]) + (4*f^3*Gamma[1/2, -((a
+ b*n*Log[d + e*x] + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n]))/(b*n))]*Sq
rt[-((a + b*n*Log[d + e*x] + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n]))/(b
*n))])/(3*b^2*e*E^((a + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n]))/(b*n))*
n^2*Sqrt[a + b*n*Log[d + e*x] + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n])]
) + (12*d*f^2*g*Gamma[1/2, -((a + b*n*Log[d + e*x] + b*(-(n*Log[d + e*x]) +
 Log[c*(d + e*x)^n]))/(b*n))]*Sqrt[-((a + b*n*Log[d + e*x] + b*(-(n*Log[d +
 e*x]) + Log[c*(d + e*x)^n]))/(b*n))])/(b^2*e^2*E^((a + b*(-(n*Log[d + e*x]
) + Log[c*(d + e*x)^n]))/(b*n))*n^2*Sqrt[a + b*n*Log[d + e*x] + b*(-(n*Log[
d + e*x]) + Log[c*(d + e*x)^n])]) + (8*d^2*f*g^2*Gamma[1/2, -((a + b*n*Log[
d + e*x] + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n]))/(b*n))]*Sqrt[-((a +
b*n*Log[d + e*x] + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n]))/(b*n))])/(b^
2*e^3*E^((a + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n]))/(b*n))*n^2*Sqrt[a
 + b*n*Log[d + e*x] + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n])]) + Sqrt[a
 + b*n*Log[d + e*x] + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n])]*((-2*(d +
 e*x)*(f + g*x)^3)/(3*b*e*n*(a + b*n*Log[d + e*x] + b*(-(n*Log[d + e*x]) +
Log[c*(d + e*x)^n]))^2) - (4*(d + e*x)*(f + g*x)^2*(e*f + 3*d*g + 4*e*g*x))
/(3*b^2*e^2*n^2*(a + b*n*Log[d + e*x] + b*(-(n*Log[d + e*x]) + Log[c*(d + e
*x)^n]))))
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3/(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(gx+f)^3}{\left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3/(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="giac")
[Out] integrate((g*x + f)^3/(b*log((e*x + d)^n*c) + a)^(5/2), x)
```

maple [F] time = 0.53, size = 0, normalized size = 0.00

$$\int \frac{(gx+f)^3}{\left(b\ln\left(c\,(ex+d)^n\right)+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^3/(b*ln(c*(e*x+d)^n)+a)^(5/2),x)
[Out] int((g*x+f)^3/(b*ln(c*(e*x+d)^n)+a)^(5/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(gx+f)^3}{\left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3/(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="maxima")
[Out] integrate((g*x + f)^3/(b*log((e*x + d)^n*c) + a)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(f+g\,x)^3}{\left(a+b\,\ln\left(c\,(d+e\,x)^n\right)\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^3/(a + b*log(c*(d + e*x)^n))^(5/2),x)
[Out] int((f + g*x)^3/(a + b*log(c*(d + e*x)^n))^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(f+gx)^3}{\left(a+b\log\left(c\,(d+ex)^n\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**3/(a+b*ln(c*(e*x+d)**n))**(5/2),x)
[Out] Integral((f + g*x)**3/(a + b*log(c*(d + e*x)**n))**(5/2), x)
```

3.134 $\int \frac{(f+gx)^2}{\left(a+b\log(c(d+ex)^n)\right)^{5/2}}\,dx$

Optimal. Leaf size=421

$$\frac{16\sqrt{2\pi}\,g e^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)\left(c(d+ex)^n\right)^{-2/n}\operatorname{erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{3b^{5/2}e^3n^{5/2}}+\frac{4\sqrt{\pi}\,e^{-\frac{a}{bn}}(d+ex)(ef-dg)^2\left(c(d+e\right.}{3b^{5/2}e^3n}$$

```
[Out] -2/3*(e*x+d)*(g*x+f)^2/b/e/n/(a+b*ln(c*(e*x+d)^n))^(3/2)+4/3*(-d*g+e*f)^2*(
e*x+d)*erfi((a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*Pi^(1/2)/b^(5/2)/e
^3/exp(a/b/n)/n^(5/2)/((c*(e*x+d)^n)^(1/n))+16/3*g*(-d*g+e*f)*(e*x+d)^2*erf
i(2^(1/2)*(a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*2^(1/2)*Pi^(1/2)/b^(
5/2)/e^3/exp(2*a/b/n)/n^(5/2)/((c*(e*x+d)^n)^(2/n))+4*g^2*(e*x+d)^3*erfi(3^
(1/2)*(a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*3^(1/2)*Pi^(1/2)/b^(5/2)
/e^3/exp(3*a/b/n)/n^(5/2)/((c*(e*x+d)^n)^(3/n))+8/3*(-d*g+e*f)*(e*x+d)*(g*x
+f)/b^2/e^2/n^2/(a+b*ln(c*(e*x+d)^n))^(1/2)-4*(e*x+d)*(g*x+f)^2/b^2/e/n^2/(
a+b*ln(c*(e*x+d)^n))^(1/2)
```

Rubi [A] time = 1.40, antiderivative size = 421, normalized size of antiderivative = 1.00, number of steps used = 41, number of rules used = 8, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308, Rules used = {2400, 2401, 2389, 2300, 2180, 2204, 2390, 2310}

$$\frac{16\sqrt{2\pi}\,g e^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)\left(c(d+ex)^n\right)^{-2/n}\operatorname{Erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{3b^{5/2}e^3n^{5/2}}+\frac{4\sqrt{\pi}\,e^{-\frac{a}{bn}}(d+ex)(ef-dg)^2\left(c(d+\right.}{3b^{5/2}e^3}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^2/(a + b*Log[c*(d + e*x)^n])^(5/2),x]
```

```
[Out] (4*(e*f - d*g)^2*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sq
rt[b]*Sqrt[n])])/(3*b^(5/2)*e^3*E^(a/(b*n))*n^(5/2)*(c*(d + e*x)^n)^n^(-1))
 + (16*g*(e*f - d*g)*Sqrt[2*Pi]*(d + e*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*
(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(3*b^(5/2)*e^3*E^((2*a)/(b*n))*n^(5/2)*(
c*(d + e*x)^n)^(2/n)) + (4*g^2*Sqrt[3*Pi]*(d + e*x)^3*Erfi[(Sqrt[3]*Sqrt[a
+ b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(b^(5/2)*e^3*E^((3*a)/(b*n))*n
^(5/2)*(c*(d + e*x)^n)^(3/n)) - (2*(d + e*x)*(f + g*x)^2)/(3*b*e*n*(a + b*L
og[c*(d + e*x)^n])^(3/2)) + (8*(e*f - d*g)*(d + e*x)*(f + g*x))/(3*b^2*e^2*
n^2*Sqrt[a + b*Log[c*(d + e*x)^n]]) - (4*(d + e*x)*(f + g*x)^2)/(b^2*e*n^2*
Sqrt[a + b*Log[c*(d + e*x)^n]])
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
```

```
{a, b, c, n, p}, x]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2400

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((d + e*x)*(f + g*x)^q*(a + b*Log[c*(d + e
*x)^n])^(p + 1))/(b*e*n*(p + 1)), x] + (-Dist[(q + 1)/(b*n*(p + 1)), Int[(f
 + g*x)^q*(a + b*Log[c*(d + e*x)^n])^(p + 1), x], x] + Dist[(q*(e*f - d*g))
/(b*e*n*(p + 1)), Int[(f + g*x)^(q - 1)*(a + b*Log[c*(d + e*x)^n])^(p + 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] && LtQ[
p, -1] && GtQ[q, 0]
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rubi steps

$$\int \frac{(f+gx)^2}{\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}}\,dx = -\frac{2(d+ex)(f+gx)^2}{3ben\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}} + \frac{2\int \frac{(f+gx)^2}{\left(a+b\log(c(d+ex)^n)\right)^{3/2}}\,dx}{bn} - \frac{(4(ef-dg)}{}$$

$$= -\frac{2(d+ex)(f+gx)^2}{3ben\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}} + \frac{8(ef-dg)(d+ex)(f+gx)}{3b^2e^2n^2\sqrt{a+b\log\left(c(d+ex)^n\right)}} - \frac{}{b^2en}$$

$$= -\frac{2(d+ex)(f+gx)^2}{3ben\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}} + \frac{8(ef-dg)(d+ex)(f+gx)}{3b^2e^2n^2\sqrt{a+b\log\left(c(d+ex)^n\right)}} - \frac{}{b^2en}$$

$$= -\frac{2(d+ex)(f+gx)^2}{3ben\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}} + \frac{8(ef-dg)(d+ex)(f+gx)}{3b^2e^2n^2\sqrt{a+b\log\left(c(d+ex)^n\right)}} - \frac{}{b^2en}$$

$$= -\frac{2(d+ex)(f+gx)^2}{3ben\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}} + \frac{8(ef-dg)(d+ex)(f+gx)}{3b^2e^2n^2\sqrt{a+b\log\left(c(d+ex)^n\right)}} - \frac{}{b^2en}$$

$$= \frac{8e^{-\frac{a}{bn}}(ef-dg)^2\sqrt{\pi}\,(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{3b^{5/2}e^3n^{5/2}} - \frac{}{3ben}$$

$$= \frac{8e^{-\frac{a}{bn}}(ef-dg)^2\sqrt{\pi}\,(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{3b^{5/2}e^3n^{5/2}} - \frac{}{3ben}$$

$$= \frac{4e^{-\frac{a}{bn}}(ef-dg)^2\sqrt{\pi}\,(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{3b^{5/2}e^3n^{5/2}} + \frac{16e^{-\frac{2}{b}}}{}$$

Mathematica [A] time = 4.58, size = 527, normalized size = 1.25

$$-\frac{2e^{-\frac{3a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-3/n}\left(\sqrt{b}\sqrt{n}\,e^{\frac{2a}{bn}}\left(c(d+ex)^n\right)^{2/n}\left(2bn\left(2d^2g^2+6defg+e^2f^2\right)\left(-\frac{a+b\log(c(d+ex)^n)}{bn}\right)^{3/2}\Gamma\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^2/(a + b*Log[c*(d + e*x)^n])^(5/2),x]
```

```
[Out] (-2*(d + e*x)*(2*d*E^((2*a)/(b*n))*g*(8*e*f + d*g)*Sqrt[Pi]*(c*(d + e*x)^n)
^(2/n)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])]*(a + b*Log[c*
(d + e*x)^n])^(3/2) + 8*E^(a/(b*n))*g*(-(e*f) + d*g)*Sqrt[2*Pi]*(d + e*x)*(
c*(d + e*x)^n)^n^(-1)*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b
]*Sqrt[n])]*(a + b*Log[c*(d + e*x)^n])^(3/2) - 6*g^2*Sqrt[3*Pi]*(d + e*x)^2
*Erfi[(Sqrt[3]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])]*(a + b*Lo
g[c*(d + e*x)^n])^(3/2) + Sqrt[b]*E^((2*a)/(b*n))*Sqrt[n]*(c*(d + e*x)^n)^(
2/n)*(2*b*(e^2*f^2 + 6*d*e*f*g + 2*d^2*g^2)*n*Gamma[1/2, -((a + b*Log[c*(d
+ e*x)^n])/(b*n))]*(-((a + b*Log[c*(d + e*x)^n])/(b*n)))^(3/2) + e*E^(a/(b*
n))*(c*(d + e*x)^n)^n^(-1)*(f + g*x)*(b*e*n*(f + g*x) + 2*a*(e*f + 2*d*g +
3*e*g*x) + 2*b*(2*d*g + e*(f + 3*g*x))*Log[c*(d + e*x)^n]))))/(3*b^(5/2)*e^
3*E^((3*a)/(b*n))*n^(5/2)*(c*(d + e*x)^n)^(3/n)*(a + b*Log[c*(d + e*x)^n])^
(3/2))
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2/(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(gx+f)^2}{\left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2/(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((g*x + f)^2/(b*log((e*x + d)^n*c) + a)^(5/2), x)
```

maple [F] time = 0.53, size = 0, normalized size = 0.00

$$\int \frac{(gx+f)^2}{\left(b\ln\left(c\,(ex+d)^n\right)+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^2/(b*ln(c*(e*x+d)^n)+a)^(5/2),x)
```

```
[Out] int((g*x+f)^2/(b*ln(c*(e*x+d)^n)+a)^(5/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(gx+f)^2}{\left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2/(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((g*x + f)^2/(b*log((e*x + d)^n*c) + a)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(f+g\,x)^2}{\left(a+b\,\ln\left(c\,(d+e\,x)^n\right)\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^2/(a + b*log(c*(d + e*x)^n))^(5/2),x)
```

```
[Out] int((f + g*x)^2/(a + b*log(c*(d + e*x)^n))^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(f+gx)^2}{\left(a+b\log\left(c\,(d+ex)^n\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**2/(a+b*ln(c*(e*x+d)**n))**(5/2),x)
```

```
[Out] Integral((f + g*x)**2/(a + b*log(c*(d + e*x)**n))**(5/2), x)
```

3.135 $\int \frac{f+gx}{(a+b\log(c(d+ex)^n))^{5/2}}\,dx$

Optimal. Leaf size=311

$$\frac{4\sqrt{\pi}e^{-\frac{a}{bn}}(d+ex)(ef-dg)\left(c(d+ex)^n\right)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{3b^{5/2}e^2n^{5/2}}+\frac{8\sqrt{2\pi}ge^{-\frac{2a}{bn}}(d+ex)^2\left(c(d+ex)^n\right)^{-2/n}\operatorname{erfi}\left(\frac{\sqrt{2}\cdots}{}\right.}{3b^{5/2}e^2n^{5/2}}$$

```
[Out] -2/3*(e*x+d)*(g*x+f)/b/e/n/(a+b*ln(c*(e*x+d)^n))^(3/2)+4/3*(-d*g+e*f)*(e*x+
d)*erfi((a+b*ln(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*Pi^(1/2)/b^(5/2)/e^2/e
xp(a/b/n)/n^(5/2)/((c*(e*x+d)^n)^(1/n))+8/3*g*(e*x+d)^2*erfi(2^(1/2)*(a+b*l
n(c*(e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*2^(1/2)*Pi^(1/2)/b^(5/2)/e^2/exp(2*a
/b/n)/n^(5/2)/((c*(e*x+d)^n)^(2/n))+4/3*(-d*g+e*f)*(e*x+d)/b^2/e^2/n^2/(a+b
*ln(c*(e*x+d)^n))^(1/2)-8/3*(e*x+d)*(g*x+f)/b^2/e/n^2/(a+b*ln(c*(e*x+d)^n))
^(1/2)
```

Rubi [A] time = 0.56, antiderivative size = 311, normalized size of antiderivative = 1.00, number of steps used = 21, number of rules used = 9, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.375, Rules used = {2400, 2401, 2389, 2300, 2180, 2204, 2390, 2310, 2297}

$$\frac{4\sqrt{\pi}e^{-\frac{a}{bn}}(d+ex)(ef-dg)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{3b^{5/2}e^2n^{5/2}}+\frac{8\sqrt{2\pi}ge^{-\frac{2a}{bn}}(d+ex)^2\left(c(d+ex)^n\right)^{-2/n}\operatorname{Erfi}\left(\frac{\sqrt{2}\cdots}{}\right.}{3b^{5/2}e^2n^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)/(a + b*Log[c*(d + e*x)^n])^(5/2),x]
```

```
[Out] (4*(e*f - d*g)*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt
[b]*Sqrt[n])])/(3*b^(5/2)*e^2*E^(a/(b*n))*n^(5/2)*(c*(d + e*x)^n)^n^(-1)) +
 (8*g*Sqrt[2*Pi]*(d + e*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d + e*x)^n]])/
(Sqrt[b]*Sqrt[n])])/(3*b^(5/2)*e^2*E^((2*a)/(b*n))*n^(5/2)*(c*(d + e*x)^n)^
(2/n)) - (2*(d + e*x)*(f + g*x))/(3*b*e*n*(a + b*Log[c*(d + e*x)^n])^(3/2))
 + (4*(e*f - d*g)*(d + e*x))/(3*b^2*e^2*n^2*Sqrt[a + b*Log[c*(d + e*x)^n]])
 - (8*(d + e*x)*(f + g*x))/(3*b^2*e*n^2*Sqrt[a + b*Log[c*(d + e*x)^n]])
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2297

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[(x*(a + b
*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
gerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2400

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((d + e*x)*(f + g*x)^q*(a + b*Log[c*(d + e
*x)^n])^(p + 1))/(b*e*n*(p + 1)), x] + (-Dist[(q + 1)/(b*n*(p + 1)), Int[(f
 + g*x)^q*(a + b*Log[c*(d + e*x)^n])^(p + 1), x], x] + Dist[(q*(e*f - d*g))
/(b*e*n*(p + 1)), Int[(f + g*x)^(q - 1)*(a + b*Log[c*(d + e*x)^n])^(p + 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] && LtQ[
p, -1] && GtQ[q, 0]
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rubi steps

$$\int \frac{f+gx}{\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}}\,dx = -\frac{2(d+ex)(f+gx)}{3ben\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}} + \frac{4\int \frac{f+gx}{\left(a+b\log(c(d+ex)^n)\right)^{3/2}}\,dx}{3bn} - \frac{(2(ef-dg))\int}{}$$

$$= -\frac{2(d+ex)(f+gx)}{3ben\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}} - \frac{8(d+ex)(f+gx)}{3b^2en^2\sqrt{a+b\log\left(c(d+ex)^n\right)}} + \frac{16\int \frac{}{\sqrt{a+}}}{}$$

$$= -\frac{2(d+ex)(f+gx)}{3ben\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}} + \frac{4(ef-dg)(d+ex)}{3b^2e^2n^2\sqrt{a+b\log\left(c(d+ex)^n\right)}} - \frac{8}{3b^2en^2\sqrt{}}$$

$$= -\frac{2(d+ex)(f+gx)}{3ben\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}} + \frac{4(ef-dg)(d+ex)}{3b^2e^2n^2\sqrt{a+b\log\left(c(d+ex)^n\right)}} - \frac{8}{3b^2en^2\sqrt{}}$$

$$= -\frac{2(d+ex)(f+gx)}{3ben\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}} + \frac{4(ef-dg)(d+ex)}{3b^2e^2n^2\sqrt{a+b\log\left(c(d+ex)^n\right)}} - \frac{8}{3b^2en^2\sqrt{}}$$

$$= -\frac{4e^{-\frac{a}{bn}}(ef-dg)\sqrt{\pi}\,(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{b^{5/2}e^2n^{5/2}} - \frac{2}{3ben\left(a\right.}$$

$$= -\frac{4e^{-\frac{a}{bn}}(ef-dg)\sqrt{\pi}\,(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{b^{5/2}e^2n^{5/2}} - \frac{2}{3ben\left(a\right.}$$

$$= \frac{4e^{-\frac{a}{bn}}(ef-dg)\sqrt{\pi}\,(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{3b^{5/2}e^2n^{5/2}} + \frac{8e^{-\frac{2a}{bn}}g\sqrt{2}}{}$$

Mathematica [A] time = 1.96, size = 353, normalized size = 1.14

$$\frac{2e^{-\frac{2a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-2/n}\left(-8\sqrt{\pi}\,dge^{\frac{a}{bn}}\left(c(d+ex)^n\right)^{\frac{1}{n}}\operatorname{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)+4\sqrt{2\pi}\,g(d+ex)\operatorname{erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log}}{\sqrt{b}}\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)/(a + b*Log[c*(d + e*x)^n])^(5/2),x]
```

```
[Out] (2*(d + e*x)*(-8*d*E^(a/(b*n))*g*Sqrt[Pi]*(c*(d + e*x)^n)^n^(-1)*Erfi[Sqrt[
a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])] + 4*g*Sqrt[2*Pi]*(d + e*x)*Erf
i[(Sqrt[2]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])] - (Sqrt[b]*E^
(a/(b*n))*Sqrt[n]*(c*(d + e*x)^n)^n^(-1)*(2*b*(e*f + 3*d*g)*n*Gamma[1/2, -(
(a + b*Log[c*(d + e*x)^n])/(b*n))]*(-((a + b*Log[c*(d + e*x)^n])/(b*n)))^(3
/2) + E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)*(b*e*n*(f + g*x) + 2*a*(e*f + d*g
+ 2*e*g*x) + 2*b*(d*g + e*(f + 2*g*x))*Log[c*(d + e*x)^n])))/(a + b*Log[c*(
d + e*x)^n])^(3/2)))/(3*b^(5/2)*e^2*E^((2*a)/(b*n))*n^(5/2)*(c*(d + e*x)^n)
^(2/n))
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{gx+f}{\left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((g*x + f)/(b*log((e*x + d)^n*c) + a)^(5/2), x)
```

maple [F] time = 0.38, size = 0, normalized size = 0.00

$$\int \frac{gx+f}{\left(b\ln\left(c\,(ex+d)^n\right)+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)/(b*ln(c*(e*x+d)^n)+a)^(5/2),x)
```

```
[Out] int((g*x+f)/(b*ln(c*(e*x+d)^n)+a)^(5/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{gx+f}{\left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((g*x + f)/(b*log((e*x + d)^n*c) + a)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{f+g\,x}{\left(a+b\,\ln\left(c\,(d+e\,x)^n\right)\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)/(a + b*log(c*(d + e*x)^n))^(5/2),x)
```

```
[Out] int((f + g*x)/(a + b*log(c*(d + e*x)^n))^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{f+gx}{\left(a+b\log\left(c\,(d+ex)^n\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(a+b*ln(c*(e*x+d)**n))**(5/2),x)
```

```
[Out] Integral((f + g*x)/(a + b*log(c*(d + e*x)**n))**(5/2), x)
```

3.136 $\int \frac{1}{\left(a+b\log(c(d+ex)^n)\right)^{5/2}}\,dx$

Optimal. Leaf size=156

$$\frac{4\sqrt{\pi}\,e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{3b^{5/2}en^{5/2}}-\frac{4(d+ex)}{3b^2en^2\sqrt{a+b\log\left(c(d+ex)^n\right)}}-\frac{2(d+ex)}{3ben\left(a+b\log\left(c(d+\right.\right.}$$

```
[Out] -2/3*(e*x+d)/b/e/n/(a+b*ln(c*(e*x+d)^n))^(3/2)+4/3*(e*x+d)*erfi((a+b*ln(c*(
e*x+d)^n))^(1/2)/b^(1/2)/n^(1/2))*Pi^(1/2)/b^(5/2)/e/exp(a/b/n)/n^(5/2)/((c
*(e*x+d)^n)^(1/n))-4/3*(e*x+d)/b^2/e/n^2/(a+b*ln(c*(e*x+d)^n))^(1/2)
```

Rubi [A] time = 0.12, antiderivative size = 156, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {2389, 2297, 2300, 2180, 2204}

$$\frac{4\sqrt{\pi}\,e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{3b^{5/2}en^{5/2}}-\frac{4(d+ex)}{3b^2en^2\sqrt{a+b\log\left(c(d+ex)^n\right)}}-\frac{2(d+ex)}{3ben\left(a+b\log\left(c(d+\right.\right.}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^(-5/2),x]
```

```
[Out] (4*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])
])/(3*b^(5/2)*e*E^(a/(b*n))*n^(5/2)*(c*(d + e*x)^n)^n^(-1)) - (2*(d + e*x))
/(3*b*e*n*(a + b*Log[c*(d + e*x)^n])^(3/2)) - (4*(d + e*x))/(3*b^2*e*n^2*Sq
rt[a + b*Log[c*(d + e*x)^n]])
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2297

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[(x*(a + b
*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
gerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
```

```
, b, c, d, e, n, p}, x]
```

Rubi steps

$$\int \frac{1}{\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}}\,dx = \frac{\text{Subst}\left(\int \frac{1}{\left(a+b\log(cx^n)\right)^{5/2}}\,dx, x, d+ex\right)}{e}$$

$$= -\frac{2(d+ex)}{3ben\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}} + \frac{2\,\text{Subst}\left(\int \frac{1}{\left(a+b\log(cx^n)\right)^{3/2}}\,dx, x, d+ex\right)}{3ben}$$

$$= -\frac{2(d+ex)}{3ben\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}} - \frac{4(d+ex)}{3b^2en^2\sqrt{a+b\log\left(c(d+ex)^n\right)}} + \frac{4\,\text{Sub}}{}$$

$$= -\frac{2(d+ex)}{3ben\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}} - \frac{4(d+ex)}{3b^2en^2\sqrt{a+b\log\left(c(d+ex)^n\right)}} + \frac{(4(d+}{}$$

$$= -\frac{2(d+ex)}{3ben\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}} - \frac{4(d+ex)}{3b^2en^2\sqrt{a+b\log\left(c(d+ex)^n\right)}} + \frac{(8(d+}{}$$

$$= \frac{4e^{-\frac{a}{bn}}\sqrt{\pi}\,(d+ex)\left(c(d+ex)^n\right)^{-1/n}\,\text{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\,\sqrt{n}}\right)}{3b^{5/2}en^{5/2}} - \frac{2(d+}{3ben\left(a+b\log\right.}$$

Mathematica [A] time = 0.16, size = 163, normalized size = 1.04

$$-\frac{2e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\left(e^{\frac{a}{bn}}\left(c(d+ex)^n\right)^{\frac{1}{n}}\left(2a+2b\log\left(c(d+ex)^n\right)+bn\right)+2bn\left(-\frac{a+b\log(c(d+ex)^n)}{bn}\right)^{3/2}\Gamma\right.}{3b^2en^2\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^(-5/2),x]
```

```
[Out] (-2*(d + e*x)*(2*b*n*Gamma[1/2, -((a + b*Log[c*(d + e*x)^n])/(b*n))]*(-((a
+ b*Log[c*(d + e*x)^n])/(b*n)))^(3/2) + E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)*
(2*a + b*n + 2*b*Log[c*(d + e*x)^n])))/(3*b^2*e*E^(a/(b*n))*n^2*(c*(d + e*x
)^n)^n^(-1)*(a + b*Log[c*(d + e*x)^n])^(3/2))
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="giac")
[Out] integrate((b*log((e*x + d)^n*c) + a)^(-5/2), x)
```

maple [F] time = 0.04, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(b \ln \left(c \left(ex+d\right)^{n}\right)+a\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*ln(c*(e*x+d)^n)+a)^(5/2),x)
[Out] int(1/(b*ln(c*(e*x+d)^n)+a)^(5/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(b \log \left(\left(ex+d\right)^{n} c\right)+a\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="maxima")
[Out] integrate((b*log((e*x + d)^n*c) + a)^(-5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*log(c*(d + e*x)^n))^(5/2),x)
[Out] int(1/(a + b*log(c*(d + e*x)^n))^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a + b \log{\left(c \left(d + ex\right)^{n} \right)}\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(e*x+d)**n))**(5/2),x)
[Out] Integral((a + b*log(c*(d + e*x)**n))**(-5/2), x)
```

3.137 $\int \frac{1}{(f+gx)\left(a+b\log(c(d+ex)^n)\right)^{5/2}}\,dx$

Optimal. Leaf size=29

$$\text{Int}\left(\frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}},x\right)$$

```
[Out] Unintegrable(1/(g*x+f)/(a+b*ln(c*(e*x+d)^n))^(5/2),x)
```

Rubi [A] time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^(5/2)),x]
```

```
[Out] Defer[Int][1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^(5/2)), x]
```

Rubi steps

$$\int \frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}}\,dx=\int \frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}}\,dx$$

Mathematica [A] time = 0.56, size = 0, normalized size = 0.00

$$\int \frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^(5/2)),x]
```

```
[Out] Integrate[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^(5/2)), x]
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(gx+f)\left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="giac")
```

```
[Out] integrate(1/((g*x + f)*(b*log((e*x + d)^n*c) + a)^(5/2)), x)
```

maple [A] time = 0.55, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(gx+f\right)\left(b\ln\left(c\left(ex+d\right)^{n}\right)+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(g*x+f)/(b*ln(c*(e*x+d)^n)+a)^(5/2),x)
```

```
[Out] int(1/(g*x+f)/(b*ln(c*(e*x+d)^n)+a)^(5/2),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(gx+f\right)\left(b\log\left(\left(ex+d\right)^{n}c\right)+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate(1/((g*x + f)*(b*log((e*x + d)^n*c) + a)^(5/2)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{\left(f+g\,x\right)\,{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((f + g*x)*(a + b*log(c*(d + e*x)^n))^(5/2)),x)
```

```
[Out] int(1/((f + g*x)*(a + b*log(c*(d + e*x)^n))^(5/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*ln(c*(e*x+d)**n))**(5/2),x)
```

```
[Out] Timed out
```

3.138 $\int (f+gx)^{3/2} \left(a+b\log\left(c(d+ex)^n\right)\right) dx$

Optimal. Leaf size=163

$$\frac{2(f+gx)^{5/2}\left(a+b\log\left(c(d+ex)^n\right)\right)}{5g}+\frac{4bn(ef-dg)^{5/2}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{5e^{5/2}g}-\frac{4bn\sqrt{f+gx}\,(ef-dg)^2}{5e^2g}-\frac{4bn(f+g\text{:}}{1}$$

```
[Out] -4/15*b*(-d*g+e*f)*n*(g*x+f)^(3/2)/e/g-4/25*b*n*(g*x+f)^(5/2)/g+4/5*b*(-d*g
+e*f)^(5/2)*n*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))/e^(5/2)/g+2/5
*(g*x+f)^(5/2)*(a+b*ln(c*(e*x+d)^n))/g-4/5*b*(-d*g+e*f)^2*n*(g*x+f)^(1/2)/e
^2/g
```

Rubi [A] time = 0.16, antiderivative size = 163, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {2395, 50, 63, 208}

$$\frac{2(f+gx)^{5/2}\left(a+b\log\left(c(d+ex)^n\right)\right)}{5g}-\frac{4bn\sqrt{f+gx}\,(ef-dg)^2}{5e^2g}+\frac{4bn(ef-dg)^{5/2}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{5e^{5/2}g}-\frac{4bn(f+g\text{:}}{1}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^(3/2)*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] (-4*b*(e*f - d*g)^2*n*Sqrt[f + g*x])/(5*e^2*g) - (4*b*(e*f - d*g)*n*(f + g*
x)^(3/2))/(15*e*g) - (4*b*n*(f + g*x)^(5/2))/(25*g) + (4*b*(e*f - d*g)^(5/2
)*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]])/(5*e^(5/2)*g) + (2*(f
 + g*x)^(5/2)*(a + b*Log[c*(d + e*x)^n]))/(5*g)
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rubi steps

$$\int (f+gx)^{3/2}\left(a+b\log\left(c(d+ex)^n\right)\right)dx = \frac{2(f+gx)^{5/2}\left(a+b\log\left(c(d+ex)^n\right)\right)}{5g} - \frac{(2ben)\int \frac{(f+gx)^{5/2}}{d+ex}dx}{5g}$$

$$= -\frac{4bn(f+gx)^{5/2}}{25g} + \frac{2(f+gx)^{5/2}\left(a+b\log\left(c(d+ex)^n\right)\right)}{5g} - (2b(ef-dg$$

$$= -\frac{4b(ef-dg)n(f+gx)^{3/2}}{15eg} - \frac{4bn(f+gx)^{5/2}}{25g} + \frac{2(f+gx)^{5/2}\left(a+b\log\right.}{5g}$$

$$= -\frac{4b(ef-dg)^2n\sqrt{f+gx}}{5e^2g} - \frac{4b(ef-dg)n(f+gx)^{3/2}}{15eg} - \frac{4bn(f+gx)^{5/2}}{25g}$$

$$= -\frac{4b(ef-dg)^2n\sqrt{f+gx}}{5e^2g} - \frac{4b(ef-dg)n(f+gx)^{3/2}}{15eg} - \frac{4bn(f+gx)^{5/2}}{25g}$$

$$= -\frac{4b(ef-dg)^2n\sqrt{f+gx}}{5e^2g} - \frac{4b(ef-dg)n(f+gx)^{3/2}}{15eg} - \frac{4bn(f+gx)^{5/2}}{25g}$$

Mathematica [A] time = 0.23, size = 137, normalized size = 0.84

$$\frac{2\left((f+gx)^{5/2}\left(a+b\log\left(c(d+ex)^n\right)\right) - \frac{2bn(ef-dg)\left(\sqrt{e}\sqrt{f+gx}(-3dg+4ef+egx)-3(ef-dg)^{3/2}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)\right)}{3e^{5/2}} - \frac{2}{5}bn(f+gx)^{5/}\right.}{5g}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^(3/2)*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] (2*((-2*b*n*(f + g*x)^(5/2))/5 - (2*b*(e*f - d*g)*n*(Sqrt[e]*Sqrt[f + g*x]*
(4*e*f - 3*d*g + e*g*x) - 3*(e*f - d*g)^(3/2)*ArcTanh[(Sqrt[e]*Sqrt[f + g*x
])/Sqrt[e*f - d*g]]))/(3*e^(5/2)) + (f + g*x)^(5/2)*(a + b*Log[c*(d + e*x)^
n])))/(5*g)
```

fricas [A] time = 0.55, size = 538, normalized size = 3.30

$$\left[\frac{2\left(15\left(be^2f^2-2\,bdefg+bd^2g^2\right)n\sqrt{\frac{ef-dg}{e}}\log\left(\frac{egx+2\,ef-dg+2\,\sqrt{gx+f}\,e\sqrt{\frac{ef-dg}{e}}}{ex+d}\right)+\left(15\,ae^2f^2-3\left(2\,be^2g^2n-5\,ae^2g^2\right)x^2\right.\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(3/2)*(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
```

```
[Out] [2/75*(15*(b*e^2*f^2 - 2*b*d*e*f*g + b*d^2*g^2)*n*sqrt((e*f - d*g)/e)*log((
e*g*x + 2*e*f - d*g + 2*sqrt(g*x + f)*e*sqrt((e*f - d*g)/e))/(e*x + d)) + (
15*a*e^2*f^2 - 3*(2*b*e^2*g^2*n - 5*a*e^2*g^2)*x^2 - 2*(23*b*e^2*f^2 - 35*b
*d*e*f*g + 15*b*d^2*g^2)*n + 2*(15*a*e^2*f*g - (11*b*e^2*f*g - 5*b*d*e*g^2)
*n)*x + 15*(b*e^2*g^2*n*x^2 + 2*b*e^2*f*g*n*x + b*e^2*f^2*n)*log(e*x + d) +
 15*(b*e^2*g^2*x^2 + 2*b*e^2*f*g*x + b*e^2*f^2)*log(c))*sqrt(g*x + f))/(e^2
*g), 2/75*(30*(b*e^2*f^2 - 2*b*d*e*f*g + b*d^2*g^2)*n*sqrt(-(e*f - d*g)/e)*
arctan(-sqrt(g*x + f)*e*sqrt(-(e*f - d*g)/e)/(e*f - d*g)) + (15*a*e^2*f^2 -
```

```
 3*(2*b*e^2*g^2*n - 5*a*e^2*g^2)*x^2 - 2*(23*b*e^2*f^2 - 35*b*d*e*f*g + 15*
b*d^2*g^2)*n + 2*(15*a*e^2*f*g - (11*b*e^2*f*g - 5*b*d*e*g^2)*n)*x + 15*(b*
e^2*g^2*n*x^2 + 2*b*e^2*f*g*n*x + b*e^2*f^2*n)*log(e*x + d) + 15*(b*e^2*g^2
*x^2 + 2*b*e^2*f*g*x + b*e^2*f^2)*log(c))*sqrt(g*x + f))/(e^2*g)]
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(gx+f\right)^{\frac{3}{2}} \left(b \log\left(\left(ex+d\right)^{n} c\right)+a\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(3/2)*(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
```

```
[Out] integrate((g*x + f)^(3/2)*(b*log((e*x + d)^n*c) + a), x)
```

maple [F] time = 0.66, size = 0, normalized size = 0.00

$$\int \left(gx+f\right)^{\frac{3}{2}} \left(b \ln\left(c \left(ex+d\right)^{n}\right)+a\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^(3/2)*(b*ln(c*(e*x+d)^n)+a),x)
```

```
[Out] int((g*x+f)^(3/2)*(b*ln(c*(e*x+d)^n)+a),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(3/2)*(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(d*g-e*f>0)', see `assume?` for more
 details)Is d*g-e*f positive or negative?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int {\left(f+g\,x\right)}^{3/2}\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right) \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^(3/2)*(a + b*log(c*(d + e*x)^n)),x)
```

```
[Out] int((f + g*x)^(3/2)*(a + b*log(c*(d + e*x)^n)), x)
```

sympy [A] time = 57.10, size = 469, normalized size = 2.88

$$af\left(\begin{cases} \sqrt{f}\, x & \text{for}\: g = 0 \\ \frac{2 \left(f + g x\right)^{\frac{3}{2}}}{3 g} & \text{otherwise} \end{cases}\right) + \frac{2 a \left(- \frac{f \left(f + g x\right)^{\frac{3}{2}}}{3} + \frac{\left(f + g x\right)^{\frac{5}{2}}}{5}\right)}{g} + \frac{2 b f \left(\begin{cases} - \frac{2 e n \left(\frac{g \left(f + g x\right)^{\frac{3}{2}}}{3 e} + \frac{\sqrt{f + g x} \left(- d g^{2} + e f g\right)}{e^{2}} + \frac{g \left(d g - e f\right)^{2} \operatorname{atan}{\left(\frac{\sqrt{f + g x}}{\sqrt{\frac{d g - e f}{e}}} \right)}}{e^{3} \sqrt{\frac{d g - e f}{e}}}\right)}{3 g} \end{cases}\right)}{g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**(3/2)*(a+b*ln(c*(e*x+d)**n)),x)
```

```
[Out] a*f*Piecewise((sqrt(f)*x, Eq(g, 0)), (2*(f + g*x)**(3/2)/(3*g), True)) + 2*
a*(-f*(f + g*x)**(3/2)/3 + (f + g*x)**(5/2)/5)/g + 2*b*f*(-2*e*n*(g*(f + g*
x)**(3/2)/(3*e) + sqrt(f + g*x)*(-d*g**2 + e*f*g)/e**2 + g*(d*g - e*f)**2*a
tan(sqrt(f + g*x)/sqrt((d*g - e*f)/e))/(e**3*sqrt((d*g - e*f)/e)))/(3*g) +
(f + g*x)**(3/2)*log(c*(d - e*f/g + e*(f + g*x)/g)**n)/3)/g + 2*b*(-2*e*n*(
g*(f + g*x)**(5/2)/(5*e) + (f + g*x)**(3/2)*(-d*g**2 + e*f*g)/(3*e**2) + sq
rt(f + g*x)*(d**2*g**3 - 2*d*e*f*g**2 + e**2*f**2*g)/e**3 - g*(d*g - e*f)**
3*atan(sqrt(f + g*x)/sqrt((d*g - e*f)/e))/(e**4*sqrt((d*g - e*f)/e)))/(5*g)
 - f*(-2*e*n*(g*(f + g*x)**(3/2)/(3*e) + sqrt(f + g*x)*(-d*g**2 + e*f*g)/e*
*2 + g*(d*g - e*f)**2*atan(sqrt(f + g*x)/sqrt((d*g - e*f)/e))/(e**3*sqrt((d
*g - e*f)/e)))/(3*g) + (f + g*x)**(3/2)*log(c*(d - e*f/g + e*(f + g*x)/g)**
n)/3) + (f + g*x)**(5/2)*log(c*(d - e*f/g + e*(f + g*x)/g)**n)/5)/g
```

3.139 $\int \sqrt{f+gx}\left(a+b\log\left(c(d+ex)^n\right)\right)dx$

Optimal. Leaf size=132

$$\frac{2(f+gx)^{3/2}\left(a+b\log\left(c(d+ex)^n\right)\right)}{3g}+\frac{4bn(ef-dg)^{3/2}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{3e^{3/2}g}-\frac{4bn\sqrt{f+gx}\,(ef-dg)}{3eg}-\frac{4bn(f+gx}{9g}$$

```
[Out] -4/9*b*n*(g*x+f)^(3/2)/g+4/3*b*(-d*g+e*f)^(3/2)*n*arctanh(e^(1/2)*(g*x+f)^(
1/2)/(-d*g+e*f)^(1/2))/e^(3/2)/g+2/3*(g*x+f)^(3/2)*(a+b*ln(c*(e*x+d)^n))/g-
4/3*b*(-d*g+e*f)*n*(g*x+f)^(1/2)/e/g
```

Rubi [A] time = 0.09, antiderivative size = 132, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {2395, 50, 63, 208}

$$\frac{2(f+gx)^{3/2}\left(a+b\log\left(c(d+ex)^n\right)\right)}{3g}+\frac{4bn(ef-dg)^{3/2}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{3e^{3/2}g}-\frac{4bn\sqrt{f+gx}\,(ef-dg)}{3eg}-\frac{4bn(f+gx}{9g}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[f + g*x]*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] (-4*b*(e*f - d*g)*n*Sqrt[f + g*x])/(3*e*g) - (4*b*n*(f + g*x)^(3/2))/(9*g)
+ (4*b*(e*f - d*g)^(3/2)*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]
)/(3*e^(3/2)*g) + (2*(f + g*x)^(3/2)*(a + b*Log[c*(d + e*x)^n]))/(3*g)
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rubi steps

$$\int \sqrt{f+gx}\left(a+b\log\left(c(d+ex)^n\right)\right)dx = \frac{2(f+gx)^{3/2}\left(a+b\log\left(c(d+ex)^n\right)\right)}{3g} - \frac{(2ben)\int \frac{(f+gx)^{3/2}}{d+ex}dx}{3g}$$

$$= -\frac{4bn(f+gx)^{3/2}}{9g} + \frac{2(f+gx)^{3/2}\left(a+b\log\left(c(d+ex)^n\right)\right)}{3g} - \frac{(2b(ef-dg)}{3}$$

$$= -\frac{4b(ef-dg)n\sqrt{f+gx}}{3eg} - \frac{4bn(f+gx)^{3/2}}{9g} + \frac{2(f+gx)^{3/2}\left(a+b\log(c(\right.}{3g}$$

$$= -\frac{4b(ef-dg)n\sqrt{f+gx}}{3eg} - \frac{4bn(f+gx)^{3/2}}{9g} + \frac{2(f+gx)^{3/2}\left(a+b\log(c(\right.}{3g}$$

$$= -\frac{4b(ef-dg)n\sqrt{f+gx}}{3eg} - \frac{4bn(f+gx)^{3/2}}{9g} + \frac{4b(ef-dg)^{3/2}n\tanh^{-1}\left(\frac{\sqrt{}}{}\right.}{3e^{3/2}g}$$

Mathematica [A] time = 0.14, size = 118, normalized size = 0.89

$$\frac{2\left(\sqrt{e}\sqrt{f+gx}\left(3ae(f+gx)+3be(f+gx)\log\left(c(d+ex)^n\right)-2bn(-3dg+4ef+egx)\right)+6bn(ef-dg)^{3/2}\tanh^{-1}\left(\right.\right.}{9e^{3/2}g}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[f + g*x]*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] (2*(6*b*(e*f - d*g)^(3/2)*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]
] + Sqrt[e]*Sqrt[f + g*x]*(3*a*e*(f + g*x) - 2*b*n*(4*e*f - 3*d*g + e*g*x)
+ 3*b*e*(f + g*x)*Log[c*(d + e*x)^n])))/(9*e^(3/2)*g)
```

fricas [A] time = 0.50, size = 311, normalized size = 2.36

$$\left[-\frac{2\left(3\left(bef-bdg\right)n\sqrt{\frac{ef-dg}{e}}\log\left(\frac{egx+2ef-dg-2\sqrt{gx+f}e\sqrt{\frac{ef-dg}{e}}}{ex+d}\right)-\left(3aef-2\left(4bef-3bdg\right)n-\left(2begn-3aeg\right)x+\right.\right.}{9eg}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(1/2)*(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
```

```
[Out] [-2/9*(3*(b*e*f - b*d*g)*n*sqrt((e*f - d*g)/e)*log((e*g*x + 2*e*f - d*g - 2
*sqrt(g*x + f)*e*sqrt((e*f - d*g)/e))/(e*x + d)) - (3*a*e*f - 2*(4*b*e*f -
3*b*d*g)*n - (2*b*e*g*n - 3*a*e*g)*x + 3*(b*e*g*n*x + b*e*f*n)*log(e*x + d)
 + 3*(b*e*g*x + b*e*f)*log(c))*sqrt(g*x + f))/(e*g), 2/9*(6*(b*e*f - b*d*g)
*n*sqrt(-(e*f - d*g)/e)*arctan(-sqrt(g*x + f)*e*sqrt(-(e*f - d*g)/e)/(e*f -
 d*g)) + (3*a*e*f - 2*(4*b*e*f - 3*b*d*g)*n - (2*b*e*g*n - 3*a*e*g)*x + 3*(
b*e*g*n*x + b*e*f*n)*log(e*x + d) + 3*(b*e*g*x + b*e*f)*log(c))*sqrt(g*x +
f))/(e*g)]
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{gx+f}\left(b\log\left((ex+d)^n c\right)+a\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(1/2)*(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
```

```
[Out] integrate(sqrt(g*x + f)*(b*log((e*x + d)^n*c) + a), x)
```

maple [F] time = 0.61, size = 0, normalized size = 0.00

$$\int \sqrt{gx+f}\,\left(b\ln\left(c\,(ex+d)^{n}\right)+a\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^(1/2)*(b*ln(c*(e*x+d)^n)+a),x)
```

```
[Out] int((g*x+f)^(1/2)*(b*ln(c*(e*x+d)^n)+a),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(1/2)*(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(d*g-e*f>0)', see `assume?` for more
 details)Is d*g-e*f positive or negative?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \sqrt{f+g\,x}\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^(1/2)*(a + b*log(c*(d + e*x)^n)),x)
```

```
[Out] int((f + g*x)^(1/2)*(a + b*log(c*(d + e*x)^n)), x)
```

sympy [A] time = 4.72, size = 139, normalized size = 1.05

$$\frac{2\left(\frac{a\left(f+gx\right)^{\frac{3}{2}}}{3}+b\left(-\frac{2en\left(\frac{g\left(f+gx\right)^{\frac{3}{2}}}{3e}+\frac{\sqrt{f+gx}\left(-dg^{2}+efg\right)}{e^{2}}+\frac{g\left(dg-ef\right)^{2}\operatorname{atan}\left(\frac{\sqrt{f+gx}}{\sqrt{\frac{dg-ef}{e}}}\right)}{e^{3}\sqrt{\frac{dg-ef}{e}}}\right)}{3g}+\frac{\left(f+gx\right)^{\frac{3}{2}}\log\left(c\left(d-\frac{ef}{g}+\frac{e\left(f+gx\right)}{g}\right)^{n}\right)}{3}\right)\right)}{g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**(1/2)*(a+b*ln(c*(e*x+d)**n)),x)
```

```
[Out] 2*(a*(f + g*x)**(3/2)/3 + b*(-2*e*n*(g*(f + g*x)**(3/2)/(3*e) + sqrt(f + g*
x)*(-d*g**2 + e*f*g)/e**2 + g*(d*g - e*f)**2*atan(sqrt(f + g*x)/sqrt((d*g -
 e*f)/e))/(e**3*sqrt((d*g - e*f)/e)))/(3*g) + (f + g*x)**(3/2)*log(c*(d - e
*f/g + e*(f + g*x)/g)**n)/3))/g
```

3.140 $\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{f+gx}}\,dx$

Optimal. Leaf size=97

$$\frac{2\sqrt{f+gx}\left(a+b\log\left(c(d+ex)^n\right)\right)}{g}+\frac{4bn\sqrt{ef-dg}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{\sqrt{e}g}-\frac{4bn\sqrt{f+gx}}{g}$$

```
[Out] 4*b*n*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))*(-d*g+e*f)^(1/2)/g/e^
(1/2)-4*b*n*(g*x+f)^(1/2)/g+2*(a+b*ln(c*(e*x+d)^n))*(g*x+f)^(1/2)/g
```

Rubi [A] time = 0.06, antiderivative size = 97, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {2395, 50, 63, 208}

$$\frac{2\sqrt{f+gx}\left(a+b\log\left(c(d+ex)^n\right)\right)}{g}+\frac{4bn\sqrt{ef-dg}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{\sqrt{e}g}-\frac{4bn\sqrt{f+gx}}{g}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/Sqrt[f + g*x],x]
```

```
[Out] (-4*b*n*Sqrt[f + g*x])/g + (4*b*Sqrt[e*f - d*g]*n*ArcTanh[(Sqrt[e]*Sqrt[f +
 g*x])/Sqrt[e*f - d*g]])/(Sqrt[e]*g) + (2*Sqrt[f + g*x]*(a + b*Log[c*(d + e
*x)^n]))/g
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rubi steps

$$\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{f+gx}}\,dx = \frac{2\sqrt{f+gx}\left(a+b\log(c(d+ex)^n)\right)}{g} - \frac{(2ben)\int \frac{\sqrt{f+gx}}{d+ex}\,dx}{g}$$

$$= -\frac{4bn\sqrt{f+gx}}{g} + \frac{2\sqrt{f+gx}\left(a+b\log(c(d+ex)^n)\right)}{g} - \frac{(2b(ef-dg)n)\int \frac{1}{(d+ex)\sqrt{f}}}{g}$$

$$= -\frac{4bn\sqrt{f+gx}}{g} + \frac{2\sqrt{f+gx}\left(a+b\log(c(d+ex)^n)\right)}{g} - \frac{(4b(ef-dg)n)\,\mathrm{Subst}\left(\int\right.}{g}$$

$$= -\frac{4bn\sqrt{f+gx}}{g} + \frac{4b\sqrt{ef-dg}\,n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{\sqrt{e}\,g} + \frac{2\sqrt{f+gx}\left(a+b\log(c(d\right.}{g}$$

Mathematica [A] time = 0.08, size = 83, normalized size = 0.86

$$\frac{2\left(\sqrt{f+gx}\left(a+b\log(c(d+ex)^n)-2bn\right)+\frac{2bn\sqrt{ef-dg}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{\sqrt{e}}\right)}{g}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/Sqrt[f + g*x],x]
```

```
[Out] (2*((2*b*Sqrt[e*f - d*g]*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]
)/Sqrt[e] + Sqrt[f + g*x]*(a - 2*b*n + b*Log[c*(d + e*x)^n])))/g
```

fricas [A] time = 0.54, size = 185, normalized size = 1.91

$$\left[\frac{2\left(bn\sqrt{\frac{ef-dg}{e}}\log\left(\frac{egx+2ef-dg+2\sqrt{gx+f}\,e\sqrt{\frac{ef-dg}{e}}}{ex+d}\right)+\left(bn\log(ex+d)-2bn+b\log(c)+a\right)\sqrt{gx+f}\right)}{g}, \frac{2\left(2bn\sqrt{-\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^(1/2),x, algorithm="fricas")
```

```
[Out] [2*(b*n*sqrt((e*f - d*g)/e)*log((e*g*x + 2*e*f - d*g + 2*sqrt(g*x + f)*e*sq
rt((e*f - d*g)/e))/(e*x + d)) + (b*n*log(e*x + d) - 2*b*n + b*log(c) + a)*s
qrt(g*x + f))/g, 2*(2*b*n*sqrt(-(e*f - d*g)/e)*arctan(-sqrt(g*x + f)*e*sqrt
(-(e*f - d*g)/e)/(e*f - d*g)) + (b*n*log(e*x + d) - 2*b*n + b*log(c) + a)*s
qrt(g*x + f))/g]
```

giac [A] time = 0.19, size = 110, normalized size = 1.13

$$\frac{2\left(\left(\left(2\left(\frac{(dg-fe)\arctan\left(\frac{\sqrt{gx+f}\,e}{\sqrt{dge-f e^2}}\right)e^{(-1)}}{\sqrt{dge-fe^2}}-\sqrt{gx+f}\,e^{(-1)}\right)e+\sqrt{gx+f}\log(xe+d)\right)bn+\sqrt{gx+f}\,b\log(c)+\sqrt{gx+f}\,a\right.\right.}{g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^(1/2),x, algorithm="giac")
```

```
[Out] 2*((2*((d*g - f*e)*arctan(sqrt(g*x + f)*e/sqrt(d*g*e - f*e^2))*e^(-1)/sqrt(
d*g*e - f*e^2) - sqrt(g*x + f)*e^(-1))*e + sqrt(g*x + f)*log(x*e + d))*b*n
+ sqrt(g*x + f)*b*log(c) + sqrt(g*x + f)*a)/g
```

maple [A] time = 0.08, size = 148, normalized size = 1.53

$$\frac{4bdn\arctan\left(\frac{\sqrt{gx+f}\,e}{\sqrt{(dg-ef)e}}\right)}{\sqrt{(dg-ef)e}}-\frac{4befn\arctan\left(\frac{\sqrt{gx+f}\,e}{\sqrt{(dg-ef)e}}\right)}{\sqrt{(dg-ef)e}\,g}-\frac{4\sqrt{gx+f}\,bn}{g}+\frac{2\sqrt{gx+f}\,b\ln\left(c\left(\frac{dg-ef+(gx+f)e}{g}\right)^{n}\right)}{g}+\frac{2\sqrt{gx+}}{g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)/(g*x+f)^(1/2),x)
```

```
[Out] 2/g*(g*x+f)^(1/2)*a+2/g*b*(g*x+f)^(1/2)*ln(c*((d*g-e*f+(g*x+f)*e)/g)^n)-4*b
*n*(g*x+f)^(1/2)/g+4*b*n/((d*g-e*f)*e)^(1/2)*arctan((g*x+f)^(1/2)*e/((d*g-e
*f)*e)^(1/2))*d-4/g*b*e*n/((d*g-e*f)*e)^(1/2)*arctan((g*x+f)^(1/2)*e/((d*g-
e*f)*e)^(1/2))*f
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(d*g-e*f>0)', see `assume?` for more
 details)Is d*g-e*f positive or negative?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a + b\,\ln\left(c\,(d + e\,x)^{n}\right)}{\sqrt{f + g\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/(f + g*x)^(1/2),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))/(f + g*x)^(1/2), x)
```

sympy [A] time = 38.95, size = 326, normalized size = 3.36

$$\begin{cases} \frac{-\frac{2af}{\sqrt{f+gx}} - 2a\left(-\frac{f}{\sqrt{f+gx}} - \sqrt{f+gx}\right) - 2bf\left(\frac{2en\operatorname{atan}\left(\frac{1}{\sqrt{\frac{e}{dg-ef}}\sqrt{f+gx}}\right)}{\sqrt{\frac{e}{dg-ef}}\left(dg-ef\right)} + \frac{\log\left(c(d+ex)^{n}\right)}{\sqrt{f+gx}}\right) - 2b\left(-\frac{2en\left(-\frac{g\sqrt{f+gx}}{e} - \frac{g\operatorname{atan}\left(\frac{1}{\sqrt{\frac{e}{dg-ef}}\sqrt{f+gx}}\right)}{e\sqrt{\frac{e}{dg-ef}}}\right)}{g} - f\left(\frac{2en\operatorname{atan}\left(\frac{1}{\sqrt{\frac{e}{dg-ef}}\sqrt{f+gx}}\right)}{\sqrt{\frac{e}{dg-ef}}\left(dg-ef\right)} + \cdots \right.\right.}{g} & \\ \frac{ax+b\left(-en\left(-\frac{d\left(\begin{cases}\frac{x}{d} & \text{for}\ e=0\\ \frac{\log(d+ex)}{e} & \text{otherwise}\end{cases}\right)}{e} + \frac{x}{e}\right) + x\log\left(c(d+ex)^{n}\right)\right)}{\sqrt{f}} & \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(g*x+f)**(1/2),x)
```

```
[Out] Piecewise(((-2*a*f/sqrt(f + g*x) - 2*a*(-f/sqrt(f + g*x) - sqrt(f + g*x)) -
 2*b*f*(2*e*n*atan(1/(sqrt(e/(d*g - e*f))*sqrt(f + g*x)))/(sqrt(e/(d*g - e*
f))*(d*g - e*f)) + log(c*(d + e*x)**n)/sqrt(f + g*x)) - 2*b*(-2*e*n*(-g*sqr
t(f + g*x)/e - g*atan(1/(sqrt(e/(d*g - e*f))*sqrt(f + g*x)))/(e*sqrt(e/(d*g
 - e*f))))/g - f*(2*e*n*atan(1/(sqrt(e/(d*g - e*f))*sqrt(f + g*x)))/(sqrt(e
/(d*g - e*f))*(d*g - e*f)) + log(c*(d - e*f/g + e*(f + g*x)/g)**n)/sqrt(f +
 g*x)) - sqrt(f + g*x)*log(c*(d - e*f/g + e*(f + g*x)/g)**n)))/g, Ne(g, 0))
, ((a*x + b*(-e*n*(-d*Piecewise((x/d, Eq(e, 0)), (log(d + e*x)/e, True))/e
+ x/e) + x*log(c*(d + e*x)**n)))/sqrt(f), True))
```

3.141 $\int \frac{a+b\log(c(d+ex)^n)}{(f+gx)^{3/2}}\,dx$

Optimal. Leaf size=81

$$-\frac{2\left(a+b\log\left(c(d+ex)^n\right)\right)}{g\sqrt{f+gx}}-\frac{4b\sqrt{e}\,n\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{g\sqrt{ef-dg}}$$

```
[Out] -4*b*n*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))*e^(1/2)/g/(-d*g+e*f)
^(1/2)-2*(a+b*ln(c*(e*x+d)^n))/g/(g*x+f)^(1/2)
```

Rubi [A] time = 0.05, antiderivative size = 81, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {2395, 63, 208}

$$-\frac{2\left(a+b\log\left(c(d+ex)^n\right)\right)}{g\sqrt{f+gx}}-\frac{4b\sqrt{e}\,n\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{g\sqrt{ef-dg}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(f + g*x)^(3/2),x]
```

```
[Out] (-4*b*Sqrt[e]*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]])/(g*Sqrt[e
*f - d*g]) - (2*(a + b*Log[c*(d + e*x)^n]))/(g*Sqrt[f + g*x])
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rubi steps

$$\int \frac{a+b\log(c(d+ex)^n)}{(f+gx)^{3/2}}\,dx = -\frac{2\left(a+b\log(c(d+ex)^n)\right)}{g\sqrt{f+gx}} + \frac{(2ben)\int \frac{1}{(d+ex)\sqrt{f+gx}}\,dx}{g}$$

$$= -\frac{2\left(a+b\log(c(d+ex)^n)\right)}{g\sqrt{f+gx}} + \frac{(4ben)\,\mathrm{Subst}\left(\int \frac{1}{d-\frac{ef}{g}+\frac{ex^2}{g}}\,dx, x, \sqrt{f+gx}\right)}{g^2}$$

$$= -\frac{4b\sqrt{e}\,n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{g\sqrt{ef-dg}} - \frac{2\left(a+b\log(c(d+ex)^n)\right)}{g\sqrt{f+gx}}$$

Mathematica [A] time = 0.17, size = 80, normalized size = 0.99

$$\frac{2\left(-\frac{a+b\log(c(d+ex)^n)}{\sqrt{f+gx}} - \frac{2b\sqrt{e}\,n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{\sqrt{ef-dg}}\right)}{g}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(f + g*x)^(3/2),x]
```

```
[Out] (2*((-2*b*Sqrt[e]*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]])/Sqrt[
e*f - d*g] - (a + b*Log[c*(d + e*x)^n])/Sqrt[f + g*x]))/g
```

fricas [A] time = 0.55, size = 224, normalized size = 2.77

$$\left[\frac{2\left(\left(bgnx+bfn\right)\sqrt{\frac{e}{ef-dg}}\log\left(\frac{egx+2\,ef-dg-2\left(ef-dg\right)\sqrt{gx+f}\sqrt{\frac{e}{ef-dg}}}{ex+d}\right)-\left(bn\log\left(ex+d\right)+b\log(c)+a\right)\sqrt{gx+f}\right)}{g^2x+fg}, -\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^(3/2),x, algorithm="fricas")
```

```
[Out] [2*((b*g*n*x + b*f*n)*sqrt(e/(e*f - d*g))*log((e*g*x + 2*e*f - d*g - 2*(e*f
 - d*g)*sqrt(g*x + f)*sqrt(e/(e*f - d*g)))/(e*x + d)) - (b*n*log(e*x + d) +
 b*log(c) + a)*sqrt(g*x + f))/(g^2*x + f*g), -2*(2*(b*g*n*x + b*f*n)*sqrt(-
e/(e*f - d*g))*arctan(-(e*f - d*g)*sqrt(g*x + f)*sqrt(-e/(e*f - d*g))/(e*g*
x + e*f)) + (b*n*log(e*x + d) + b*log(c) + a)*sqrt(g*x + f))/(g^2*x + f*g)]
```

giac [A] time = 0.22, size = 92, normalized size = 1.14

$$\frac{4\,bn\arctan\left(\frac{\sqrt{gx+f}\,e}{\sqrt{dge-fe^2}}\right)e}{\sqrt{dge-fe^2}\,g} - \frac{2\left(bn\log\left(dg+\left(gx+f\right)e-fe\right)-bn\log(g)+b\log(c)+a\right)}{\sqrt{gx+f}\,g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^(3/2),x, algorithm="giac")
```

```
[Out] 4*b*n*arctan(sqrt(g*x + f)*e/sqrt(d*g*e - f*e^2))*e/(sqrt(d*g*e - f*e^2)*g)
 - 2*(b*n*log(d*g + (g*x + f)*e - f*e) - b*n*log(g) + b*log(c) + a)/(sqrt(g
*x + f)*g)
```

maple [F] time = 0.47, size = 0, normalized size = 0.00

$$\int \frac{b\ln\left(c\,(ex+d)^{n}\right)+a}{\left(gx+f\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)/(g*x+f)^(3/2),x)
```

```
[Out] int((b*ln(c*(e*x+d)^n)+a)/(g*x+f)^(3/2),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(d*g-e*f>0)', see `assume?` for more
 details)Is d*g-e*f positive or negative?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}{{\left(f+g\,x\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/(f + g*x)^(3/2),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))/(f + g*x)^(3/2), x)
```

sympy [A] time = 15.98, size = 85, normalized size = 1.05

$$\frac{-\frac{2a}{\sqrt{f+gx}}+2b\left(\frac{2n\,\mathrm{atan}\left(\frac{\sqrt{f+gx}}{\sqrt{\frac{g\left(d-\frac{ef}{g}\right)}{e}}}\right)}{\sqrt{\frac{g\left(d-\frac{ef}{g}\right)}{e}}}-\frac{\log\left(c\left(d-\frac{ef}{g}+\frac{e(f+gx)}{g}\right)^{n}\right)}{\sqrt{f+gx}}\right)}{g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(g*x+f)**(3/2),x)
```

```
[Out] (-2*a/sqrt(f + g*x) + 2*b*(2*n*atan(sqrt(f + g*x)/sqrt(g*(d - e*f/g)/e))/sq
rt(g*(d - e*f/g)/e) - log(c*(d - e*f/g + e*(f + g*x)/g)**n)/sqrt(f + g*x)))
/g
```

3.142 $\int \frac{a+b\log(c(d+ex)^n)}{(f+gx)^{5/2}}\,dx$

Optimal. Leaf size=114

$$-\frac{2\left(a+b\log\left(c(d+ex)^n\right)\right)}{3g(f+gx)^{3/2}}-\frac{4be^{3/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{3g(ef-dg)^{3/2}}+\frac{4ben}{3g\sqrt{f+gx}\,(ef-dg)}$$

```
[Out] -4/3*b*e^(3/2)*n*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))/g/(-d*g+e*
f)^(3/2)-2/3*(a+b*ln(c*(e*x+d)^n))/g/(g*x+f)^(3/2)+4/3*b*e*n/g/(-d*g+e*f)/(
g*x+f)^(1/2)
```

Rubi [A] time = 0.08, antiderivative size = 114, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {2395, 51, 63, 208}

$$-\frac{2\left(a+b\log\left(c(d+ex)^n\right)\right)}{3g(f+gx)^{3/2}}-\frac{4be^{3/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{3g(ef-dg)^{3/2}}+\frac{4ben}{3g\sqrt{f+gx}\,(ef-dg)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(f + g*x)^(5/2),x]
```

```
[Out] (4*b*e*n)/(3*g*(e*f - d*g)*Sqrt[f + g*x]) - (4*b*e^(3/2)*n*ArcTanh[(Sqrt[e]
*Sqrt[f + g*x])/Sqrt[e*f - d*g]])/(3*g*(e*f - d*g)^(3/2)) - (2*(a + b*Log[c
*(d + e*x)^n]))/(3*g*(f + g*x)^(3/2))
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rubi steps

$$\int \frac{a+b\log(c(d+ex)^n)}{(f+gx)^{5/2}}\,dx = -\frac{2\left(a+b\log(c(d+ex)^n)\right)}{3g(f+gx)^{3/2}} + \frac{(2ben)\int \frac{1}{(d+ex)(f+gx)^{3/2}}\,dx}{3g}$$
$$= \frac{4ben}{3g(ef-dg)\sqrt{f+gx}} - \frac{2\left(a+b\log(c(d+ex)^n)\right)}{3g(f+gx)^{3/2}} + \frac{\left(2be^2n\right)\int \frac{1}{(d+ex)\sqrt{f+gx}}\,dx}{3g(ef-dg)}$$
$$= \frac{4ben}{3g(ef-dg)\sqrt{f+gx}} - \frac{2\left(a+b\log(c(d+ex)^n)\right)}{3g(f+gx)^{3/2}} + \frac{\left(4be^2n\right)\text{Subst}\left(\int \frac{1}{d-\frac{ef}{g}+\frac{ex^2}{g}}\,dx,\right.}{3g^2(ef-dg)}$$
$$= \frac{4ben}{3g(ef-dg)\sqrt{f+gx}} - \frac{4be^{3/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{3g(ef-dg)^{3/2}} - \frac{2\left(a+b\log(c(d+ex)^n)\right)}{3g(f+gx)^{3/2}}$$

Mathematica [C] time = 0.04, size = 85, normalized size = 0.75

$$-\frac{2\left(a+b\log(c(d+ex)^n)\right)}{3g(f+gx)^{3/2}} - \frac{4ben\,{}_2F_1\left(-\frac{1}{2},1;\frac{1}{2};\frac{e(f+gx)}{ef-dg}\right)}{3g\sqrt{f+gx}\,(dg-ef)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(f + g*x)^(5/2),x]
```

```
[Out] (-4*b*e*n*Hypergeometric2F1[-1/2, 1, 1/2, (e*(f + g*x))/(e*f - d*g)])/(3*g*
(-(e*f) + d*g)*Sqrt[f + g*x]) - (2*(a + b*Log[c*(d + e*x)^n]))/(3*g*(f + g*
x)^(3/2))
```

fricas [B] time = 0.53, size = 425, normalized size = 3.73

$$\left[-\frac{2\left(\left(beg^2nx^2+2\,befgnx+bef^2n\right)\sqrt{\frac{e}{ef-dg}}\,\log\left(\frac{egx+2\,ef-dg+2\left(ef-dg\right)\sqrt{gx+f}\,\sqrt{\frac{e}{ef-dg}}}{ex+d}\right)-\left(2\,begnx+2\,befn-aef+ad\right.}{3\left(ef^3g-df^2g^2+\left(efg^3-dg^4\right)x^2+2\left(ef^2g^2-dfg^3\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^(5/2),x, algorithm="fricas")
```

```
[Out] [-2/3*((b*e*g^2*n*x^2 + 2*b*e*f*g*n*x + b*e*f^2*n)*sqrt(e/(e*f - d*g))*log(
(e*g*x + 2*e*f - d*g + 2*(e*f - d*g)*sqrt(g*x + f)*sqrt(e/(e*f - d*g)))/(e*
x + d)) - (2*b*e*g*n*x + 2*b*e*f*n - a*e*f + a*d*g - (b*e*f - b*d*g)*n*log(
e*x + d) - (b*e*f - b*d*g)*log(c))*sqrt(g*x + f))/(e*f^3*g - d*f^2*g^2 + (e
*f*g^3 - d*g^4)*x^2 + 2*(e*f^2*g^2 - d*f*g^3)*x), -2/3*(2*(b*e*g^2*n*x^2 +
2*b*e*f*g*n*x + b*e*f^2*n)*sqrt(-e/(e*f - d*g))*arctan(-(e*f - d*g)*sqrt(g*
x + f)*sqrt(-e/(e*f - d*g))/(e*g*x + e*f)) - (2*b*e*g*n*x + 2*b*e*f*n - a*e
*f + a*d*g - (b*e*f - b*d*g)*n*log(e*x + d) - (b*e*f - b*d*g)*log(c))*sqrt(
g*x + f))/(e*f^3*g - d*f^2*g^2 + (e*f*g^3 - d*g^4)*x^2 + 2*(e*f^2*g^2 - d*f
*g^3)*x)]
```

giac [A] time = 0.26, size = 188, normalized size = 1.65

$$-\frac{4\,bn\arctan\left(\frac{\sqrt{gx+f}\,e}{\sqrt{dge-fe^2}}\right)e^2}{3\left(dg^2-fge\right)\sqrt{dge-fe^2}} - \frac{2\left(bdgn\log\left(dg+\left(gx+f\right)e-fe\right)-bfne\log\left(dg+\left(gx+f\right)e-fe\right)-bdgn\log(g)+\right.}{3\left(\left(gx+f\right)^{\frac{3}{2}}dg^2-\left(gx+\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^(5/2),x, algorithm="giac")
```

```
[Out] -4/3*b*n*arctan(sqrt(g*x + f)*e/sqrt(d*g*e - f*e^2))*e^2/((d*g^2 - f*g*e)*s
qrt(d*g*e - f*e^2)) - 2/3*(b*d*g*n*log(d*g + (g*x + f)*e - f*e) - b*f*n*e*l
og(d*g + (g*x + f)*e - f*e) - b*d*g*n*log(g) + b*f*n*e*log(g) + 2*(g*x + f)
*b*n*e + b*d*g*log(c) - b*f*e*log(c) + a*d*g - a*f*e)/((g*x + f)^(3/2)*d*g^
2 - (g*x + f)^(3/2)*f*g*e)
```

maple [F] time = 0.49, size = 0, normalized size = 0.00

$$\int \frac{b\ln\left(c\left(ex+d\right)^{n}\right)+a}{\left(gx+f\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)/(g*x+f)^(5/2),x)
```

```
[Out] int((b*ln(c*(e*x+d)^n)+a)/(g*x+f)^(5/2),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(d*g-e*f>0)', see `assume?` for more
 details)Is d*g-e*f positive or negative?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}{{\left(f+g\,x\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/(f + g*x)^(5/2),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))/(f + g*x)^(5/2), x)
```

sympy [A] time = 76.04, size = 117, normalized size = 1.03

$$\frac{-\frac{2a}{3\left(f+gx\right)^{\frac{3}{2}}}+2b\left(\frac{2en\left(-\frac{g}{\sqrt{f+gx}\left(dg-ef\right)}-\frac{g\operatorname{atan}\left(\frac{\sqrt{f+gx}}{\sqrt{\frac{dg-ef}{e}}}\right)}{\sqrt{\frac{dg-ef}{e}}\left(dg-ef\right)}\right)}{3g}-\frac{\log\left(c\left(d-\frac{ef}{g}+\frac{e\left(f+gx\right)}{g}\right)^{n}\right)}{3\left(f+gx\right)^{\frac{3}{2}}}\right)}{g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(g*x+f)**(5/2),x)
```

```
[Out] (-2*a/(3*(f + g*x)**(3/2)) + 2*b*(2*e*n*(-g/(sqrt(f + g*x)*(d*g - e*f)) - g
*atan(sqrt(f + g*x)/sqrt((d*g - e*f)/e))/(sqrt((d*g - e*f)/e)*(d*g - e*f)))
/(3*g) - log(c*(d - e*f/g + e*(f + g*x)/g)**n)/(3*(f + g*x)**(3/2))))/g
```

3.143 $\int \frac{a+b\log(c(d+ex)^n)}{(f+gx)^{7/2}}\,dx$

Optimal. Leaf size=145

$$-\frac{2\left(a+b\log\left(c(d+ex)^n\right)\right)}{5g(f+gx)^{5/2}}-\frac{4be^{5/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{5g(ef-dg)^{5/2}}+\frac{4be^2n}{5g\sqrt{f+gx}\,(ef-dg)^2}+\frac{4ben}{15g(f+gx)^{3/2}(ef-dg)}$$

```
[Out] 4/15*b*e*n/g/(-d*g+e*f)/(g*x+f)^(3/2)-4/5*b*e^(5/2)*n*arctanh(e^(1/2)*(g*x+
f)^(1/2)/(-d*g+e*f)^(1/2))/g/(-d*g+e*f)^(5/2)-2/5*(a+b*ln(c*(e*x+d)^n))/g/(
g*x+f)^(5/2)+4/5*b*e^2*n/g/(-d*g+e*f)^2/(g*x+f)^(1/2)
```

Rubi [A] time = 0.11, antiderivative size = 145, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {2395, 51, 63, 208}

$$-\frac{2\left(a+b\log\left(c(d+ex)^n\right)\right)}{5g(f+gx)^{5/2}}+\frac{4be^2n}{5g\sqrt{f+gx}\,(ef-dg)^2}-\frac{4be^{5/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{5g(ef-dg)^{5/2}}+\frac{4ben}{15g(f+gx)^{3/2}(ef-dg)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(f + g*x)^(7/2),x]
```

```
[Out] (4*b*e*n)/(15*g*(e*f - d*g)*(f + g*x)^(3/2)) + (4*b*e^2*n)/(5*g*(e*f - d*g)
^2*Sqrt[f + g*x]) - (4*b*e^(5/2)*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f
 - d*g]])/(5*g*(e*f - d*g)^(5/2)) - (2*(a + b*Log[c*(d + e*x)^n]))/(5*g*(f
+ g*x)^(5/2))
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rubi steps

$$\int \frac{a+b\log(c(d+ex)^n)}{(f+gx)^{7/2}}\,dx = -\frac{2\left(a+b\log(c(d+ex)^n)\right)}{5g(f+gx)^{5/2}} + \frac{(2ben)\int \frac{1}{(d+ex)(f+gx)^{5/2}}\,dx}{5g}$$
$$= \frac{4ben}{15g(ef-dg)(f+gx)^{3/2}} - \frac{2\left(a+b\log(c(d+ex)^n)\right)}{5g(f+gx)^{5/2}} + \frac{\left(2be^2n\right)\int \frac{1}{(d+ex)(f+gx)^{3/2}}\,dx}{5g(ef-dg)}$$
$$= \frac{4ben}{15g(ef-dg)(f+gx)^{3/2}} + \frac{4be^2n}{5g(ef-dg)^2\sqrt{f+gx}} - \frac{2\left(a+b\log(c(d+ex)^n)\right)}{5g(f+gx)^{5/2}} + \frac{(2}{}$$
$$= \frac{4ben}{15g(ef-dg)(f+gx)^{3/2}} + \frac{4be^2n}{5g(ef-dg)^2\sqrt{f+gx}} - \frac{2\left(a+b\log(c(d+ex)^n)\right)}{5g(f+gx)^{5/2}} + \frac{(4}{}$$
$$= \frac{4ben}{15g(ef-dg)(f+gx)^{3/2}} + \frac{4be^2n}{5g(ef-dg)^2\sqrt{f+gx}} - \frac{4be^{5/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{5g(ef-dg)^{5/2}} - \frac{2}{}$$

Mathematica [C] time = 0.05, size = 78, normalized size = 0.54

$$\frac{2\left(\frac{2ben(f+gx)\,{}_2F_1\left(-\frac{3}{2},1;-\frac{1}{2};\frac{e(f+gx)}{ef-dg}\right)}{ef-dg} - 3\left(a+b\log(c(d+ex)^n)\right)\right)}{15g(f+gx)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(f + g*x)^(7/2),x]
```

```
[Out] (2*((2*b*e*n*(f + g*x)*Hypergeometric2F1[-3/2, 1, -1/2, (e*(f + g*x))/(e*f
- d*g)])/(e*f - d*g) - 3*(a + b*Log[c*(d + e*x)^n])))/(15*g*(f + g*x)^(5/2)
)
```

fricas [B] time = 0.58, size = 789, normalized size = 5.44

$$\left[\frac{2\left(3\left(be^2g^3nx^3+3\,be^2fg^2nx^2+3\,be^2f^2gnx+be^2f^3n\right)\sqrt{\frac{e}{ef-dg}}\log\left(\frac{egx+2\,ef-dg-2\left(ef-dg\right)\sqrt{gx+f}\sqrt{\frac{e}{ef-dg}}}{ex+d}\right)+\left(6\,be^2g^2n\right.\right.}{15\left(e^2f^5g-2\,def^4g^2+d^2f^3g^3+\left(e^2\right.\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^(7/2),x, algorithm="fricas")
```

```
[Out] [2/15*(3*(b*e^2*g^3*n*x^3 + 3*b*e^2*f*g^2*n*x^2 + 3*b*e^2*f^2*g*n*x + b*e^2
*f^3*n)*sqrt(e/(e*f - d*g))*log((e*g*x + 2*e*f - d*g - 2*(e*f - d*g)*sqrt(g
*x + f)*sqrt(e/(e*f - d*g)))/(e*x + d)) + (6*b*e^2*g^2*n*x^2 - 3*a*e^2*f^2
+ 6*a*d*e*f*g - 3*a*d^2*g^2 + 2*(7*b*e^2*f*g - b*d*e*g^2)*n*x - 3*(b*e^2*f^
2 - 2*b*d*e*f*g + b*d^2*g^2)*n*log(e*x + d) + 2*(4*b*e^2*f^2 - b*d*e*f*g)*n
 - 3*(b*e^2*f^2 - 2*b*d*e*f*g + b*d^2*g^2)*log(c))*sqrt(g*x + f))/(e^2*f^5*
g - 2*d*e*f^4*g^2 + d^2*f^3*g^3 + (e^2*f^2*g^4 - 2*d*e*f*g^5 + d^2*g^6)*x^3
 + 3*(e^2*f^3*g^3 - 2*d*e*f^2*g^4 + d^2*f*g^5)*x^2 + 3*(e^2*f^4*g^2 - 2*d*e
*f^3*g^3 + d^2*f^2*g^4)*x), -2/15*(6*(b*e^2*g^3*n*x^3 + 3*b*e^2*f*g^2*n*x^2
 + 3*b*e^2*f^2*g*n*x + b*e^2*f^3*n)*sqrt(-e/(e*f - d*g))*arctan(-(e*f - d*g
)*sqrt(g*x + f)*sqrt(-e/(e*f - d*g))/(e*g*x + e*f)) - (6*b*e^2*g^2*n*x^2 -
3*a*e^2*f^2 + 6*a*d*e*f*g - 3*a*d^2*g^2 + 2*(7*b*e^2*f*g - b*d*e*g^2)*n*x -
```

```
3*(b*e^2*f^2 - 2*b*d*e*f*g + b*d^2*g^2)*n*log(e*x + d) + 2*(4*b*e^2*f^2 -
b*d*e*f*g)*n - 3*(b*e^2*f^2 - 2*b*d*e*f*g + b*d^2*g^2)*log(c))*sqrt(g*x + f
))/(e^2*f^5*g - 2*d*e*f^4*g^2 + d^2*f^3*g^3 + (e^2*f^2*g^4 - 2*d*e*f*g^5 +
d^2*g^6)*x^3 + 3*(e^2*f^3*g^3 - 2*d*e*f^2*g^4 + d^2*f*g^5)*x^2 + 3*(e^2*f^4
*g^2 - 2*d*e*f^3*g^3 + d^2*f^2*g^4)*x)]
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b\log\left((ex+d)^n c\right)+a}{(gx+f)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^(7/2),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)/(g*x + f)^(7/2), x)
```

maple [F] time = 0.52, size = 0, normalized size = 0.00

$$\int \frac{b\ln\left(c\,(ex+d)^n\right)+a}{(gx+f)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)/(g*x+f)^(7/2),x)
```

```
[Out] int((b*ln(c*(e*x+d)^n)+a)/(g*x+f)^(7/2),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^(7/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(d*g-e*f>0)', see `assume?` for more
 details)Is d*g-e*f positive or negative?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a+b\,\ln\left(c\,{(d+e\,x)}^n\right)}{{\left(f+g\,x\right)}^{7/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/(f + g*x)^(7/2),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))/(f + g*x)^(7/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(g*x+f)**(7/2),x)
```

```
[Out] Timed out
```

3.144 $\int \frac{a+b\log(c(d+ex)^n)}{(f+gx)^{9/2}}\,dx$

Optimal. Leaf size=176

$$-\frac{2\left(a+b\log\left(c(d+ex)^n\right)\right)}{7g(f+gx)^{7/2}}-\frac{4be^{7/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{7g(ef-dg)^{7/2}}+\frac{4be^3n}{7g\sqrt{f+gx}\,(ef-dg)^3}+\frac{4be^2n}{21g(f+gx)^{3/2}(ef-dg)^2}+\frac{}{35g(}$$

```
[Out] 4/35*b*e*n/g/(-d*g+e*f)/(g*x+f)^(5/2)+4/21*b*e^2*n/g/(-d*g+e*f)^2/(g*x+f)^(
3/2)-4/7*b*e^(7/2)*n*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))/g/(-d*
g+e*f)^(7/2)-2/7*(a+b*ln(c*(e*x+d)^n))/g/(g*x+f)^(7/2)+4/7*b*e^3*n/g/(-d*g+
e*f)^3/(g*x+f)^(1/2)
```

Rubi [A] time = 0.14, antiderivative size = 176, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {2395, 51, 63, 208}

$$-\frac{2\left(a+b\log\left(c(d+ex)^n\right)\right)}{7g(f+gx)^{7/2}}+\frac{4be^3n}{7g\sqrt{f+gx}\,(ef-dg)^3}+\frac{4be^2n}{21g(f+gx)^{3/2}(ef-dg)^2}-\frac{4be^{7/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{7g(ef-dg)^{7/2}}+\frac{}{35g(}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(f + g*x)^(9/2),x]
```

```
[Out] (4*b*e*n)/(35*g*(e*f - d*g)*(f + g*x)^(5/2)) + (4*b*e^2*n)/(21*g*(e*f - d*g
)^2*(f + g*x)^(3/2)) + (4*b*e^3*n)/(7*g*(e*f - d*g)^3*Sqrt[f + g*x]) - (4*b
*e^(7/2)*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]])/(7*g*(e*f - d*
g)^(7/2)) - (2*(a + b*Log[c*(d + e*x)^n]))/(7*g*(f + g*x)^(7/2))
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rubi steps

$$\int \frac{a+b\log\left(c(d+ex)^n\right)}{(f+gx)^{9/2}}\,dx = -\frac{2\left(a+b\log\left(c(d+ex)^n\right)\right)}{7g(f+gx)^{7/2}} + \frac{(2ben)\int \frac{1}{(d+ex)(f+gx)^{7/2}}\,dx}{7g}$$

$$= \frac{4ben}{35g(ef-dg)(f+gx)^{5/2}} - \frac{2\left(a+b\log\left(c(d+ex)^n\right)\right)}{7g(f+gx)^{7/2}} + \frac{\left(2be^2n\right)\int \frac{1}{(d+ex)(f+gx)^{5/2}}\,c}{7g(ef-dg)}$$

$$= \frac{4ben}{35g(ef-dg)(f+gx)^{5/2}} + \frac{4be^2n}{21g(ef-dg)^2(f+gx)^{3/2}} - \frac{2\left(a+b\log\left(c(d+ex)^n\right)\right)}{7g(f+gx)^{7/2}}$$

$$= \frac{4ben}{35g(ef-dg)(f+gx)^{5/2}} + \frac{4be^2n}{21g(ef-dg)^2(f+gx)^{3/2}} + \frac{4be^3n}{7g(ef-dg)^3\sqrt{f+gx}} -$$

$$= \frac{4ben}{35g(ef-dg)(f+gx)^{5/2}} + \frac{4be^2n}{21g(ef-dg)^2(f+gx)^{3/2}} + \frac{4be^3n}{7g(ef-dg)^3\sqrt{f+gx}} -$$

$$= \frac{4ben}{35g(ef-dg)(f+gx)^{5/2}} + \frac{4be^2n}{21g(ef-dg)^2(f+gx)^{3/2}} + \frac{4be^3n}{7g(ef-dg)^3\sqrt{f+gx}} -$$

Mathematica [C] time = 0.05, size = 78, normalized size = 0.44

$$\frac{2\left(\frac{2ben(f+gx)\,{}_2F_1\left(-\frac{5}{2},1;-\frac{3}{2};\frac{e(f+gx)}{ef-dg}\right)}{ef-dg} - 5\left(a+b\log\left(c(d+ex)^n\right)\right)\right)}{35g(f+gx)^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(f + g*x)^(9/2),x]
```

```
[Out] (2*((2*b*e*n*(f + g*x)*Hypergeometric2F1[-5/2, 1, -3/2, (e*(f + g*x))/(e*f
- d*g)])/(e*f - d*g) - 5*(a + b*Log[c*(d + e*x)^n])))/(35*g*(f + g*x)^(7/2)
)
```

fricas [B] time = 0.60, size = 1252, normalized size = 7.11

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^(9/2),x, algorithm="fricas")
```

```
[Out] [-2/105*(15*(b*e^3*g^4*n*x^4 + 4*b*e^3*f*g^3*n*x^3 + 6*b*e^3*f^2*g^2*n*x^2
+ 4*b*e^3*f^3*g*n*x + b*e^3*f^4*n)*sqrt(e/(e*f - d*g))*log((e*g*x + 2*e*f -
 d*g + 2*(e*f - d*g)*sqrt(g*x + f)*sqrt(e/(e*f - d*g)))/(e*x + d)) - (30*b*
e^3*g^3*n*x^3 - 15*a*e^3*f^3 + 45*a*d*e^2*f^2*g - 45*a*d^2*e*f*g^2 + 15*a*d
^3*g^3 + 10*(10*b*e^3*f*g^2 - b*d*e^2*g^3)*n*x^2 + 2*(58*b*e^3*f^2*g - 16*b
*d*e^2*f*g^2 + 3*b*d^2*e*g^3)*n*x - 15*(b*e^3*f^3 - 3*b*d*e^2*f^2*g + 3*b*d
^2*e*f*g^2 - b*d^3*g^3)*n*log(e*x + d) + 2*(23*b*e^3*f^3 - 11*b*d*e^2*f^2*g
 + 3*b*d^2*e*f*g^2)*n - 15*(b*e^3*f^3 - 3*b*d*e^2*f^2*g + 3*b*d^2*e*f*g^2 -
 b*d^3*g^3)*log(c))*sqrt(g*x + f))/(e^3*f^7*g - 3*d*e^2*f^6*g^2 + 3*d^2*e*f
^5*g^3 - d^3*f^4*g^4 + (e^3*f^3*g^5 - 3*d*e^2*f^2*g^6 + 3*d^2*e*f*g^7 - d^3
*g^8)*x^4 + 4*(e^3*f^4*g^4 - 3*d*e^2*f^3*g^5 + 3*d^2*e*f^2*g^6 - d^3*f*g^7)
*x^3 + 6*(e^3*f^5*g^3 - 3*d*e^2*f^4*g^4 + 3*d^2*e*f^3*g^5 - d^3*f^2*g^6)*x^
2 + 4*(e^3*f^6*g^2 - 3*d*e^2*f^5*g^3 + 3*d^2*e*f^4*g^4 - d^3*f^3*g^5)*x), -
```

```
2/105*(30*(b*e^3*g^4*n*x^4 + 4*b*e^3*f*g^3*n*x^3 + 6*b*e^3*f^2*g^2*n*x^2 +
4*b*e^3*f^3*g*n*x + b*e^3*f^4*n)*sqrt(-e/(e*f - d*g))*arctan(-(e*f - d*g)*s
qrt(g*x + f)*sqrt(-e/(e*f - d*g))/(e*g*x + e*f)) - (30*b*e^3*g^3*n*x^3 - 15
*a*e^3*f^3 + 45*a*d*e^2*f^2*g - 45*a*d^2*e*f*g^2 + 15*a*d^3*g^3 + 10*(10*b*
e^3*f*g^2 - b*d*e^2*g^3)*n*x^2 + 2*(58*b*e^3*f^2*g - 16*b*d*e^2*f*g^2 + 3*b
*d^2*e*g^3)*n*x - 15*(b*e^3*f^3 - 3*b*d*e^2*f^2*g + 3*b*d^2*e*f*g^2 - b*d^3
*g^3)*n*log(e*x + d) + 2*(23*b*e^3*f^3 - 11*b*d*e^2*f^2*g + 3*b*d^2*e*f*g^2
)*n - 15*(b*e^3*f^3 - 3*b*d*e^2*f^2*g + 3*b*d^2*e*f*g^2 - b*d^3*g^3)*log(c)
)*sqrt(g*x + f))/(e^3*f^7*g - 3*d*e^2*f^6*g^2 + 3*d^2*e*f^5*g^3 - d^3*f^4*g
^4 + (e^3*f^3*g^5 - 3*d*e^2*f^2*g^6 + 3*d^2*e*f*g^7 - d^3*g^8)*x^4 + 4*(e^3
*f^4*g^4 - 3*d*e^2*f^3*g^5 + 3*d^2*e*f^2*g^6 - d^3*f*g^7)*x^3 + 6*(e^3*f^5*
g^3 - 3*d*e^2*f^4*g^4 + 3*d^2*e*f^3*g^5 - d^3*f^2*g^6)*x^2 + 4*(e^3*f^6*g^2
 - 3*d*e^2*f^5*g^3 + 3*d^2*e*f^4*g^4 - d^3*f^3*g^5)*x)]
```

giac [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b \log\left((ex+d)^n c\right) + a}{(gx+f)^{\frac{9}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^(9/2),x, algorithm="giac")
[Out] integrate((b*log((e*x + d)^n*c) + a)/(g*x + f)^(9/2), x)
```

maple [**F**] time = 0.47, size = 0, normalized size = 0.00

$$\int \frac{b \ln\left(c\,(ex+d)^n\right) + a}{(gx+f)^{\frac{9}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)/(g*x+f)^(9/2),x)
[Out] int((b*ln(c*(e*x+d)^n)+a)/(g*x+f)^(9/2),x)
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^(9/2),x, algorithm="maxima")
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(d*g-e*f>0)', see `assume?` for more
 details)Is d*g-e*f positive or negative?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a + b\,\ln\left(c\,{(d+e\,x)}^n\right)}{{(f+g\,x)}^{9/2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/(f + g*x)^(9/2),x)
[Out] int((a + b*log(c*(d + e*x)^n))/(f + g*x)^(9/2), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(g*x+f)**(9/2),x)
[Out] Timed out
```

3.145 $\int (f+gx)^{3/2}\left(a+b\log\left(c(d+ex)^n\right)\right)^2\,dx$

Optimal. Leaf size=590

$$\frac{8bn(ef-dg)^{5/2}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{5e^{5/2}g}-\frac{8bn\sqrt{f+gx}\,(ef-dg)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{5e^2g}-\frac{8bn\cdots}{}$$

```
[Out] 128/225*b^2*(-d*g+e*f)*n^2*(g*x+f)^(3/2)/e/g+16/125*b^2*n^2*(g*x+f)^(5/2)/g
-368/75*b^2*(-d*g+e*f)^(5/2)*n^2*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(
1/2))/e^(5/2)/g-8/5*b^2*(-d*g+e*f)^(5/2)*n^2*arctanh(e^(1/2)*(g*x+f)^(1/2)/
(-d*g+e*f)^(1/2))^2/e^(5/2)/g-8/15*b*(-d*g+e*f)*n*(g*x+f)^(3/2)*(a+b*ln(c*(
e*x+d)^n))/e/g-8/25*b*n*(g*x+f)^(5/2)*(a+b*ln(c*(e*x+d)^n))/g+8/5*b*(-d*g+e
*f)^(5/2)*n*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))*(a+b*ln(c*(e*x+
d)^n))/e^(5/2)/g+2/5*(g*x+f)^(5/2)*(a+b*ln(c*(e*x+d)^n))^2/g+16/5*b^2*(-d*g
+e*f)^(5/2)*n^2*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))*ln(2/(1-e^(
1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2)))/e^(5/2)/g+8/5*b^2*(-d*g+e*f)^(5/2)*n^
2*polylog(2,1-2/(1-e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2)))/e^(5/2)/g+368/7
5*b^2*(-d*g+e*f)^2*n^2*(g*x+f)^(1/2)/e^2/g-8/5*b*(-d*g+e*f)^2*n*(a+b*ln(c*(
e*x+d)^n))*(g*x+f)^(1/2)/e^2/g
```

Rubi [A] time = 2.17, antiderivative size = 590, normalized size of antiderivative = 1.00, number of steps used = 28, number of rules used = 15, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.577, Rules used = {2398, 2411, 2346, 63, 208, 2348, 12, 1587, 6741, 5984, 5918, 2402, 2315, 2319, 50}

$$\frac{8b^2n^2(ef-dg)^{5/2}\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)}{5e^{5/2}g}-\frac{8bn\sqrt{f+gx}\,(ef-dg)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{5e^2g}+\frac{8bn(ef-dg)^{5/2}\,\mathrm{t}\cdots}{}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^(3/2)*(a + b*Log[c*(d + e*x)^n])^2,x]
```

```
[Out] (368*b^2*(e*f - d*g)^2*n^2*Sqrt[f + g*x])/(75*e^2*g) + (128*b^2*(e*f - d*g)
*n^2*(f + g*x)^(3/2))/(225*e*g) + (16*b^2*n^2*(f + g*x)^(5/2))/(125*g) - (3
68*b^2*(e*f - d*g)^(5/2)*n^2*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g
]])/(75*e^(5/2)*g) - (8*b^2*(e*f - d*g)^(5/2)*n^2*ArcTanh[(Sqrt[e]*Sqrt[f +
 g*x])/Sqrt[e*f - d*g]]^2)/(5*e^(5/2)*g) - (8*b*(e*f - d*g)^2*n*Sqrt[f + g*
x]*(a + b*Log[c*(d + e*x)^n]))/(5*e^2*g) - (8*b*(e*f - d*g)*n*(f + g*x)^(3/
2)*(a + b*Log[c*(d + e*x)^n]))/(15*e*g) - (8*b*n*(f + g*x)^(5/2)*(a + b*Log
[c*(d + e*x)^n]))/(25*g) + (8*b*(e*f - d*g)^(5/2)*n*ArcTanh[(Sqrt[e]*Sqrt[f
 + g*x])/Sqrt[e*f - d*g]]*(a + b*Log[c*(d + e*x)^n]))/(5*e^(5/2)*g) + (2*(f
 + g*x)^(5/2)*(a + b*Log[c*(d + e*x)^n])^2)/(5*g) + (16*b^2*(e*f - d*g)^(5/
2)*n^2*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]*Log[2/(1 - (Sqrt[e]
*Sqrt[f + g*x])/Sqrt[e*f - d*g])])/(5*e^(5/2)*g) + (8*b^2*(e*f - d*g)^(5/2)
*n^2*PolyLog[2, 1 - 2/(1 - (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])])/(5*e^
(5/2)*g)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
```

```
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 1587

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[(Coeff[Pp, x, p]*Log[RemoveContent[Qq, x]])/(q*Coeff[Qq, x, q]), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]*D[Qq, x])/(q*Coeff[Qq, x,
 q])]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2319

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/(e*(q + 1)), x]
- Dist[(b*n*p)/(e*(q + 1)), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 2346

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.))
/(x_), x_Symbol] :> Dist[d, Int[((d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p)/x,
 x], x] + Dist[e, Int[(d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p, x], x] /; Fre
eQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0] && GtQ[q, 0] && IntegerQ[2*q]
```

Rule 2348

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
```

```
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 5918

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> -Simp[((a + b*ArcTanh[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] + Dist[(b*c*
p)/e, Int[((a + b*ArcTanh[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 - c^2*x^2)
, x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2, 0
]
```

Rule 5984

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rubi steps

$$\int (f+gx)^{3/2}\left(a+b\log\left(c(d+ex)^n\right)\right)^2 dx = \frac{2(f+gx)^{5/2}\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{5g} - \frac{(4ben)\int \frac{(f+gx)^{5/2}\left(a+b\log(c(d\ldots\right.}{d+ex}}{5g}$$

$$= \frac{2(f+gx)^{5/2}\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{5g} - \frac{(4bn)\,\mathrm{Subst}\left(\int \frac{\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^{5}\ldots}{\ldots}\right.}{5\ldots}$$

$$= \frac{2(f+gx)^{5/2}\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{5g} - \frac{(4bn)\,\mathrm{Subst}\left(\int \left(\frac{ef-dg}{e}+\ldots\right.\right.}{\ldots}$$

$$= -\frac{8bn(f+gx)^{5/2}\left(a+b\log\left(c(d+ex)^n\right)\right)}{25g} + \frac{2(f+gx)^{5/2}\left(a+b\log\ldots\right.}{5g}$$

$$= \frac{16b^2n^2(f+gx)^{5/2}}{125g} - \frac{8b(ef-dg)n(f+gx)^{3/2}\left(a+b\log\left(c(d+ex)\ldots\right.\right.}{15eg}$$

$$= \frac{128b^2(ef-dg)n^2(f+gx)^{3/2}}{225eg} + \frac{16b^2n^2(f+gx)^{5/2}}{125g} - \frac{8b(ef-dg)^2\ldots}{\ldots}$$

$$= \frac{368b^2(ef-dg)^2n^2\sqrt{f+gx}}{75e^2g} + \frac{128b^2(ef-dg)n^2(f+gx)^{3/2}}{225eg} + \frac{16b\ldots}{\ldots}$$

$$= \frac{368b^2(ef-dg)^2n^2\sqrt{f+gx}}{75e^2g} + \frac{128b^2(ef-dg)n^2(f+gx)^{3/2}}{225eg} + \frac{16b\ldots}{\ldots}$$

$$= \frac{368b^2(ef-dg)^2n^2\sqrt{f+gx}}{75e^2g} + \frac{128b^2(ef-dg)n^2(f+gx)^{3/2}}{225eg} + \frac{16b\ldots}{\ldots}$$

$$= \frac{368b^2(ef-dg)^2n^2\sqrt{f+gx}}{75e^2g} + \frac{128b^2(ef-dg)n^2(f+gx)^{3/2}}{225eg} + \frac{16b\ldots}{\ldots}$$

$$= \frac{368b^2(ef-dg)^2n^2\sqrt{f+gx}}{75e^2g} + \frac{128b^2(ef-dg)n^2(f+gx)^{3/2}}{225eg} + \frac{16b\ldots}{\ldots}$$

$$= \frac{368b^2(ef-dg)^2n^2\sqrt{f+gx}}{75e^2g} + \frac{128b^2(ef-dg)n^2(f+gx)^{3/2}}{225eg} + \frac{16b\ldots}{\ldots}$$

$$\frac{368b^2(ef-dg)^2n^2\sqrt{f+gx}}{\ldots} \quad \frac{128b^2(ef-dg)n^2(f+gx)^{3/2}}{\ldots} \quad \frac{16b\ldots}{\ldots}$$

Mathematica [A] time = 1.94, size = 854, normalized size = 1.45

$$2\left((f+gx)^{5/2}\left(a+b\log\left(c(d+ex)^n\right)\right)^2-\frac{bn\left(450\left(a+b\log(c(d+ex)^n)\right)\log\left(\sqrt{ef-dg}-\sqrt{e}\sqrt{f+gx}\right)(ef-dg)^{5/2}-450\left(a+b\log(c(d+ex)^n)\right)\log(\cdots\right.}{\cdots}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^(3/2)*(a + b*Log[c*(d + e*x)^n])^2,x]
```

```
[Out] (2*((f + g*x)^(5/2)*(a + b*Log[c*(d + e*x)^n])^2 - (b*n*(900*a*Sqrt[e]*(e*f
 - d*g)^2*Sqrt[f + g*x] - 1800*b*(e*f - d*g)^2*n*(Sqrt[e]*Sqrt[f + g*x] - S
qrt[e*f - d*g]*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]) - 200*b*(e
*f - d*g)*n*(Sqrt[e]*Sqrt[f + g*x]*(4*e*f - 3*d*g + e*g*x) - 3*(e*f - d*g)^
(3/2)*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]) - 24*b*n*(3*e^(5/2)
*(f + g*x)^(5/2) + 5*(e*f - d*g)*(Sqrt[e]*Sqrt[f + g*x]*(4*e*f - 3*d*g + e*
g*x) - 3*(e*f - d*g)^(3/2)*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]
)) + 900*b*Sqrt[e]*(e*f - d*g)^2*Sqrt[f + g*x]*Log[c*(d + e*x)^n] + 300*e^(
3/2)*(e*f - d*g)*(f + g*x)^(3/2)*(a + b*Log[c*(d + e*x)^n]) + 180*e^(5/2)*(
f + g*x)^(5/2)*(a + b*Log[c*(d + e*x)^n]) + 450*(e*f - d*g)^(5/2)*(a + b*Lo
g[c*(d + e*x)^n])*Log[Sqrt[e*f - d*g] - Sqrt[e]*Sqrt[f + g*x]] - 450*(e*f -
 d*g)^(5/2)*(a + b*Log[c*(d + e*x)^n])*Log[Sqrt[e*f - d*g] + Sqrt[e]*Sqrt[f
 + g*x]] - 225*b*(e*f - d*g)^(5/2)*n*(Log[Sqrt[e*f - d*g] - Sqrt[e]*Sqrt[f
+ g*x]]*(Log[Sqrt[e*f - d*g] - Sqrt[e]*Sqrt[f + g*x]] + 2*Log[(1 + (Sqrt[e]
*Sqrt[f + g*x])/Sqrt[e*f - d*g])/2]) + 2*PolyLog[2, 1/2 - (Sqrt[e]*Sqrt[f +
 g*x])/(2*Sqrt[e*f - d*g])]) + 225*b*(e*f - d*g)^(5/2)*n*(Log[Sqrt[e*f - d*
g] + Sqrt[e]*Sqrt[f + g*x]]*(Log[Sqrt[e*f - d*g] + Sqrt[e]*Sqrt[f + g*x]] +
 2*Log[1/2 - (Sqrt[e]*Sqrt[f + g*x])/(2*Sqrt[e*f - d*g])]) + 2*PolyLog[2, (
1 + (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])/2])))/(225*e^(5/2))))/(5*g)
```

fricas [F] time = 0.47, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(b^2gx+b^2f\right)\sqrt{gx+f}\,\log\left((ex+d)^nc\right)^2+2\left(abgx+abf\right)\sqrt{gx+f}\,\log\left((ex+d)^nc\right)+\left(a^2gx+a^2f\right)\sqrt{gx\cdots}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(3/2)*(a+b*log(c*(e*x+d)^n))^2,x, algorithm="fricas")
```

```
[Out] integral((b^2*g*x + b^2*f)*sqrt(g*x + f)*log((e*x + d)^n*c)^2 + 2*(a*b*g*x
+ a*b*f)*sqrt(g*x + f)*log((e*x + d)^n*c) + (a^2*g*x + a^2*f)*sqrt(g*x + f)
, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (gx+f)^{\frac{3}{2}}\left(b\log\left((ex+d)^nc\right)+a\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(3/2)*(a+b*log(c*(e*x+d)^n))^2,x, algorithm="giac")
```

```
[Out] integrate((g*x + f)^(3/2)*(b*log((e*x + d)^n*c) + a)^2, x)
```

maple [F] time = 0.60, size = 0, normalized size = 0.00

$$\int (gx+f)^{\frac{3}{2}}\left(b\ln\left(c\,(ex+d)^n\right)+a\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^(3/2)*(b*ln(c*(e*x+d)^n)+a)^2,x)
```

```
[Out] int((g*x+f)^(3/2)*(b*ln(c*(e*x+d)^n)+a)^2,x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(3/2)*(a+b*log(c*(e*x+d)^n))^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(d*g-e*f>0)', see `assume?` for more
 details)Is d*g-e*f positive or negative?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int {\left(f+g\,x\right)}^{3/2}\,{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^(3/2)*(a + b*log(c*(d + e*x)^n))^2,x)
```

```
[Out] int((f + g*x)^(3/2)*(a + b*log(c*(d + e*x)^n))^2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**(3/2)*(a+b*ln(c*(e*x+d)**n))**2,x)
```

```
[Out] Timed out
```

3.146 $\int \sqrt{f+gx}\left(a+b\log\left(c(d+ex)^n\right)\right)^2\,dx$

Optimal. Leaf size=510

$$\frac{8bn(ef-dg)^{3/2}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{3e^{3/2}g}-\frac{8bn(f+gx)^{3/2}\left(a+b\log\left(c(d+ex)^n\right)\right)}{9g}-\frac{8bn\sqrt{f+gx}}{}$$

```
[Out] 16/27*b^2*n^2*(g*x+f)^(3/2)/g-64/9*b^2*(-d*g+e*f)^(3/2)*n^2*arctanh(e^(1/2)
*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))/e^(3/2)/g-8/3*b^2*(-d*g+e*f)^(3/2)*n^2*arc
tanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))^2/e^(3/2)/g-8/9*b*n*(g*x+f)^(3
/2)*(a+b*ln(c*(e*x+d)^n))/g+8/3*b*(-d*g+e*f)^(3/2)*n*arctanh(e^(1/2)*(g*x+f
)^(1/2)/(-d*g+e*f)^(1/2))*(a+b*ln(c*(e*x+d)^n))/e^(3/2)/g+2/3*(g*x+f)^(3/2)
*(a+b*ln(c*(e*x+d)^n))^2/g+16/3*b^2*(-d*g+e*f)^(3/2)*n^2*arctanh(e^(1/2)*(g
*x+f)^(1/2)/(-d*g+e*f)^(1/2))*ln(2/(1-e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2
)))/e^(3/2)/g+8/3*b^2*(-d*g+e*f)^(3/2)*n^2*polylog(2,1-2/(1-e^(1/2)*(g*x+f)
^(1/2)/(-d*g+e*f)^(1/2)))/e^(3/2)/g+64/9*b^2*(-d*g+e*f)*n^2*(g*x+f)^(1/2)/e
/g-8/3*b*(-d*g+e*f)*n*(a+b*ln(c*(e*x+d)^n))*(g*x+f)^(1/2)/e/g
```

Rubi [A] time = 1.50, antiderivative size = 510, normalized size of antiderivative = 1.00, number of steps used = 21, number of rules used = 15, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.577, Rules used = {2398, 2411, 2346, 63, 208, 2348, 12, 1587, 6741, 5984, 5918, 2402, 2315, 2319, 50}

$$\frac{8b^2n^2(ef-dg)^{3/2}\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)}{3e^{3/2}g}+\frac{8bn(ef-dg)^{3/2}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{3e^{3/2}g}-\frac{8bn(}{}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[f + g*x]*(a + b*Log[c*(d + e*x)^n])^2,x]
```

```
[Out] (64*b^2*(e*f - d*g)*n^2*Sqrt[f + g*x])/(9*e*g) + (16*b^2*n^2*(f + g*x)^(3/2
))/(27*g) - (64*b^2*(e*f - d*g)^(3/2)*n^2*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/S
qrt[e*f - d*g]])/(9*e^(3/2)*g) - (8*b^2*(e*f - d*g)^(3/2)*n^2*ArcTanh[(Sqrt
[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]^2)/(3*e^(3/2)*g) - (8*b*(e*f - d*g)*n*S
qrt[f + g*x]*(a + b*Log[c*(d + e*x)^n]))/(3*e*g) - (8*b*n*(f + g*x)^(3/2)*(
a + b*Log[c*(d + e*x)^n]))/(9*g) + (8*b*(e*f - d*g)^(3/2)*n*ArcTanh[(Sqrt[e
]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]*(a + b*Log[c*(d + e*x)^n]))/(3*e^(3/2)*g)
 + (2*(f + g*x)^(3/2)*(a + b*Log[c*(d + e*x)^n])^2)/(3*g) + (16*b^2*(e*f -
d*g)^(3/2)*n^2*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]*Log[2/(1 -
(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])])/(3*e^(3/2)*g) + (8*b^2*(e*f - d*
g)^(3/2)*n^2*PolyLog[2, 1 - 2/(1 - (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])
])/(3*e^(3/2)*g)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
```

```
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 1587

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[(Coeff[Pp, x, p]*Log[RemoveContent[Qq, x]])/(q*Coeff[Qq, x, q]), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]*D[Qq, x])/(q*Coeff[Qq, x,
 q])]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2319

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/(e*(q + 1)), x]
- Dist[(b*n*p)/(e*(q + 1)), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 2346

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.))
/(x_), x_Symbol] :> Dist[d, Int[((d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p)/x,
 x], x] + Dist[e, Int[(d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p, x], x] /; Fre
eQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0] && GtQ[q, 0] && IntegerQ[2*q]
```

Rule 2348

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 5918

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> -Simp[((a + b*ArcTanh[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] + Dist[(b*c*
p)/e, Int[((a + b*ArcTanh[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 - c^2*x^2)
, x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2, 0
]
```

Rule 5984

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rubi steps

$$\int \sqrt{f+gx}\left(a+b\log\left(c(d+ex)^n\right)\right)^2\,dx = \frac{2(f+gx)^{3/2}\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{3g} - \frac{(4ben)\int\frac{(f+gx)^{3/2}\left(a+b\log(c(d+\cdots\right.}{d+ex}}{3g}$$

$$= \frac{2(f+gx)^{3/2}\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{3g} - \frac{(4bn)\,\text{Subst}\left(\int\frac{\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^{3/2}\cdots}{x\cdots}\right.}{3g\cdots}$$

$$= \frac{2(f+gx)^{3/2}\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{3g} - \frac{(4bn)\,\text{Subst}\left(\int\sqrt{\frac{ef-dg}{e}+\frac{g\cdots}{e\cdots}}\right.}{\cdots}$$

$$= -\frac{8bn(f+gx)^{3/2}\left(a+b\log\left(c(d+ex)^n\right)\right)}{9g} + \frac{2(f+gx)^{3/2}\left(a+b\log(\cdots\right.}{3g}$$

$$= \frac{16b^2n^2(f+gx)^{3/2}}{27g} - \frac{8b(ef-dg)n\sqrt{f+gx}\left(a+b\log\left(c(d+ex)^n\right)\right)}{3eg}\cdots$$

$$= \frac{64b^2(ef-dg)n^2\sqrt{f+gx}}{9eg} + \frac{16b^2n^2(f+gx)^{3/2}}{27g} - \frac{8b(ef-dg)n\sqrt{f\cdots}}{\cdots}$$

$$= \frac{64b^2(ef-dg)n^2\sqrt{f+gx}}{9eg} + \frac{16b^2n^2(f+gx)^{3/2}}{27g} - \frac{8b(ef-dg)n\sqrt{f\cdots}}{\cdots}$$

$$= \frac{64b^2(ef-dg)n^2\sqrt{f+gx}}{9eg} + \frac{16b^2n^2(f+gx)^{3/2}}{27g} - \frac{64b^2(ef-dg)^{3/2}n\cdots}{9\cdots}$$

$$= \frac{64b^2(ef-dg)n^2\sqrt{f+gx}}{9eg} + \frac{16b^2n^2(f+gx)^{3/2}}{27g} - \frac{64b^2(ef-dg)^{3/2}n\cdots}{9\cdots}$$

$$= \frac{64b^2(ef-dg)n^2\sqrt{f+gx}}{9eg} + \frac{16b^2n^2(f+gx)^{3/2}}{27g} - \frac{64b^2(ef-dg)^{3/2}n\cdots}{9\cdots}$$

$$= \frac{64b^2(ef-dg)n^2\sqrt{f+gx}}{9eg} + \frac{16b^2n^2(f+gx)^{3/2}}{27g} - \frac{64b^2(ef-dg)^{3/2}n\cdots}{9\cdots}$$

$$= \frac{64b^2(ef-dg)n^2\sqrt{f+gx}}{9eg} + \frac{16b^2n^2(f+gx)^{3/2}}{27g} - \frac{64b^2(ef-dg)^{3/2}n\cdots}{9\cdots}$$

Mathematica [A] time = 1.17, size = 643, normalized size = 1.26

$$2\left((f+gx)^{3/2}\left(a+b\log\left(c(d+ex)^n\right)\right)^2-\frac{bn\left(12e^{3/2}(f+gx)^{3/2}\left(a+b\log(c(d+ex)^n)\right)+18(ef-dg)^{3/2}\log\left(\sqrt{ef-dg}-\sqrt{e}\sqrt{f+gx}\right)\left(a+b\log(c(d+\right.\right.}{}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[f + g*x]*(a + b*Log[c*(d + e*x)^n])^2,x]
```

```
[Out] (2*((f + g*x)^(3/2)*(a + b*Log[c*(d + e*x)^n])^2 - (b*n*(36*a*Sqrt[e]*(e*f
- d*g)*Sqrt[f + g*x] - 8*b*e^(3/2)*n*(f + g*x)^(3/2) - 96*b*(e*f - d*g)*n*(
Sqrt[e]*Sqrt[f + g*x] - Sqrt[e*f - d*g]*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqr
t[e*f - d*g]]) + 36*b*Sqrt[e]*(e*f - d*g)*Sqrt[f + g*x]*Log[c*(d + e*x)^n]
+ 12*e^(3/2)*(f + g*x)^(3/2)*(a + b*Log[c*(d + e*x)^n]) + 18*(e*f - d*g)^(3
/2)*(a + b*Log[c*(d + e*x)^n])*Log[Sqrt[e*f - d*g] - Sqrt[e]*Sqrt[f + g*x]]
 - 18*(e*f - d*g)^(3/2)*(a + b*Log[c*(d + e*x)^n])*Log[Sqrt[e*f - d*g] + Sq
rt[e]*Sqrt[f + g*x]] - 9*b*(e*f - d*g)^(3/2)*n*(Log[Sqrt[e*f - d*g] - Sqrt[
e]*Sqrt[f + g*x]]*(Log[Sqrt[e*f - d*g] - Sqrt[e]*Sqrt[f + g*x]] + 2*Log[(1
+ (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])/2]) + 2*PolyLog[2, 1/2 - (Sqrt[e
]*Sqrt[f + g*x])/(2*Sqrt[e*f - d*g])]) + 9*b*(e*f - d*g)^(3/2)*n*(Log[Sqrt[
e*f - d*g] + Sqrt[e]*Sqrt[f + g*x]]*(Log[Sqrt[e*f - d*g] + Sqrt[e]*Sqrt[f +
 g*x]] + 2*Log[1/2 - (Sqrt[e]*Sqrt[f + g*x])/(2*Sqrt[e*f - d*g])]) + 2*Poly
Log[2, (1 + (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])/2])))/(9*e^(3/2))))/(3
*g)
```

fricas [F] time = 0.51, size = 0, normalized size = 0.00

$$\text{integral}\left(\sqrt{gx+f}\,b^2\log\left((ex+d)^n c\right)^2+2\sqrt{gx+f}\,ab\log\left((ex+d)^n c\right)+\sqrt{gx+f}\,a^2,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(1/2)*(a+b*log(c*(e*x+d)^n))^2,x, algorithm="fricas")
```

```
[Out] integral(sqrt(g*x + f)*b^2*log((e*x + d)^n*c)^2 + 2*sqrt(g*x + f)*a*b*log((
e*x + d)^n*c) + sqrt(g*x + f)*a^2, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\sqrt{gx+f}\left(b\log\left((ex+d)^n c\right)+a\right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(1/2)*(a+b*log(c*(e*x+d)^n))^2,x, algorithm="giac")
```

```
[Out] integrate(sqrt(g*x + f)*(b*log((e*x + d)^n*c) + a)^2, x)
```

maple [F] time = 0.60, size = 0, normalized size = 0.00

$$\int\sqrt{gx+f}\ \left(b\ln\left(c\,(ex+d)^n\right)+a\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^(1/2)*(b*ln(c*(e*x+d)^n)+a)^2,x)
```

```
[Out] int((g*x+f)^(1/2)*(b*ln(c*(e*x+d)^n)+a)^2,x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(1/2)*(a+b*log(c*(e*x+d)^n))^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(d*g-e*f>0)', see `assume?` for more
 details)Is d*g-e*f positive or negative?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \sqrt{f+g\,x}\,\left(a+b\,\ln\left(c\,(d+e\,x)^n\right)\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^(1/2)*(a + b*log(c*(d + e*x)^n))^2,x)
```

```
[Out] int((f + g*x)^(1/2)*(a + b*log(c*(d + e*x)^n))^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(a+b\log\left(c\,(d+ex)^n\right)\right)^2\sqrt{f+gx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**(1/2)*(a+b*ln(c*(e*x+d)**n))**2,x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**2*sqrt(f + g*x), x)
```

3.147 $\int \frac{(a+b\log(c(d+ex)^n))^2}{\sqrt{f+gx}} \, dx$

Optimal. Leaf size=418

$$-\frac{8bn\sqrt{f+gx}\left(a+b\log\left(c(d+ex)^n\right)\right)}{g}+\frac{2\sqrt{f+gx}\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{g}+\frac{8bn\sqrt{ef-dg}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)(a$$

```
[Out] -16*b^2*n^2*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))*(-d*g+e*f)^(1/2
)/g/e^(1/2)-8*b^2*n^2*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))^2*(-d
*g+e*f)^(1/2)/g/e^(1/2)+8*b*n*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2
))*(a+b*ln(c*(e*x+d)^n))*(-d*g+e*f)^(1/2)/g/e^(1/2)+16*b^2*n^2*arctanh(e^(1
/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))*ln(2/(1-e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f
)^(1/2)))*(-d*g+e*f)^(1/2)/g/e^(1/2)+8*b^2*n^2*polylog(2,1-2/(1-e^(1/2)*(g*
x+f)^(1/2)/(-d*g+e*f)^(1/2)))*(-d*g+e*f)^(1/2)/g/e^(1/2)+16*b^2*n^2*(g*x+f)
^(1/2)/g-8*b*n*(a+b*ln(c*(e*x+d)^n))*(g*x+f)^(1/2)/g+2*(a+b*ln(c*(e*x+d)^n)
)^2*(g*x+f)^(1/2)/g
```

Rubi [A] time = 1.07, antiderivative size = 418, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 15, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.577, Rules used = {2398, 2411, 2346, 63, 208, 2348, 12, 1587, 6741, 5984, 5918, 2402, 2315, 2319, 50}

$$\frac{8b^2n^2\sqrt{ef-dg}\,\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)}{\sqrt{e}g}-\frac{8bn\sqrt{f+gx}\left(a+b\log\left(c(d+ex)^n\right)\right)}{g}+\frac{2\sqrt{f+gx}\left(a+b\log\left(c(d+e\right.\right.}{g}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^2/Sqrt[f + g*x],x]
```

```
[Out] (16*b^2*n^2*Sqrt[f + g*x])/g - (16*b^2*Sqrt[e*f - d*g]*n^2*ArcTanh[(Sqrt[e]
*Sqrt[f + g*x])/Sqrt[e*f - d*g]])/(Sqrt[e]*g) - (8*b^2*Sqrt[e*f - d*g]*n^2*
ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]^2)/(Sqrt[e]*g) - (8*b*n*Sq
rt[f + g*x]*(a + b*Log[c*(d + e*x)^n]))/g + (8*b*Sqrt[e*f - d*g]*n*ArcTanh[
(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]*(a + b*Log[c*(d + e*x)^n]))/(Sqrt[
e]*g) + (2*Sqrt[f + g*x]*(a + b*Log[c*(d + e*x)^n])^2)/g + (16*b^2*Sqrt[e*f
 - d*g]*n^2*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]*Log[2/(1 - (Sq
rt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])])/(Sqrt[e]*g) + (8*b^2*Sqrt[e*f - d*g
]*n^2*PolyLog[2, 1 - 2/(1 - (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])])/(Sqr
t[e]*g)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 1587

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[(Coeff[Pp, x, p]*Log[RemoveContent[Qq, x]])/(q*Coeff[Qq, x, q]), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]*D[Qq, x])/(q*Coeff[Qq, x,
 q])]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2319

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/(e*(q + 1)), x]
- Dist[(b*n*p)/(e*(q + 1)), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 2346

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.))
/(x_), x_Symbol] :> Dist[d, Int[((d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p)/x,
 x], x] + Dist[e, Int[(d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p, x], x] /; Fre
eQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0] && GtQ[q, 0] && IntegerQ[2*q]
```

Rule 2348

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 5918

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> -Simp[((a + b*ArcTanh[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] + Dist[(b*c*
p)/e, Int[((a + b*ArcTanh[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 - c^2*x^2)
, x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2, 0
]
```

Rule 5984

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{\sqrt{f+gx}}\,dx = \frac{2\sqrt{f+gx}\,\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{g} - \frac{(4ben)\int \frac{\sqrt{f+gx}\left(a+b\log(c(d+ex)^n)\right)}{d+ex}\,dx}{g}$$

$$= \frac{2\sqrt{f+gx}\,\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{g} - \frac{(4bn)\,\text{Subst}\left(\int \frac{\sqrt{\frac{ef-dg}{e}+\frac{gx}{e}}\left(a+b\log(cx^n)\right)}{x}\,d\right.}{g}$$

$$= \frac{2\sqrt{f+gx}\,\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{g} - \frac{(4bn)\,\text{Subst}\left(\int \frac{a+b\log(cx^n)}{\sqrt{\frac{ef-dg}{e}+\frac{gx}{e}}}\,dx, x, d+ex\right.}{e}$$

$$= -\frac{8bn\sqrt{f+gx}\,\left(a+b\log\left(c(d+ex)^n\right)\right)}{g} + \frac{8b\sqrt{ef-dg}\,n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)\left(a\right.}{\sqrt{e}\,g}$$

$$= \frac{16b^2n^2\sqrt{f+gx}}{g} - \frac{8bn\sqrt{f+gx}\,\left(a+b\log\left(c(d+ex)^n\right)\right)}{g} + \frac{8b\sqrt{ef-dg}\,n\tan}{}$$

$$= \frac{16b^2n^2\sqrt{f+gx}}{g} - \frac{8bn\sqrt{f+gx}\,\left(a+b\log\left(c(d+ex)^n\right)\right)}{g} + \frac{8b\sqrt{ef-dg}\,n\tan}{}$$

$$= \frac{16b^2n^2\sqrt{f+gx}}{g} - \frac{16b^2\sqrt{ef-dg}\,n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{\sqrt{e}\,g} - \frac{8bn\sqrt{f+gx}\,\left(a+\right.}{g}$$

$$= \frac{16b^2n^2\sqrt{f+gx}}{g} - \frac{16b^2\sqrt{ef-dg}\,n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{\sqrt{e}\,g} - \frac{8b^2\sqrt{ef-dg}\,n^2\,\text{ta}}{\sqrt{e}}$$

$$= \frac{16b^2n^2\sqrt{f+gx}}{g} - \frac{16b^2\sqrt{ef-dg}\,n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{\sqrt{e}\,g} - \frac{8b^2\sqrt{ef-dg}\,n^2\,\text{ta}}{\sqrt{e}}$$

$$= \frac{16b^2n^2\sqrt{f+gx}}{g} - \frac{16b^2\sqrt{ef-dg}\,n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{\sqrt{e}\,g} - \frac{8b^2\sqrt{ef-dg}\,n^2\,\text{ta}}{\sqrt{e}}$$

$$= \frac{16b^2n^2\sqrt{f+gx}}{g} - \frac{16b^2\sqrt{ef-dg}\,n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{\sqrt{e}\,g} - \frac{8b^2\sqrt{ef-dg}\,n^2\,\text{ta}}{\sqrt{e}}$$

Mathematica [A] time = 1.09, size = 566, normalized size = 1.35

$$2\left(\sqrt{f+gx}\left(a+b\log\left(c(d+ex)^n\right)\right)^2-\frac{bn\left(2\sqrt{ef-dg}\log\left(\sqrt{ef-dg}-\sqrt{e}\sqrt{f+gx}\right)\left(a+b\log(c(d+ex)^n)\right)-2\sqrt{ef-dg}\log\left(\sqrt{ef-dg}+\sqrt{e}\sqrt{f+gx}\right.\right.}{\ldots}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^2/Sqrt[f + g*x],x]
```

```
[Out] (2*(Sqrt[f + g*x]*(a + b*Log[c*(d + e*x)^n])^2 - (b*n*(4*a*Sqrt[e]*Sqrt[f +
 g*x] - 8*b*n*(Sqrt[e]*Sqrt[f + g*x] - Sqrt[e*f - d*g]*ArcTanh[(Sqrt[e]*Sqr
t[f + g*x])/Sqrt[e*f - d*g]]) + 4*b*Sqrt[e]*Sqrt[f + g*x]*Log[c*(d + e*x)^n
] + 2*Sqrt[e*f - d*g]*(a + b*Log[c*(d + e*x)^n])*Log[Sqrt[e*f - d*g] - Sqrt
[e]*Sqrt[f + g*x]] - 2*Sqrt[e*f - d*g]*(a + b*Log[c*(d + e*x)^n])*Log[Sqrt[
e*f - d*g] + Sqrt[e]*Sqrt[f + g*x]] - b*Sqrt[e*f - d*g]*n*(Log[Sqrt[e*f - d
*g] - Sqrt[e]*Sqrt[f + g*x]]*(Log[Sqrt[e*f - d*g] - Sqrt[e]*Sqrt[f + g*x]]
+ 2*Log[(1 + (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])/2]) + 2*PolyLog[2, 1/
2 - (Sqrt[e]*Sqrt[f + g*x])/(2*Sqrt[e*f - d*g])]) + b*Sqrt[e*f - d*g]*n*(Lo
g[Sqrt[e*f - d*g] + Sqrt[e]*Sqrt[f + g*x]]*(Log[Sqrt[e*f - d*g] + Sqrt[e]*S
qrt[f + g*x]] + 2*Log[1/2 - (Sqrt[e]*Sqrt[f + g*x])/(2*Sqrt[e*f - d*g])]) +
 2*PolyLog[2, (1 + (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])/2])))/Sqrt[e]))
/g
```

fricas [F] time = 0.50, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\sqrt{gx+f}\,b^2\log\left((ex+d)^n c\right)^2+2\sqrt{gx+f}\,ab\log\left((ex+d)^n c\right)+\sqrt{gx+f}\,a^2}{gx+f},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^(1/2),x, algorithm="fricas")
```

```
[Out] integral((sqrt(g*x + f)*b^2*log((e*x + d)^n*c)^2 + 2*sqrt(g*x + f)*a*b*log(
(e*x + d)^n*c) + sqrt(g*x + f)*a^2)/(g*x + f), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(b\log\left((ex+d)^n c\right)+a\right)^2}{\sqrt{gx+f}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2/sqrt(g*x + f), x)
```

maple [F] time = 0.50, size = 0, normalized size = 0.00

$$\int\frac{\left(b\ln\left(c\,(ex+d)^n\right)+a\right)^2}{\sqrt{gx+f}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)^2/(g*x+f)^(1/2),x)
```

```
[Out] int((b*ln(c*(e*x+d)^n)+a)^2/(g*x+f)^(1/2),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(d*g-e*f>0)', see `assume?` for more
 details)Is d*g-e*f positive or negative?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)^2}{\sqrt{f+g\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^2/(f + g*x)^(1/2),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))^2/(f + g*x)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\log\left(c\left(d+ex\right)^n\right)\right)^2}{\sqrt{f+gx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2/(g*x+f)**(1/2),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**2/sqrt(f + g*x), x)
```

3.148 $\int \frac{(a+b\log(c(d+ex)^n))^2}{(f+gx)^{3/2}} \, dx$

Optimal. Leaf size=312

$$-\frac{2(a+b\log(c(d+ex)^n))^2}{g\sqrt{f+gx}}-\frac{8b\sqrt{e}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)(a+b\log(c(d+ex)^n))}{g\sqrt{ef-dg}}-\frac{8b^2\sqrt{e}n^2\text{Li}_2\left(1-\frac{2}{1-\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)}{g\sqrt{ef-dg}}+$$

```
[Out] 8*b^2*n^2*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))^2*e^(1/2)/g/(-d*g
+e*f)^(1/2)-8*b*n*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))*(a+b*ln(c
*(e*x+d)^n))*e^(1/2)/g/(-d*g+e*f)^(1/2)-16*b^2*n^2*arctanh(e^(1/2)*(g*x+f)^
(1/2)/(-d*g+e*f)^(1/2))*ln(2/(1-e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2)))*e^
(1/2)/g/(-d*g+e*f)^(1/2)-8*b^2*n^2*polylog(2,1-2/(1-e^(1/2)*(g*x+f)^(1/2)/(
-d*g+e*f)^(1/2)))*e^(1/2)/g/(-d*g+e*f)^(1/2)-2*(a+b*ln(c*(e*x+d)^n))^2/g/(g
*x+f)^(1/2)
```

Rubi [A] time = 0.77, antiderivative size = 312, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 12, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.462, Rules used = {2398, 2411, 63, 208, 2348, 12, 1587, 6741, 5984, 5918, 2402, 2315}

$$-\frac{8b^2\sqrt{e}n^2\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)}{g\sqrt{ef-dg}}-\frac{2(a+b\log(c(d+ex)^n))^2}{g\sqrt{f+gx}}-\frac{8b\sqrt{e}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)(a+b\log(c(d+e$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^2/(f + g*x)^(3/2),x]
```

```
[Out] (8*b^2*Sqrt[e]*n^2*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]^2)/(g*S
qrt[e*f - d*g]) - (8*b*Sqrt[e]*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f -
 d*g]]*(a + b*Log[c*(d + e*x)^n]))/(g*Sqrt[e*f - d*g]) - (2*(a + b*Log[c*(d
 + e*x)^n])^2)/(g*Sqrt[f + g*x]) - (16*b^2*Sqrt[e]*n^2*ArcTanh[(Sqrt[e]*Sqr
t[f + g*x])/Sqrt[e*f - d*g]]*Log[2/(1 - (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f -
d*g])])/(g*Sqrt[e*f - d*g]) - (8*b^2*Sqrt[e]*n^2*PolyLog[2, 1 - 2/(1 - (Sqr
t[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])])/(g*Sqrt[e*f - d*g])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 1587

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[(Coeff[Pp, x, p]*Log[RemoveContent[Qq, x]])/(q*Coeff[Qq, x, q]), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]*D[Qq, x])/(q*Coeff[Qq, x,
 q])]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2348

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 5918

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> -Simp[((a + b*ArcTanh[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] + Dist[(b*c*
p)/e, Int[((a + b*ArcTanh[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 - c^2*x^2)
, x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2, 0
]
```

Rule 5984

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{(f+gx)^{3/2}}\,dx = -\frac{2\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{g\sqrt{f+gx}} + \frac{(4ben)\int \frac{a+b\log(c(d+ex)^n)}{(d+ex)\sqrt{f+gx}}\,dx}{g}$$

$$= -\frac{2\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{g\sqrt{f+gx}} + \frac{(4bn)\operatorname{Subst}\left(\int \frac{a+b\log(cx^n)}{x\sqrt{\frac{ef-dg}{e}+\frac{gx}{e}}}\,dx, x, d+ex\right)}{g}$$

$$= -\frac{8b\sqrt{e}\,n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g\sqrt{ef-dg}} - \frac{2\left(a+b\log\left(c(d+ex)^n\right)\right)}{g\sqrt{f+gx}}$$

$$= -\frac{8b\sqrt{e}\,n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g\sqrt{ef-dg}} - \frac{2\left(a+b\log\left(c(d+ex)^n\right)\right)}{g\sqrt{f+gx}}$$

$$= -\frac{8b\sqrt{e}\,n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g\sqrt{ef-dg}} - \frac{2\left(a+b\log\left(c(d+ex)^n\right)\right)}{g\sqrt{f+gx}}$$

$$= -\frac{8b\sqrt{e}\,n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g\sqrt{ef-dg}} - \frac{2\left(a+b\log\left(c(d+ex)^n\right)\right)}{g\sqrt{f+gx}}$$

$$= \frac{8b^2\sqrt{e}\,n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{g\sqrt{ef-dg}} - \frac{8b\sqrt{e}\,n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)\left(a+b\log\left(c(d+ex)\right.\right.}{g\sqrt{ef-dg}}$$

$$= \frac{8b^2\sqrt{e}\,n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{g\sqrt{ef-dg}} - \frac{8b\sqrt{e}\,n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)\left(a+b\log\left(c(d+ex)\right.\right.}{g\sqrt{ef-dg}}$$

$$= \frac{8b^2\sqrt{e}\,n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{g\sqrt{ef-dg}} - \frac{8b\sqrt{e}\,n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)\left(a+b\log\left(c(d+ex)\right.\right.}{g\sqrt{ef-dg}}$$

$$= \frac{8b^2\sqrt{e}\,n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{g\sqrt{ef-dg}} - \frac{8b\sqrt{e}\,n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)\left(a+b\log\left(c(d+ex)\right.\right.}{g\sqrt{ef-dg}}$$

Mathematica [A] time = 0.67, size = 424, normalized size = 1.36

$$2\left(\frac{b\sqrt{e}\,n\left(2\log\left(\sqrt{ef-dg}-\sqrt{e}\sqrt{f+gx}\right)\left(a+b\log(c(d+ex)^n)\right)-2\log\left(\sqrt{ef-dg}+\sqrt{e}\sqrt{f+gx}\right)\left(a+b\log(c(d+ex)^n)\right)-bn\left(2\text{Li}_2\left(\frac{1}{2}-\frac{\sqrt{e}\sqrt{f+gx}}{2\sqrt{ef-dg}}\right)+\log\left(\sqrt{ef-\cdots\right.\right.\right.}{\cdots}\cdots\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^2/(f + g*x)^(3/2),x]
```

```
[Out] (2*(-((a + b*Log[c*(d + e*x)^n])^2/Sqrt[f + g*x]) + (b*Sqrt[e]*n*(2*(a + b*
Log[c*(d + e*x)^n])*Log[Sqrt[e*f - d*g] - Sqrt[e]*Sqrt[f + g*x]] - 2*(a + b
*Log[c*(d + e*x)^n])*Log[Sqrt[e*f - d*g] + Sqrt[e]*Sqrt[f + g*x]] - b*n*(Lo
g[Sqrt[e*f - d*g] - Sqrt[e]*Sqrt[f + g*x]]*(Log[Sqrt[e*f - d*g] - Sqrt[e]*S
qrt[f + g*x]] + 2*Log[(1 + (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])/2]) + 2
*PolyLog[2, 1/2 - (Sqrt[e]*Sqrt[f + g*x])/(2*Sqrt[e*f - d*g])]) + b*n*(Log[
Sqrt[e*f - d*g] + Sqrt[e]*Sqrt[f + g*x]]*(Log[Sqrt[e*f - d*g] + Sqrt[e]*Sqr
t[f + g*x]] + 2*Log[1/2 - (Sqrt[e]*Sqrt[f + g*x])/(2*Sqrt[e*f - d*g])]) + 2
*PolyLog[2, (1 + (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])/2])))/Sqrt[e*f -
d*g]))/g
```

fricas [F] time = 0.52, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{gx+f}\,b^2\log\left((ex+d)^n c\right)^2+2\sqrt{gx+f}\,ab\log\left((ex+d)^n c\right)+\sqrt{gx+f}\,a^2}{g^2x^2+2\,fgx+f^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^(3/2),x, algorithm="fricas")
```

```
[Out] integral((sqrt(g*x + f)*b^2*log((e*x + d)^n*c)^2 + 2*sqrt(g*x + f)*a*b*log(
(e*x + d)^n*c) + sqrt(g*x + f)*a^2)/(g^2*x^2 + 2*f*g*x + f^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(b\log\left((ex+d)^n c\right)+a\right)^2}{(gx+f)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2/(g*x + f)^(3/2), x)
```

maple [F] time = 0.49, size = 0, normalized size = 0.00

$$\int\frac{\left(b\ln\left(c\,(ex+d)^n\right)+a\right)^2}{(gx+f)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)^2/(g*x+f)^(3/2),x)
```

```
[Out] int((b*ln(c*(e*x+d)^n)+a)^2/(g*x+f)^(3/2),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(d*g-e*f>0)', see `assume?` for more
 details)Is d*g-e*f positive or negative?
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a + b\,\ln\left(c\,(d + e\,x)^n\right)\right)^2}{\left(f + g\,x\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^2/(f + g*x)^(3/2),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))^2/(f + g*x)^(3/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a + b\log\left(c\,(d + ex)^n\right)\right)^2}{\left(f + gx\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2/(g*x+f)**(3/2),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**2/(f + g*x)**(3/2), x)
```

3.149 $\int \frac{(a+b\log(c(d+ex)^n))^2}{(f+gx)^{5/2}}\,dx$

Optimal. Leaf size=423

$$-\frac{8be^{3/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{3g(ef-dg)^{3/2}}+\frac{8ben\left(a+b\log\left(c(d+ex)^n\right)\right)}{3g\sqrt{f+gx}\,(ef-dg)}-\frac{2\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{3g(f+gx)^{3/2}}$$

```
[Out] 16/3*b^2*e^(3/2)*n^2*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))/g/(-d*
g+e*f)^(3/2)+8/3*b^2*e^(3/2)*n^2*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(
1/2))^2/g/(-d*g+e*f)^(3/2)-8/3*b*e^(3/2)*n*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-
d*g+e*f)^(1/2))*(a+b*ln(c*(e*x+d)^n))/g/(-d*g+e*f)^(3/2)-2/3*(a+b*ln(c*(e*x
+d)^n))^2/g/(g*x+f)^(3/2)-16/3*b^2*e^(3/2)*n^2*arctanh(e^(1/2)*(g*x+f)^(1/2
)/(-d*g+e*f)^(1/2))*ln(2/(1-e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2)))/g/(-d*
g+e*f)^(3/2)-8/3*b^2*e^(3/2)*n^2*polylog(2,1-2/(1-e^(1/2)*(g*x+f)^(1/2)/(-d
*g+e*f)^(1/2)))/g/(-d*g+e*f)^(3/2)+8/3*b*e*n*(a+b*ln(c*(e*x+d)^n))/g/(-d*g+
e*f)/(g*x+f)^(1/2)
```

Rubi [A] time = 1.12, antiderivative size = 423, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 14, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.538, Rules used = {2398, 2411, 2347, 63, 208, 2348, 12, 1587, 6741, 5984, 5918, 2402, 2315, 2319}

$$-\frac{8b^2e^{3/2}n^2\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)}{3g(ef-dg)^{3/2}}-\frac{8be^{3/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{3g(ef-dg)^{3/2}}+\frac{8ben\left(a+b\log(c\ldots\right.}{3g\sqrt{f+gx}\,(e\ldots}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^2/(f + g*x)^(5/2),x]
```

```
[Out] (16*b^2*e^(3/2)*n^2*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]])/(3*g*
(e*f - d*g)^(3/2)) + (8*b^2*e^(3/2)*n^2*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqr
t[e*f - d*g]]^2)/(3*g*(e*f - d*g)^(3/2)) + (8*b*e*n*(a + b*Log[c*(d + e*x)^
n]))/(3*g*(e*f - d*g)*Sqrt[f + g*x]) - (8*b*e^(3/2)*n*ArcTanh[(Sqrt[e]*Sqrt
[f + g*x])/Sqrt[e*f - d*g]]*(a + b*Log[c*(d + e*x)^n]))/(3*g*(e*f - d*g)^(3
/2)) - (2*(a + b*Log[c*(d + e*x)^n])^2)/(3*g*(f + g*x)^(3/2)) - (16*b^2*e^(
3/2)*n^2*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]*Log[2/(1 - (Sqrt[
e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])])/(3*g*(e*f - d*g)^(3/2)) - (8*b^2*e^(3/
2)*n^2*PolyLog[2, 1 - 2/(1 - (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])])/(3*
g*(e*f - d*g)^(3/2))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 1587

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[(Coeff[Pp, x, p]*Log[RemoveContent[Qq, x]])/(q*Coeff[Qq, x, q]), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]*D[Qq, x])/(q*Coeff[Qq, x,
 q])]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2319

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/(e*(q + 1)), x]
- Dist[(b*n*p)/(e*(q + 1)), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 2347

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/x
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2348

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
```

```
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 5918

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> -Simp[((a + b*ArcTanh[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] + Dist[(b*c*
p)/e, Int[((a + b*ArcTanh[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 - c^2*x^2)
, x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2, 0
]
```

Rule 5984

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{(f+gx)^{5/2}}\,dx = -\frac{2\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{3g(f+gx)^{3/2}}+\frac{(4ben)\int \frac{a+b\log(c(d+ex)^n)}{(d+ex)(f+gx)^{3/2}}\,dx}{3g}$$

$$= -\frac{2\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{3g(f+gx)^{3/2}}+\frac{(4bn)\,\mathrm{Subst}\left(\int \frac{a+b\log(cx^n)}{x\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^{3/2}}\,dx,x,d+ex\right)}{3g}$$

$$= -\frac{2\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{3g(f+gx)^{3/2}}-\frac{(4bn)\,\mathrm{Subst}\left(\int \frac{a+b\log(cx^n)}{\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^{3/2}}\,dx,x,d+ex\right)}{3(ef-dg)}+\frac{(4ben}{}$$

$$= \frac{8ben\left(a+b\log\left(c(d+ex)^n\right)\right)}{3g(ef-dg)\sqrt{f+gx}}-\frac{8be^{3/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)\left(a+b\log\left(c(d+ex)^n\right.\right.}{3g(ef-dg)^{3/2}}$$

$$= \frac{8ben\left(a+b\log\left(c(d+ex)^n\right)\right)}{3g(ef-dg)\sqrt{f+gx}}-\frac{8be^{3/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)\left(a+b\log\left(c(d+ex)^n\right.\right.}{3g(ef-dg)^{3/2}}$$

$$= \frac{16b^2e^{3/2}n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{3g(ef-dg)^{3/2}}+\frac{8ben\left(a+b\log\left(c(d+ex)^n\right)\right)}{3g(ef-dg)\sqrt{f+gx}}-\frac{8be^{3/2}n\tanh^{-1}}{}$$

$$= \frac{16b^2e^{3/2}n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{3g(ef-dg)^{3/2}}+\frac{8ben\left(a+b\log\left(c(d+ex)^n\right)\right)}{3g(ef-dg)\sqrt{f+gx}}-\frac{8be^{3/2}n\tanh^{-1}}{}$$

$$= \frac{16b^2e^{3/2}n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{3g(ef-dg)^{3/2}}+\frac{8b^2e^{3/2}n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{3g(ef-dg)^{3/2}}+\frac{8ben\left(a+b\log\right.}{3g(ef-dg}$$

$$= \frac{16b^2e^{3/2}n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{3g(ef-dg)^{3/2}}+\frac{8b^2e^{3/2}n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{3g(ef-dg)^{3/2}}+\frac{8ben\left(a+b\log\right.}{3g(ef-dg}$$

$$= \frac{16b^2e^{3/2}n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{3g(ef-dg)^{3/2}}+\frac{8b^2e^{3/2}n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{3g(ef-dg)^{3/2}}+\frac{8ben\left(a+b\log\right.}{3g(ef-dg}$$

$$= \frac{16b^2e^{3/2}n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{3g(ef-dg)^{3/2}}+\frac{8b^2e^{3/2}n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{3g(ef-dg)^{3/2}}+\frac{8ben\left(a+b\log\right.}{3g(ef-dg}$$

Mathematica [A] time = 1.33, size = 557, normalized size = 1.32

$$2\left(\frac{ben(f+gx)\left(4\sqrt{ef-dg}\left(a+b\log(c(d+ex)^n)\right)+2\sqrt{e}\sqrt{f+gx}\log\left(\sqrt{ef-dg}-\sqrt{e}\sqrt{f+gx}\right)\left(a+b\log(c(d+ex)^n)\right)-2\sqrt{e}\sqrt{f+gx}\log\left(\sqrt{ef-dg}+\sqrt{e}\sqrt{f+gx}\right.\right.}{}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^2/(f + g*x)^(5/2),x]
```

```
[Out] (2*(-(a + b*Log[c*(d + e*x)^n])^2 + (b*e*n*(f + g*x)*(8*b*Sqrt[e]*n*Sqrt[f
+ g*x]*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]] + 4*Sqrt[e*f - d*g]
*(a + b*Log[c*(d + e*x)^n]) + 2*Sqrt[e]*Sqrt[f + g*x]*(a + b*Log[c*(d + e*x
)^n])*Log[Sqrt[e*f - d*g] - Sqrt[e]*Sqrt[f + g*x]] - 2*Sqrt[e]*Sqrt[f + g*x
]*(a + b*Log[c*(d + e*x)^n])*Log[Sqrt[e*f - d*g] + Sqrt[e]*Sqrt[f + g*x]] -
 b*Sqrt[e]*n*Sqrt[f + g*x]*(Log[Sqrt[e*f - d*g] - Sqrt[e]*Sqrt[f + g*x]]*(L
og[Sqrt[e*f - d*g] - Sqrt[e]*Sqrt[f + g*x]] + 2*Log[(1 + (Sqrt[e]*Sqrt[f +
g*x])/Sqrt[e*f - d*g])/2]) + 2*PolyLog[2, 1/2 - (Sqrt[e]*Sqrt[f + g*x])/(2*
Sqrt[e*f - d*g])]) + b*Sqrt[e]*n*Sqrt[f + g*x]*(Log[Sqrt[e*f - d*g] + Sqrt[
e]*Sqrt[f + g*x]]*(Log[Sqrt[e*f - d*g] + Sqrt[e]*Sqrt[f + g*x]] + 2*Log[1/2
 - (Sqrt[e]*Sqrt[f + g*x])/(2*Sqrt[e*f - d*g])]) + 2*PolyLog[2, (1 + (Sqrt[
e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])/2])))/(e*f - d*g)^(3/2)))/(3*g*(f + g*x)
^(3/2))
```

fricas [F] time = 0.56, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\sqrt{gx+f}\,b^2\log\left((ex+d)^n c\right)^2+2\sqrt{gx+f}\,ab\log\left((ex+d)^n c\right)+\sqrt{gx+f}\,a^2}{g^3x^3+3\,fg^2x^2+3\,f^2gx+f^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^(5/2),x, algorithm="fricas")
```

```
[Out] integral((sqrt(g*x + f)*b^2*log((e*x + d)^n*c)^2 + 2*sqrt(g*x + f)*a*b*log(
(e*x + d)^n*c) + sqrt(g*x + f)*a^2)/(g^3*x^3 + 3*f*g^2*x^2 + 3*f^2*g*x + f^
3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(b\log\left((ex+d)^n c\right)+a\right)^2}{\left(gx+f\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2/(g*x + f)^(5/2), x)
```

maple [F] time = 0.46, size = 0, normalized size = 0.00

$$\int\frac{\left(b\ln\left(c\,(ex+d)^n\right)+a\right)^2}{\left(gx+f\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)^2/(g*x+f)^(5/2),x)
```

```
[Out] int((b*ln(c*(e*x+d)^n)+a)^2/(g*x+f)^(5/2),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(d*g-e*f>0)', see `assume?` for more
 details)Is d*g-e*f positive or negative?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)^2}{{\left(f+g\,x\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^2/(f + g*x)^(5/2),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))^2/(f + g*x)^(5/2), x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2/(g*x+f)**(5/2),x)
```

```
[Out] Exception raised: HeuristicGCDFailed
```

3.150 $\int \frac{\left(a+b\log(c(d+ex)^n)\right)^2}{(f+gx)^{7/2}}\,dx$

Optimal. Leaf size=503

$$-\frac{8be^{5/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{5g(ef-dg)^{5/2}}+\frac{8be^2n\left(a+b\log\left(c(d+ex)^n\right)\right)}{5g\sqrt{f+gx}\,(ef-dg)^2}+\frac{8ben\left(a+b\log\left(c(d+ex\cdots\right.\right.}{15g(f+gx)^{3/2}(ef-dg\cdots}$$

```
[Out] 64/15*b^2*e^(5/2)*n^2*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))/g/(-d
*g+e*f)^(5/2)+8/5*b^2*e^(5/2)*n^2*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^
(1/2))^2/g/(-d*g+e*f)^(5/2)+8/15*b*e*n*(a+b*ln(c*(e*x+d)^n))/g/(-d*g+e*f)/(
g*x+f)^(3/2)-8/5*b*e^(5/2)*n*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2)
)*(a+b*ln(c*(e*x+d)^n))/g/(-d*g+e*f)^(5/2)-2/5*(a+b*ln(c*(e*x+d)^n))^2/g/(g
*x+f)^(5/2)-16/5*b^2*e^(5/2)*n^2*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(
1/2))*ln(2/(1-e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2)))/g/(-d*g+e*f)^(5/2)-8
/5*b^2*e^(5/2)*n^2*polylog(2,1-2/(1-e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))
)/g/(-d*g+e*f)^(5/2)-16/15*b^2*e^2*n^2/g/(-d*g+e*f)^2/(g*x+f)^(1/2)+8/5*b*e
^2*n*(a+b*ln(c*(e*x+d)^n))/g/(-d*g+e*f)^2/(g*x+f)^(1/2)
```

Rubi [A] time = 1.51, antiderivative size = 503, normalized size of antiderivative = 1.00, number of steps used = 19, number of rules used = 15, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.577, Rules used = {2398, 2411, 2347, 63, 208, 2348, 12, 1587, 6741, 5984, 5918, 2402, 2315, 2319, 51}

$$-\frac{8b^2e^{5/2}n^2\,\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)}{5g(ef-dg)^{5/2}}+\frac{8be^2n\left(a+b\log\left(c(d+ex)^n\right)\right)}{5g\sqrt{f+gx}\,(ef-dg)^2}-\frac{8be^{5/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)\left(a+b\log\left(\cdots\right.\right.}{5g(ef-dg)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^2/(f + g*x)^(7/2),x]
```

```
[Out] (-16*b^2*e^2*n^2)/(15*g*(e*f - d*g)^2*Sqrt[f + g*x]) + (64*b^2*e^(5/2)*n^2*
ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]])/(15*g*(e*f - d*g)^(5/2))
+ (8*b^2*e^(5/2)*n^2*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]^2)/(5
*g*(e*f - d*g)^(5/2)) + (8*b*e*n*(a + b*Log[c*(d + e*x)^n]))/(15*g*(e*f - d
*g)*(f + g*x)^(3/2)) + (8*b*e^2*n*(a + b*Log[c*(d + e*x)^n]))/(5*g*(e*f - d
*g)^2*Sqrt[f + g*x]) - (8*b*e^(5/2)*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[
e*f - d*g]]*(a + b*Log[c*(d + e*x)^n]))/(5*g*(e*f - d*g)^(5/2)) - (2*(a + b
*Log[c*(d + e*x)^n])^2)/(5*g*(f + g*x)^(5/2)) - (16*b^2*e^(5/2)*n^2*ArcTanh
[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]*Log[2/(1 - (Sqrt[e]*Sqrt[f + g*x]
)/Sqrt[e*f - d*g])])/(5*g*(e*f - d*g)^(5/2)) - (8*b^2*e^(5/2)*n^2*PolyLog[2
, 1 - 2/(1 - (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])])/(5*g*(e*f - d*g)^(5
/2))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
```

```
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 1587

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[(Coeff[Pp, x, p]*Log[RemoveContent[Qq, x]])/(q*Coeff[Qq, x, q]), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]*D[Qq, x])/(q*Coeff[Qq, x,
 q])]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2319

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/(e*(q + 1)), x]
- Dist[(b*n*p)/(e*(q + 1)), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 2347

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/x
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2348

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
```

```
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 5918

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> -Simp[((a + b*ArcTanh[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] + Dist[(b*c*
p)/e, Int[((a + b*ArcTanh[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 - c^2*x^2)
, x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2, 0
]
```

Rule 5984

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{(f+gx)^{7/2}}\,dx = -\frac{2\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{5g(f+gx)^{5/2}} + \frac{(4ben)\int \frac{a+b\log(c(d+ex)^n)}{(d+ex)(f+gx)^{5/2}}\,dx}{5g}$$

$$= -\frac{2\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{5g(f+gx)^{5/2}} + \frac{(4bn)\,\mathrm{Subst}\left(\int \frac{a+b\log(cx^n)}{x\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^{5/2}}\,dx, x, d+ex\right)}{5g}$$

$$= -\frac{2\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{5g(f+gx)^{5/2}} - \frac{(4bn)\,\mathrm{Subst}\left(\int \frac{a+b\log(cx^n)}{\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^{5/2}}\,dx, x, d+ex\right)}{5(ef-dg)} + \frac{(4ben \ldots}{\ldots}$$

$$= \frac{8ben\left(a+b\log\left(c(d+ex)^n\right)\right)}{15g(ef-dg)(f+gx)^{3/2}} - \frac{2\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{5g(f+gx)^{5/2}} - \frac{(4ben)\,\mathrm{Subst}\left(\int \ldots\right)}{5(e \ldots}$$

$$= -\frac{16b^2e^2n^2}{15g(ef-dg)^2\sqrt{f+gx}} + \frac{8ben\left(a+b\log\left(c(d+ex)^n\right)\right)}{15g(ef-dg)(f+gx)^{3/2}} + \frac{8be^2n\left(a+b\log(c(\ldots\right.}{5g(ef-dg)^2\sqrt{f \ldots}}$$

$$= -\frac{16b^2e^2n^2}{15g(ef-dg)^2\sqrt{f+gx}} + \frac{8ben\left(a+b\log\left(c(d+ex)^n\right)\right)}{15g(ef-dg)(f+gx)^{3/2}} + \frac{8be^2n\left(a+b\log(c(\ldots\right.}{5g(ef-dg)^2\sqrt{f \ldots}}$$

$$= -\frac{16b^2e^2n^2}{15g(ef-dg)^2\sqrt{f+gx}} + \frac{64b^2e^{5/2}n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{15g(ef-dg)^{5/2}} + \frac{8ben\left(a+b\log(c(\ldots\right.}{15g(ef-dg)(f+\ldots}$$

$$= -\frac{16b^2e^2n^2}{15g(ef-dg)^2\sqrt{f+gx}} + \frac{64b^2e^{5/2}n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{15g(ef-dg)^{5/2}} + \frac{8ben\left(a+b\log(c(\ldots\right.}{15g(ef-dg)(f+\ldots}$$

$$= -\frac{16b^2e^2n^2}{15g(ef-dg)^2\sqrt{f+gx}} + \frac{64b^2e^{5/2}n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{15g(ef-dg)^{5/2}} + \frac{8b^2e^{5/2}n^2\tanh^{-1}\left(\ldots\right.}{5g(ef-dg\ldots}$$

$$= -\frac{16b^2e^2n^2}{15g(ef-dg)^2\sqrt{f+gx}} + \frac{64b^2e^{5/2}n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{15g(ef-dg)^{5/2}} + \frac{8b^2e^{5/2}n^2\tanh^{-1}\left(\ldots\right.}{5g(ef-dg\ldots}$$

$$= -\frac{16b^2e^2n^2}{15g(ef-dg)^2\sqrt{f+gx}} + \frac{64b^2e^{5/2}n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{15g(ef-dg)^{5/2}} + \frac{8b^2e^{5/2}n^2\tanh^{-1}\left(\ldots\right.}{5g(ef-dg\ldots}$$

$$= -\frac{16b^2e^2n^2}{15g(ef-dg)^2\sqrt{f+gx}} + \frac{64b^2e^{5/2}n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{15g(ef-dg)^{5/2}} + \frac{8b^2e^{5/2}n^2\tanh^{-1}\left(\ldots\right.}{5g(ef-dg\ldots}$$

Mathematica [C] time = 2.20, size = 639, normalized size = 1.27

$$2\left(\frac{ben(f+gx)\left(6e^{3/2}(f+gx)^{3/2}\log\left(\sqrt{ef-dg}-\sqrt{e}\sqrt{f+gx}\right)\left(a+b\log(c(d+ex)^n)\right)-6e^{3/2}(f+gx)^{3/2}\log\left(\sqrt{ef-dg}+\sqrt{e}\sqrt{f+gx}\right)\left(a+b\log(c(d+ex)^n)\right)+4(ef\right.}{}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^2/(f + g*x)^(7/2),x]
```

```
[Out] (2*(-3*(a + b*Log[c*(d + e*x)^n])^2 + (b*e*n*(f + g*x)*(24*b*e^(3/2)*n*(f +
 g*x)^(3/2)*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]] - 8*b*e*Sqrt[e
*f - d*g]*n*(f + g*x)*Hypergeometric2F1[-1/2, 1, 1/2, (e*(f + g*x))/(e*f -
d*g)] + 4*(e*f - d*g)^(3/2)*(a + b*Log[c*(d + e*x)^n]) + 12*e*Sqrt[e*f - d*
g]*(f + g*x)*(a + b*Log[c*(d + e*x)^n]) + 6*e^(3/2)*(f + g*x)^(3/2)*(a + b*
Log[c*(d + e*x)^n])*Log[Sqrt[e*f - d*g] - Sqrt[e]*Sqrt[f + g*x]] - 6*e^(3/2
)*(f + g*x)^(3/2)*(a + b*Log[c*(d + e*x)^n])*Log[Sqrt[e*f - d*g] + Sqrt[e]*
Sqrt[f + g*x]] - 3*b*e^(3/2)*n*(f + g*x)^(3/2)*(Log[Sqrt[e*f - d*g] - Sqrt[
e]*Sqrt[f + g*x]]*(Log[Sqrt[e*f - d*g] - Sqrt[e]*Sqrt[f + g*x]] + 2*Log[(1
+ (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])/2]) + 2*PolyLog[2, 1/2 - (Sqrt[e
]*Sqrt[f + g*x])/(2*Sqrt[e*f - d*g])]) + 3*b*e^(3/2)*n*(f + g*x)^(3/2)*(Log
[Sqrt[e*f - d*g] + Sqrt[e]*Sqrt[f + g*x]]*(Log[Sqrt[e*f - d*g] + Sqrt[e]*Sq
rt[f + g*x]] + 2*Log[1/2 - (Sqrt[e]*Sqrt[f + g*x])/(2*Sqrt[e*f - d*g])]) +
2*PolyLog[2, (1 + (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])/2])))/(e*f - d*g
)^(5/2)))/(15*g*(f + g*x)^(5/2))
```

fricas [F] time = 0.83, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{gx+f}\,b^2\log\left((ex+d)^n c\right)^2+2\sqrt{gx+f}\,ab\log\left((ex+d)^n c\right)+\sqrt{gx+f}\,a^2}{g^4x^4+4\,fg^3x^3+6\,f^2g^2x^2+4\,f^3gx+f^4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^(7/2),x, algorithm="fricas")
```

```
[Out] integral((sqrt(g*x + f)*b^2*log((e*x + d)^n*c)^2 + 2*sqrt(g*x + f)*a*b*log(
(e*x + d)^n*c) + sqrt(g*x + f)*a^2)/(g^4*x^4 + 4*f*g^3*x^3 + 6*f^2*g^2*x^2
+ 4*f^3*g*x + f^4), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)^2}{\left(gx+f\right)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^(7/2),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2/(g*x + f)^(7/2), x)
```

maple [F] time = 0.53, size = 0, normalized size = 0.00

$$\int \frac{\left(b\ln\left(c\left(ex+d\right)^n\right)+a\right)^2}{\left(gx+f\right)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)^2/(g*x+f)^(7/2),x)
```

```
[Out] int((b*ln(c*(e*x+d)^n)+a)^2/(g*x+f)^(7/2),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^(7/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(d*g-e*f>0)', see `assume?` for more
 details)Is d*g-e*f positive or negative?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)^2}{{\left(f+g\,x\right)}^{7/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^2/(f + g*x)^(7/2),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))^2/(f + g*x)^(7/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2/(g*x+f)**(7/2),x)
```

```
[Out] Timed out
```

3.151 $\int \frac{(a+b\log(c(d+ex)^n))^2}{(f+gx)^{9/2}}\,dx$

Optimal. Leaf size=583

$$-\frac{8be^{7/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)(a+b\log(c(d+ex)^n))}{7g(ef-dg)^{7/2}}+\frac{8be^3n(a+b\log(c(d+ex)^n))}{7g\sqrt{f+gx}(ef-dg)^3}+\frac{8be^2n(a+b\log(c(d+e\ldots}{21g(f+gx)^{3/2}(ef-dg\ldots}$$

```
[Out] -16/105*b^2*e^2*n^2/g/(-d*g+e*f)^2/(g*x+f)^(3/2)+368/105*b^2*e^(7/2)*n^2*ar
ctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))/g/(-d*g+e*f)^(7/2)+8/7*b^2*e^
(7/2)*n^2*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))^2/g/(-d*g+e*f)^(7
/2)+8/35*b*e*n*(a+b*ln(c*(e*x+d)^n))/g/(-d*g+e*f)/(g*x+f)^(5/2)+8/21*b*e^2*
n*(a+b*ln(c*(e*x+d)^n))/g/(-d*g+e*f)^2/(g*x+f)^(3/2)-8/7*b*e^(7/2)*n*arctan
h(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))*(a+b*ln(c*(e*x+d)^n))/g/(-d*g+e*f
)^(7/2)-2/7*(a+b*ln(c*(e*x+d)^n))^2/g/(g*x+f)^(7/2)-16/7*b^2*e^(7/2)*n^2*ar
ctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))*ln(2/(1-e^(1/2)*(g*x+f)^(1/2)
/(-d*g+e*f)^(1/2)))/g/(-d*g+e*f)^(7/2)-8/7*b^2*e^(7/2)*n^2*polylog(2,1-2/(1
-e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2)))/g/(-d*g+e*f)^(7/2)-128/105*b^2*e^
3*n^2/g/(-d*g+e*f)^3/(g*x+f)^(1/2)+8/7*b*e^3*n*(a+b*ln(c*(e*x+d)^n))/g/(-d*
g+e*f)^3/(g*x+f)^(1/2)
```

Rubi [A] time = 1.85, antiderivative size = 583, normalized size of antiderivative = 1.00, number of steps used = 25, number of rules used = 15, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.577, Rules used = {2398, 2411, 2347, 63, 208, 2348, 12, 1587, 6741, 5984, 5918, 2402, 2315, 2319, 51}

$$-\frac{8b^2e^{7/2}n^2\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)}{7g(ef-dg)^{7/2}}+\frac{8be^3n(a+b\log(c(d+ex)^n))}{7g\sqrt{f+gx}(ef-dg)^3}+\frac{8be^2n(a+b\log(c(d+ex)^n))}{21g(f+gx)^{3/2}(ef-dg)^2}-\frac{8be^{7/2}\ldots}{\ldots}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^2/(f + g*x)^(9/2),x]
```

```
[Out] (-16*b^2*e^2*n^2)/(105*g*(e*f - d*g)^2*(f + g*x)^(3/2)) - (128*b^2*e^3*n^2)
/(105*g*(e*f - d*g)^3*Sqrt[f + g*x]) + (368*b^2*e^(7/2)*n^2*ArcTanh[(Sqrt[e
]*Sqrt[f + g*x])/Sqrt[e*f - d*g]])/(105*g*(e*f - d*g)^(7/2)) + (8*b^2*e^(7/
2)*n^2*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]^2)/(7*g*(e*f - d*g)
^(7/2)) + (8*b*e*n*(a + b*Log[c*(d + e*x)^n]))/(35*g*(e*f - d*g)*(f + g*x)^
(5/2)) + (8*b*e^2*n*(a + b*Log[c*(d + e*x)^n]))/(21*g*(e*f - d*g)^2*(f + g*
x)^(3/2)) + (8*b*e^3*n*(a + b*Log[c*(d + e*x)^n]))/(7*g*(e*f - d*g)^3*Sqrt[
f + g*x]) - (8*b*e^(7/2)*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]
*(a + b*Log[c*(d + e*x)^n]))/(7*g*(e*f - d*g)^(7/2)) - (2*(a + b*Log[c*(d +
 e*x)^n])^2)/(7*g*(f + g*x)^(7/2)) - (16*b^2*e^(7/2)*n^2*ArcTanh[(Sqrt[e]*S
qrt[f + g*x])/Sqrt[e*f - d*g]]*Log[2/(1 - (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f
- d*g])])/(7*g*(e*f - d*g)^(7/2)) - (8*b^2*e^(7/2)*n^2*PolyLog[2, 1 - 2/(1
- (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])])/(7*g*(e*f - d*g)^(7/2))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
```

```
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 1587

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[(Coeff[Pp, x, p]*Log[RemoveContent[Qq, x]])/(q*Coeff[Qq, x, q]), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]*D[Qq, x])/(q*Coeff[Qq, x,
 q])]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2319

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/(e*(q + 1)), x]
- Dist[(b*n*p)/(e*(q + 1)), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 2347

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/x
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2348

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
```

```
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 5918

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> -Simp[((a + b*ArcTanh[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] + Dist[(b*c*
p)/e, Int[((a + b*ArcTanh[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 - c^2*x^2)
, x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2, 0
]
```

Rule 5984

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{(f+gx)^{9/2}}\,dx = -\frac{2\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{7g(f+gx)^{7/2}} + \frac{(4ben)\int \frac{a+b\log(c(d+ex)^n)}{(d+ex)(f+gx)^{7/2}}\,dx}{7g}$$

$$= -\frac{2\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{7g(f+gx)^{7/2}} + \frac{(4bn)\,\mathrm{Subst}\left(\int \frac{a+b\log(cx^n)}{x\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^{7/2}}\,dx, x, d+ex\right)}{7g}$$

$$= -\frac{2\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{7g(f+gx)^{7/2}} - \frac{(4bn)\,\mathrm{Subst}\left(\int \frac{a+b\log(cx^n)}{\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^{7/2}}\,dx, x, d+ex\right)}{7(ef-dg)} + \frac{(4be \cdots}{\cdots}$$

$$= \frac{8ben\left(a+b\log\left(c(d+ex)^n\right)\right)}{35g(ef-dg)(f+gx)^{5/2}} - \frac{2\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{7g(f+gx)^{7/2}} - \frac{(4ben)\,\mathrm{Subst}\left(\int \frac{a \cdots}{\left(e \cdots\right.}\right.}{7(e \cdots}$$

$$= -\frac{16b^2e^2n^2}{105g(ef-dg)^2(f+gx)^{3/2}} + \frac{8ben\left(a+b\log\left(c(d+ex)^n\right)\right)}{35g(ef-dg)(f+gx)^{5/2}} + \frac{8be^2n\left(a+b\log \cdots\right.}{21g(ef-dg)^2 \cdots}$$

$$= -\frac{16b^2e^2n^2}{105g(ef-dg)^2(f+gx)^{3/2}} - \frac{128b^2e^3n^2}{105g(ef-dg)^3\sqrt{f+gx}} + \frac{8ben\left(a+b\log\left(c(d+\cdots\right.\right.}{35g(ef-dg)(f+g\cdots}$$

$$= -\frac{16b^2e^2n^2}{105g(ef-dg)^2(f+gx)^{3/2}} - \frac{128b^2e^3n^2}{105g(ef-dg)^3\sqrt{f+gx}} + \frac{8ben\left(a+b\log\left(c(d+\cdots\right.\right.}{35g(ef-dg)(f+g\cdots}$$

$$= -\frac{16b^2e^2n^2}{105g(ef-dg)^2(f+gx)^{3/2}} - \frac{128b^2e^3n^2}{105g(ef-dg)^3\sqrt{f+gx}} + \frac{368b^2e^{7/2}n^2\tanh^{-1}\left(\cdots\right.}{105g(ef-dg)\cdots}$$

$$= -\frac{16b^2e^2n^2}{105g(ef-dg)^2(f+gx)^{3/2}} - \frac{128b^2e^3n^2}{105g(ef-dg)^3\sqrt{f+gx}} + \frac{368b^2e^{7/2}n^2\tanh^{-1}\left(\cdots\right.}{105g(ef-dg)\cdots}$$

$$= -\frac{16b^2e^2n^2}{105g(ef-dg)^2(f+gx)^{3/2}} - \frac{128b^2e^3n^2}{105g(ef-dg)^3\sqrt{f+gx}} + \frac{368b^2e^{7/2}n^2\tanh^{-1}\left(\cdots\right.}{105g(ef-dg)\cdots}$$

$$= -\frac{16b^2e^2n^2}{105g(ef-dg)^2(f+gx)^{3/2}} - \frac{128b^2e^3n^2}{105g(ef-dg)^3\sqrt{f+gx}} + \frac{368b^2e^{7/2}n^2\tanh^{-1}\left(\cdots\right.}{105g(ef-dg)\cdots}$$

$$= -\frac{16b^2e^2n^2}{105g(ef-dg)^2(f+gx)^{3/2}} - \frac{128b^2e^3n^2}{105g(ef-dg)^3\sqrt{f+gx}} + \frac{368b^2e^{7/2}n^2\tanh^{-1}\left(\cdots\right.}{105g(ef-dg)\cdots}$$

Mathematica [C] time = 3.95, size = 728, normalized size = 1.25

$$2\left(\frac{ben(f+gx)\left(30e^{5/2}(f+gx)^{5/2}\log\left(\sqrt{ef-dg}-\sqrt{e}\sqrt{f+gx}\right)\left(a+b\log(c(d+ex)^n)\right)-30e^{5/2}(f+gx)^{5/2}\log\left(\sqrt{ef-dg}+\sqrt{e}\sqrt{f+gx}\right)\left(a+b\log(c(d+ex)^n)\right)+6}{}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^2/(f + g*x)^(9/2),x]
```

```
[Out] (2*(-15*(a + b*Log[c*(d + e*x)^n])^2 + (b*e*n*(f + g*x)*(120*b*e^(5/2)*n*(f
 + g*x)^(5/2)*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]] - 8*b*e*(e*f
 - d*g)^(3/2)*n*(f + g*x)*Hypergeometric2F1[-3/2, 1, -1/2, (e*(f + g*x))/(e
*f - d*g)] - 40*b*e^2*Sqrt[e*f - d*g]*n*(f + g*x)^2*Hypergeometric2F1[-1/2,
 1, 1/2, (e*(f + g*x))/(e*f - d*g)] + 12*(e*f - d*g)^(5/2)*(a + b*Log[c*(d
+ e*x)^n]) + 20*e*(e*f - d*g)^(3/2)*(f + g*x)*(a + b*Log[c*(d + e*x)^n]) +
60*e^2*Sqrt[e*f - d*g]*(f + g*x)^2*(a + b*Log[c*(d + e*x)^n]) + 30*e^(5/2)*
(f + g*x)^(5/2)*(a + b*Log[c*(d + e*x)^n])*Log[Sqrt[e*f - d*g] - Sqrt[e]*Sq
rt[f + g*x]] - 30*e^(5/2)*(f + g*x)^(5/2)*(a + b*Log[c*(d + e*x)^n])*Log[Sq
rt[e*f - d*g] + Sqrt[e]*Sqrt[f + g*x]] - 15*b*e^(5/2)*n*(f + g*x)^(5/2)*(Lo
g[Sqrt[e*f - d*g] - Sqrt[e]*Sqrt[f + g*x]]*(Log[Sqrt[e*f - d*g] - Sqrt[e]*S
qrt[f + g*x]] + 2*Log[(1 + (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])/2]) + 2
*PolyLog[2, 1/2 - (Sqrt[e]*Sqrt[f + g*x])/(2*Sqrt[e*f - d*g])]) + 15*b*e^(5
/2)*n*(f + g*x)^(5/2)*(Log[Sqrt[e*f - d*g] + Sqrt[e]*Sqrt[f + g*x]]*(Log[Sq
rt[e*f - d*g] + Sqrt[e]*Sqrt[f + g*x]] + 2*Log[1/2 - (Sqrt[e]*Sqrt[f + g*x]
)/(2*Sqrt[e*f - d*g])]) + 2*PolyLog[2, (1 + (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*
f - d*g])/2])))/(e*f - d*g)^(7/2)))/(105*g*(f + g*x)^(7/2))
```

fricas [F] time = 0.56, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\sqrt{gx+f}\,b^2\log\left((ex+d)^n c\right)^2+2\sqrt{gx+f}\,ab\log\left((ex+d)^n c\right)+\sqrt{gx+f}\,a^2}{g^5x^5+5\,fg^4x^4+10\,f^2g^3x^3+10\,f^3g^2x^2+5\,f^4gx+f^5},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^(9/2),x, algorithm="fricas")
```

```
[Out] integral((sqrt(g*x + f)*b^2*log((e*x + d)^n*c)^2 + 2*sqrt(g*x + f)*a*b*log(
(e*x + d)^n*c) + sqrt(g*x + f)*a^2)/(g^5*x^5 + 5*f*g^4*x^4 + 10*f^2*g^3*x^3
 + 10*f^3*g^2*x^2 + 5*f^4*g*x + f^5), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)^2}{\left(gx+f\right)^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^(9/2),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2/(g*x + f)^(9/2), x)
```

maple [F] time = 0.52, size = 0, normalized size = 0.00

$$\int \frac{\left(b\ln\left(c\,(ex+d)^n\right)+a\right)^2}{\left(gx+f\right)^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)^2/(g*x+f)^(9/2),x)
```

```
[Out] int((b*ln(c*(e*x+d)^n)+a)^2/(g*x+f)^(9/2),x)
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^(9/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(d*g-e*f>0)', see `assume?` for more
 details)Is d*g-e*f positive or negative?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)^2}{{\left(f+g\,x\right)}^{9/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^2/(f + g*x)^(9/2),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))^2/(f + g*x)^(9/2), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2/(g*x+f)**(9/2),x)
```

```
[Out] Timed out
```

3.152 $\int \frac{(f+gx)^{3/2}}{a+b\log(c(d+ex)^n)}\,dx$

Optimal. Leaf size=29

$$\text{Int}\left(\frac{(f+gx)^{3/2}}{a+b\log\left(c(d+ex)^n\right)},x\right)$$

```
[Out] Unintegrable((g*x+f)^(3/2)/(a+b*ln(c*(e*x+d)^n)),x)
```

Rubi [A] time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(f+gx)^{3/2}}{a+b\log\left(c(d+ex)^n\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(f + g*x)^(3/2)/(a + b*Log[c*(d + e*x)^n]),x]
[Out] Defer[Int][(f + g*x)^(3/2)/(a + b*Log[c*(d + e*x)^n]), x]
```

Rubi steps

$$\int \frac{(f+gx)^{3/2}}{a+b\log\left(c(d+ex)^n\right)}\,dx=\int \frac{(f+gx)^{3/2}}{a+b\log\left(c(d+ex)^n\right)}\,dx$$

Mathematica [A] time = 1.09, size = 0, normalized size = 0.00

$$\int \frac{(f+gx)^{3/2}}{a+b\log\left(c(d+ex)^n\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(f + g*x)^(3/2)/(a + b*Log[c*(d + e*x)^n]),x]
[Out] Integrate[(f + g*x)^(3/2)/(a + b*Log[c*(d + e*x)^n]), x]
```

fricas [A] time = 0.51, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(gx+f\right)^{\frac{3}{2}}}{b\log\left(\left(ex+d\right)^{n}c\right)+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(3/2)/(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
[Out] integral((g*x + f)^(3/2)/(b*log((e*x + d)^n*c) + a), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(gx+f\right)^{\frac{3}{2}}}{b\log\left(\left(ex+d\right)^{n}c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(3/2)/(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
```

```
[Out] integrate((g*x + f)^(3/2)/(b*log((e*x + d)^n*c) + a), x)
```

maple [A] time = 0.43, size = 0, normalized size = 0.00

$$\int \frac{(gx+f)^{\frac{3}{2}}}{b\ln\left(c\,(ex+d)^{n}\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^(3/2)/(b*ln(c*(e*x+d)^n)+a),x)
```

```
[Out] int((g*x+f)^(3/2)/(b*ln(c*(e*x+d)^n)+a),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{2\left(g^{2}x^{2}+2\,fgx+f^{2}\right)\sqrt{gx+f}}{5\left(bg\log\left((ex+d)^{n}\right)+bg\log(c)+ag\right)}+\int \frac{2}{5\left(b^{2}dg\log(c)^{2}+2\,abdg\log(c)+a^{2}dg+\left(b^{2}egx+b^{2}dg\right)\log\left((ex+d)\cdots\right)\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(3/2)/(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
```

```
[Out] 2/5*(g^2*x^2 + 2*f*g*x + f^2)*sqrt(g*x + f)/(b*g*log((e*x + d)^n) + b*g*log
(c) + a*g) + integrate(2/5*(b*e*g^2*n*x^2 + 2*b*e*f*g*n*x + b*e*f^2*n)*sqrt
(g*x + f)/(b^2*d*g*log(c)^2 + 2*a*b*d*g*log(c) + a^2*d*g + (b^2*e*g*x + b^2
*d*g)*log((e*x + d)^n)^2 + (b^2*e*g*log(c)^2 + 2*a*b*e*g*log(c) + a^2*e*g)*
x + 2*(b^2*d*g*log(c) + a*b*d*g + (b^2*e*g*log(c) + a*b*e*g)*x)*log((e*x +
d)^n)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{{\left(f+g\,x\right)}^{3/2}}{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^(3/2)/(a + b*log(c*(d + e*x)^n)),x)
```

```
[Out] int((f + g*x)^(3/2)/(a + b*log(c*(d + e*x)^n)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**(3/2)/(a+b*ln(c*(e*x+d)**n)),x)
```

```
[Out] Timed out
```

3.153 $\int \frac{\sqrt{f+gx}}{a+b\log(c(d+ex)^n)}\,dx$

Optimal. Leaf size=29

$$\text{Int}\left(\frac{\sqrt{f+gx}}{a+b\log\left(c(d+ex)^n\right)},x\right)$$

```
[Out] Unintegrable((g*x+f)^(1/2)/(a+b*ln(c*(e*x+d)^n)),x)
```

Rubi [A] time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sqrt{f+gx}}{a+b\log\left(c(d+ex)^n\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sqrt[f + g*x]/(a + b*Log[c*(d + e*x)^n]),x]
[Out] Defer[Int][Sqrt[f + g*x]/(a + b*Log[c*(d + e*x)^n]), x]
```

Rubi steps

$$\int \frac{\sqrt{f+gx}}{a+b\log\left(c(d+ex)^n\right)}\,dx=\int \frac{\sqrt{f+gx}}{a+b\log\left(c(d+ex)^n\right)}\,dx$$

Mathematica [A] time = 0.94, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{f+gx}}{a+b\log\left(c(d+ex)^n\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sqrt[f + g*x]/(a + b*Log[c*(d + e*x)^n]),x]
[Out] Integrate[Sqrt[f + g*x]/(a + b*Log[c*(d + e*x)^n]), x]
```

fricas [A] time = 0.51, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{gx+f}}{b\log\left((ex+d)^n c\right)+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(1/2)/(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
[Out] integral(sqrt(g*x + f)/(b*log((e*x + d)^n*c) + a), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{gx+f}}{b\log\left((ex+d)^n c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(1/2)/(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
[Out] integrate(sqrt(g*x + f)/(b*log((e*x + d)^n*c) + a), x)
```

maple [A] time = 0.41, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{gx+f}}{b\ln\left(c\,(ex+d)^{n}\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^(1/2)/(b*ln(c*(e*x+d)^n)+a),x)
```

```
[Out] int((g*x+f)^(1/2)/(b*ln(c*(e*x+d)^n)+a),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{2\left(gx+f\right)^{\frac{3}{2}}}{3\left(bg\log\left((ex+d)^{n}\right)+bg\log(c)+ag\right)}+\int \frac{}{3\left(b^{2}dg\log(c)^{2}+2\,abdg\log(c)+a^{2}dg+\left(b^{2}egx+b^{2}dg\right)\log\left((ex+d)\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(1/2)/(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
```

```
[Out] 2/3*(g*x + f)^(3/2)/(b*g*log((e*x + d)^n) + b*g*log(c) + a*g) + integrate(2
/3*(b*e*g*n*x + b*e*f*n)*sqrt(g*x + f)/(b^2*d*g*log(c)^2 + 2*a*b*d*g*log(c)
 + a^2*d*g + (b^2*e*g*x + b^2*d*g)*log((e*x + d)^n)^2 + (b^2*e*g*log(c)^2 +
 2*a*b*e*g*log(c) + a^2*e*g)*x + 2*(b^2*d*g*log(c) + a*b*d*g + (b^2*e*g*log
(c) + a*b*e*g)*x)*log((e*x + d)^n)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\sqrt{f+g\,x}}{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^(1/2)/(a + b*log(c*(d + e*x)^n)),x)
```

```
[Out] int((f + g*x)^(1/2)/(a + b*log(c*(d + e*x)^n)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**(1/2)/(a+b*ln(c*(e*x+d)**n)),x)
```

```
[Out] Timed out
```

3.154 $\int \frac{1}{\sqrt{f+gx}\left(a+b\log(c(d+ex)^n)\right)}\,dx$

Optimal. Leaf size=29

$$\text{Int}\left(\frac{1}{\sqrt{f+gx}\left(a+b\log\left(c(d+ex)^n\right)\right)},x\right)$$

```
[Out] Unintegrable(1/(a+b*ln(c*(e*x+d)^n))/(g*x+f)^(1/2),x)
```

Rubi [A] time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{\sqrt{f+gx}\left(a+b\log\left(c(d+ex)^n\right)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/(Sqrt[f + g*x]*(a + b*Log[c*(d + e*x)^n])),x]
[Out] Defer[Int][1/(Sqrt[f + g*x]*(a + b*Log[c*(d + e*x)^n])), x]
```

Rubi steps

$$\int \frac{1}{\sqrt{f+gx}\left(a+b\log\left(c(d+ex)^n\right)\right)}\,dx = \int \frac{1}{\sqrt{f+gx}\left(a+b\log\left(c(d+ex)^n\right)\right)}\,dx$$

Mathematica [A] time = 1.35, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{f+gx}\left(a+b\log\left(c(d+ex)^n\right)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/(Sqrt[f + g*x]*(a + b*Log[c*(d + e*x)^n])),x]
[Out] Integrate[1/(Sqrt[f + g*x]*(a + b*Log[c*(d + e*x)^n])), x]
```

fricas [A] time = 0.50, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{gx+f}}{agx+af+\left(bgx+bf\right)\log\left((ex+d)^n c\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))/(g*x+f)^(1/2),x, algorithm="fricas")
[Out] integral(sqrt(g*x + f)/(a*g*x + a*f + (b*g*x + b*f)*log((e*x + d)^n*c)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{gx+f}\left(b\log\left((ex+d)^n c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))/(g*x+f)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(1/(sqrt(g*x + f)*(b*log((e*x + d)^n*c) + a)), x)
```

maple [A] time = 0.40, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(b \ln \left(c \left(ex+d\right)^{n}\right)+a\right) \sqrt{gx+f}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*ln(c*(e*x+d)^n)+a)/(g*x+f)^(1/2),x)
```

```
[Out] int(1/(b*ln(c*(e*x+d)^n)+a)/(g*x+f)^(1/2),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{2\sqrt{gx+f}}{bg\log\left(\left(ex+d\right)^{n}\right)+bg\log\left(c\right)+ag}+\int \frac{}{\left(b^{2}dg\log\left(c\right)^{2}+2\,abdg\log\left(c\right)+a^{2}dg+\left(b^{2}egx+b^{2}dg\right)\log\left(\left(ex+d\right)^{n}\right)^{2}+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))/(g*x+f)^(1/2),x, algorithm="maxima")
```

```
[Out] 2*sqrt(g*x + f)/(b*g*log((e*x + d)^n) + b*g*log(c) + a*g) + integrate(2*(b*
e*g*n*x + b*e*f*n)/((b^2*d*g*log(c)^2 + 2*a*b*d*g*log(c) + a^2*d*g + (b^2*e
*g*x + b^2*d*g)*log((e*x + d)^n)^2 + (b^2*e*g*log(c)^2 + 2*a*b*e*g*log(c) +
 a^2*e*g)*x + 2*(b^2*d*g*log(c) + a*b*d*g + (b^2*e*g*log(c) + a*b*e*g)*x)*l
og((e*x + d)^n))*sqrt(g*x + f)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{\sqrt{f+g\,x}\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((f + g*x)^(1/2)*(a + b*log(c*(d + e*x)^n))),x)
```

```
[Out] int(1/((f + g*x)^(1/2)*(a + b*log(c*(d + e*x)^n))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\log\left(c\left(d+ex\right)^{n}\right)\right)\sqrt{f+gx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(e*x+d)**n))/(g*x+f)**(1/2),x)
```

```
[Out] Integral(1/((a + b*log(c*(d + e*x)**n))*sqrt(f + g*x)), x)
```

3.155 $\int \frac{1}{(f+gx)^{3/2}\left(a+b\log(c(d+ex)^n)\right)}\,dx$

Optimal. Leaf size=29

$$\text{Int}\left(\frac{1}{(f+gx)^{3/2}\left(a+b\log\left(c(d+ex)^n\right)\right)},x\right)$$

```
[Out] Unintegrable(1/(g*x+f)^(3/2)/(a+b*ln(c*(e*x+d)^n)),x)
```

Rubi [A] time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(f+gx)^{3/2}\left(a+b\log\left(c(d+ex)^n\right)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((f + g*x)^(3/2)*(a + b*Log[c*(d + e*x)^n])),x]
[Out] Defer[Int][1/((f + g*x)^(3/2)*(a + b*Log[c*(d + e*x)^n])), x]
```

Rubi steps

$$\int \frac{1}{(f+gx)^{3/2}\left(a+b\log\left(c(d+ex)^n\right)\right)}\,dx=\int \frac{1}{(f+gx)^{3/2}\left(a+b\log\left(c(d+ex)^n\right)\right)}\,dx$$

Mathematica [A] time = 1.45, size = 0, normalized size = 0.00

$$\int \frac{1}{(f+gx)^{3/2}\left(a+b\log\left(c(d+ex)^n\right)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((f + g*x)^(3/2)*(a + b*Log[c*(d + e*x)^n])),x]
[Out] Integrate[1/((f + g*x)^(3/2)*(a + b*Log[c*(d + e*x)^n])), x]
```

fricas [A] time = 0.53, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{gx+f}}{ag^2x^2+2\,afgx+af^2+\left(bg^2x^2+2\,bfgx+bf^2\right)\log\left((ex+d)^n c\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)^(3/2)/(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
[Out] integral(sqrt(g*x + f)/(a*g^2*x^2 + 2*a*f*g*x + a*f^2 + (b*g^2*x^2 + 2*b*f*
g*x + b*f^2)*log((e*x + d)^n*c)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(gx+f)^{\frac{3}{2}}\left(b\log\left((ex+d)^n c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)^(3/2)/(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
```

```
[Out] integrate(1/((g*x + f)^(3/2)*(b*log((e*x + d)^n*c) + a)), x)
```

maple [A] time = 0.41, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(gx+f\right)^{\frac{3}{2}}\left(b\ln\left(c\left(ex+d\right)^{n}\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(g*x+f)^(3/2)/(b*ln(c*(e*x+d)^n)+a),x)
```

```
[Out] int(1/(g*x+f)^(3/2)/(b*ln(c*(e*x+d)^n)+a),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-2\,ben\int\frac{1}{\left(b^{2}dg\log(c)^{2}+2\,abdg\log(c)+a^{2}dg+\left(b^{2}egx+b^{2}dg\right)\log\left(\left(ex+d\right)^{n}\right)^{2}+\left(b^{2}eg\log(c)^{2}+2\,abeg\log(c)\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)^(3/2)/(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
```

```
[Out] -2*b*e*n*integrate(1/((b^2*d*g*log(c)^2 + 2*a*b*d*g*log(c) + a^2*d*g + (b^2
*e*g*x + b^2*d*g)*log((e*x + d)^n)^2 + (b^2*e*g*log(c)^2 + 2*a*b*e*g*log(c)
 + a^2*e*g)*x + 2*(b^2*d*g*log(c) + a*b*d*g + (b^2*e*g*log(c) + a*b*e*g)*x)
*log((e*x + d)^n))*sqrt(g*x + f)), x) - 2/((b*g*log((e*x + d)^n) + b*g*log(
c) + a*g)*sqrt(g*x + f))
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{{\left(f+g\,x\right)}^{3/2}\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^{n}\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((f + g*x)^(3/2)*(a + b*log(c*(d + e*x)^n))),x)
```

```
[Out] int(1/((f + g*x)^(3/2)*(a + b*log(c*(d + e*x)^n))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\log\left(c\left(d+ex\right)^{n}\right)\right)\left(f+gx\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)**(3/2)/(a+b*ln(c*(e*x+d)**n)),x)
```

```
[Out] Integral(1/((a + b*log(c*(d + e*x)**n))*(f + g*x)**(3/2)), x)
```

3.156 $\int \sqrt{f+gx}\sqrt{a+b\log\left(c(d+ex)^n\right)}\,dx$

Optimal. Leaf size=83

$$\frac{2(f+gx)^{3/2}\sqrt{a+b\log\left(c(d+ex)^n\right)}}{3g}-\frac{ben\text{Int}\left(\frac{(f+gx)^{3/2}}{(d+ex)\sqrt{a+b\log(c(d+ex)^n)}},x\right)}{3g}$$

```
[Out] 2/3*(g*x+f)^(3/2)*(a+b*ln(c*(e*x+d)^n))^(1/2)/g-1/3*b*e*n*Unintegrable((g*x
+f)^(3/2)/(e*x+d)/(a+b*ln(c*(e*x+d)^n))^(1/2),x)/g
```

Rubi [A] time = 0.26, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \sqrt{f+gx}\sqrt{a+b\log\left(c(d+ex)^n\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sqrt[f + g*x]*Sqrt[a + b*Log[c*(d + e*x)^n]],x]
```

```
[Out] (2*(f + g*x)^(3/2)*Sqrt[a + b*Log[c*(d + e*x)^n]])/(3*g) - (b*e*n*Defer[Int
][(f + g*x)^(3/2)/((d + e*x)*Sqrt[a + b*Log[c*(d + e*x)^n]]), x])/(3*g)
```

Rubi steps

$$\int \sqrt{f+gx}\sqrt{a+b\log\left(c(d+ex)^n\right)}\,dx=\frac{2(f+gx)^{3/2}\sqrt{a+b\log\left(c(d+ex)^n\right)}}{3g}-\frac{(ben)\int\frac{(f+gx)^{3/2}}{(d+ex)\sqrt{a+b\log(c(d+ex)^n)}}\,d}{3g}$$

Mathematica [A] time = 1.42, size = 0, normalized size = 0.00

$$\int \sqrt{f+gx}\sqrt{a+b\log\left(c(d+ex)^n\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sqrt[f + g*x]*Sqrt[a + b*Log[c*(d + e*x)^n]],x]
```

```
[Out] Integrate[Sqrt[f + g*x]*Sqrt[a + b*Log[c*(d + e*x)^n]], x]
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(1/2)*(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{gx+f}\sqrt{b\log\left((ex+d)^n c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(1/2)*(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(g*x + f)*sqrt(b*log((e*x + d)^n*c) + a), x)
```

maple [A] time = 0.72, size = 0, normalized size = 0.00

$$\int \sqrt{gx+f}\,\sqrt{b\ln\left(c\,(ex+d)^{n}\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^(1/2)*(b*ln(c*(e*x+d)^n)+a)^(1/2),x)
[Out] int((g*x+f)^(1/2)*(b*ln(c*(e*x+d)^n)+a)^(1/2),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{gx+f}\,\sqrt{b\log\left((ex+d)^{n}c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(1/2)*(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="maxima")
[Out] integrate(sqrt(g*x + f)*sqrt(b*log((e*x + d)^n*c) + a), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.01

$$\int \sqrt{f+g\,x}\,\sqrt{a+b\,\ln\left(c\,(d+e\,x)^{n}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^(1/2)*(a + b*log(c*(d + e*x)^n))^(1/2),x)
[Out] int((f + g*x)^(1/2)*(a + b*log(c*(d + e*x)^n))^(1/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**(1/2)*(a+b*ln(c*(e*x+d)**n))**(1/2),x)
[Out] Timed out
```

3.157 $\int \frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{f+gx}}\,dx$

Optimal. Leaf size=79

$$\frac{2\sqrt{f+gx}\sqrt{a+b\log(c(d+ex)^n)}}{g}-\frac{ben\text{Int}\left(\frac{\sqrt{f+gx}}{(d+ex)\sqrt{a+b\log(c(d+ex)^n)}},x\right)}{g}$$

```
[Out] 2*(g*x+f)^(1/2)*(a+b*ln(c*(e*x+d)^n))^(1/2)/g-b*e*n*Unintegrable((g*x+f)^(1
/2)/(e*x+d)/(a+b*ln(c*(e*x+d)^n))^(1/2),x)/g
```

Rubi [A] time = 0.24, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{f+gx}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sqrt[a + b*Log[c*(d + e*x)^n]]/Sqrt[f + g*x],x]
```

```
[Out] (2*Sqrt[f + g*x]*Sqrt[a + b*Log[c*(d + e*x)^n]])/g - (b*e*n*Defer[Int][Sqrt
[f + g*x]/((d + e*x)*Sqrt[a + b*Log[c*(d + e*x)^n]]), x])/g
```

Rubi steps

$$\int \frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{f+gx}}\,dx=\frac{2\sqrt{f+gx}\sqrt{a+b\log(c(d+ex)^n)}}{g}-\frac{(ben)\int \frac{\sqrt{f+gx}}{(d+ex)\sqrt{a+b\log(c(d+ex)^n)}}\,dx}{g}$$

Mathematica [A] time = 1.66, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{f+gx}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sqrt[a + b*Log[c*(d + e*x)^n]]/Sqrt[f + g*x],x]
```

```
[Out] Integrate[Sqrt[a + b*Log[c*(d + e*x)^n]]/Sqrt[f + g*x], x]
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2)/(g*x+f)^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >> Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{b\log\left((ex+d)^n c\right)+a}}{\sqrt{gx+f}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2)/(g*x+f)^(1/2),x, algorithm="giac")
[Out] integrate(sqrt(b*log((e*x + d)^n*c) + a)/sqrt(g*x + f), x)
```

maple [A] time = 0.63, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{b\ln\left(c\,(ex+d)^{n}\right)+a}}{\sqrt{gx+f}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)^(1/2)/(g*x+f)^(1/2),x)
[Out] int((b*ln(c*(e*x+d)^n)+a)^(1/2)/(g*x+f)^(1/2),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{b\log\left((ex+d)^{n}c\right)+a}}{\sqrt{gx+f}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2)/(g*x+f)^(1/2),x, algorithm="maxima")
[Out] integrate(sqrt(b*log((e*x + d)^n*c) + a)/sqrt(g*x + f), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sqrt{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}}{\sqrt{f+g\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^(1/2)/(f + g*x)^(1/2),x)
[Out] int((a + b*log(c*(d + e*x)^n))^(1/2)/(f + g*x)^(1/2), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{a+b\log\left(c\,(d+ex)^{n}\right)}}{\sqrt{f+gx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**(1/2)/(g*x+f)**(1/2),x)
[Out] Integral(sqrt(a + b*log(c*(d + e*x)**n))/sqrt(f + g*x), x)
```

3.158 $\int \frac{\sqrt{a+b\log(c(d+ex)^n)}}{(f+gx)^{3/2}}\,dx$

Optimal. Leaf size=78

$$\frac{ben\text{Int}\left(\frac{1}{(d+ex)\sqrt{f+gx}\sqrt{a+b\log(c(d+ex)^n)}},x\right)}{g}-\frac{2\sqrt{a+b\log\left(c(d+ex)^n\right)}}{g\sqrt{f+gx}}$$

```
[Out] -2*(a+b*ln(c*(e*x+d)^n))^(1/2)/g/(g*x+f)^(1/2)+b*e*n*Unintegrable(1/(e*x+d)
/(g*x+f)^(1/2)/(a+b*ln(c*(e*x+d)^n))^(1/2),x)/g
```

Rubi [A] time = 0.26, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{(f+gx)^{3/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sqrt[a + b*Log[c*(d + e*x)^n]]/(f + g*x)^(3/2),x]
```

```
[Out] (-2*Sqrt[a + b*Log[c*(d + e*x)^n]])/(g*Sqrt[f + g*x]) + (b*e*n*Defer[Int][1
/((d + e*x)*Sqrt[f + g*x]*Sqrt[a + b*Log[c*(d + e*x)^n]]), x])/g
```

Rubi steps

$$\int \frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{(f+gx)^{3/2}}\,dx=-\frac{2\sqrt{a+b\log\left(c(d+ex)^n\right)}}{g\sqrt{f+gx}}+\frac{(ben)\int \frac{1}{(d+ex)\sqrt{f+gx}\sqrt{a+b\log(c(d+ex)^n)}}\,dx}{g}$$

Mathematica [A] time = 1.32, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{(f+gx)^{3/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sqrt[a + b*Log[c*(d + e*x)^n]]/(f + g*x)^(3/2),x]
```

```
[Out] Integrate[Sqrt[a + b*Log[c*(d + e*x)^n]]/(f + g*x)^(3/2), x]
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2)/(g*x+f)^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >> Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{b\log\left((ex+d)^n c\right)+a}}{(gx+f)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2)/(g*x+f)^(3/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(b*log((e*x + d)^n*c) + a)/(g*x + f)^(3/2), x)
```

maple [A] time = 0.64, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{b \ln \left(c \left(ex+d\right)^{n}\right)+a}}{\left(gx+f\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)^(1/2)/(g*x+f)^(3/2),x)
```

```
[Out] int((b*ln(c*(e*x+d)^n)+a)^(1/2)/(g*x+f)^(3/2),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{b \log \left(\left(ex+d\right)^{n} c\right)+a}}{\left(gx+f\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2)/(g*x+f)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(b*log((e*x + d)^n*c) + a)/(g*x + f)^(3/2), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sqrt{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}}{{\left(f+g\,x\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^(1/2)/(f + g*x)^(3/2),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))^(1/2)/(f + g*x)^(3/2), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{a + b \log{\left(c \left(d + ex\right)^{n} \right)}}}{\left(f + gx\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**(1/2)/(g*x+f)**(3/2),x)
```

```
[Out] Integral(sqrt(a + b*log(c*(d + e*x)**n))/(f + g*x)**(3/2), x)
```

3.159 $\int \frac{\sqrt{f+gx}}{\sqrt{a+b\log(c(d+ex)^n)}}\,dx$

Optimal. Leaf size=31

$$\mathrm{Int}\left(\frac{\sqrt{f+gx}}{\sqrt{a+b\log\left(c(d+ex)^n\right)}},x\right)$$

```
[Out] Unintegrable((g*x+f)^(1/2)/(a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

Rubi [A] time = 0.05, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sqrt{f+gx}}{\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sqrt[f + g*x]/Sqrt[a + b*Log[c*(d + e*x)^n]],x]
```

```
[Out] Defer[Int][Sqrt[f + g*x]/Sqrt[a + b*Log[c*(d + e*x)^n]], x]
```

Rubi steps

$$\int \frac{\sqrt{f+gx}}{\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx=\int \frac{\sqrt{f+gx}}{\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx$$

Mathematica [A] time = 5.33, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{f+gx}}{\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sqrt[f + g*x]/Sqrt[a + b*Log[c*(d + e*x)^n]],x]
```

```
[Out] Integrate[Sqrt[f + g*x]/Sqrt[a + b*Log[c*(d + e*x)^n]], x]
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(1/2)/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{gx+f}}{\sqrt{b\log\left((ex+d)^n c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(1/2)/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(g*x + f)/sqrt(b*log((e*x + d)^n*c) + a), x)
```

maple [A] time = 0.64, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{gx+f}}{\sqrt{b\ln\left(c\,(ex+d)^{n}\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^(1/2)/(b*ln(c*(e*x+d)^n)+a)^(1/2),x)
[Out] int((g*x+f)^(1/2)/(b*ln(c*(e*x+d)^n)+a)^(1/2),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{gx+f}}{\sqrt{b\log\left((ex+d)^{n}c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(1/2)/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="maxima")
[Out] integrate(sqrt(g*x + f)/sqrt(b*log((e*x + d)^n*c) + a), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\sqrt{f+g\,x}}{\sqrt{a+b\,\ln\left(c\,(d+e\,x)^{n}\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^(1/2)/(a + b*log(c*(d + e*x)^n))^(1/2),x)
[Out] int((f + g*x)^(1/2)/(a + b*log(c*(d + e*x)^n))^(1/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**(1/2)/(a+b*ln(c*(e*x+d)**n))**(1/2),x)
[Out] Timed out
```

3.160 $\int \frac{1}{\sqrt{f+gx}\sqrt{a+b\log(c(d+ex)^n)}}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{1}{\sqrt{f+gx}\sqrt{a+b\log\left(c(d+ex)^n\right)}},x\right)$$

```
[Out] Unintegrable(1/(g*x+f)^(1/2)/(a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

Rubi [A] time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{\sqrt{f+gx}\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/(Sqrt[f + g*x]*Sqrt[a + b*Log[c*(d + e*x)^n]]),x]
```

```
[Out] Defer[Int][1/(Sqrt[f + g*x]*Sqrt[a + b*Log[c*(d + e*x)^n]]), x]
```

Rubi steps

$$\int \frac{1}{\sqrt{f+gx}\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx=\int \frac{1}{\sqrt{f+gx}\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx$$

Mathematica [A] time = 3.08, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{f+gx}\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/(Sqrt[f + g*x]*Sqrt[a + b*Log[c*(d + e*x)^n]]),x]
```

```
[Out] Integrate[1/(Sqrt[f + g*x]*Sqrt[a + b*Log[c*(d + e*x)^n]]), x]
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)^(1/2)/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="fricas
")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{gx+f}\sqrt{b\log\left((ex+d)^n c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)^(1/2)/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(1/(sqrt(g*x + f)*sqrt(b*log((e*x + d)^n*c) + a)), x)
```

maple [A] time = 0.57, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{gx+f}\,\sqrt{b\ln\left(c\,(ex+d)^{n}\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(g*x+f)^(1/2)/(b*ln(c*(e*x+d)^n)+a)^(1/2),x)
```

```
[Out] int(1/(g*x+f)^(1/2)/(b*ln(c*(e*x+d)^n)+a)^(1/2),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{gx+f}\,\sqrt{b\log\left((ex+d)^{n}c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)^(1/2)/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="maxima
")
```

```
[Out] integrate(1/(sqrt(g*x + f)*sqrt(b*log((e*x + d)^n*c) + a)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{\sqrt{f+g\,x}\,\sqrt{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((f + g*x)^(1/2)*(a + b*log(c*(d + e*x)^n))^(1/2)),x)
```

```
[Out] int(1/((f + g*x)^(1/2)*(a + b*log(c*(d + e*x)^n))^(1/2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{a+b\log\left(c\,(d+ex)^{n}\right)}\,\sqrt{f+gx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)**(1/2)/(a+b*ln(c*(e*x+d)**n))**(1/2),x)
```

```
[Out] Integral(1/(sqrt(a + b*log(c*(d + e*x)**n))*sqrt(f + g*x)), x)
```

3.161 $\int \frac{1}{(f+gx)^{3/2}\sqrt{a+b\log(c(d+ex)^n)}}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{1}{(f+gx)^{3/2}\sqrt{a+b\log\left(c(d+ex)^n\right)}},x\right)$$

```
[Out] Unintegrable(1/(g*x+f)^(3/2)/(a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

Rubi [A] time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(f+gx)^{3/2}\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((f + g*x)^(3/2)*Sqrt[a + b*Log[c*(d + e*x)^n]]),x]
[Out] Defer[Int][1/((f + g*x)^(3/2)*Sqrt[a + b*Log[c*(d + e*x)^n]]), x]
```

Rubi steps

$$\int \frac{1}{(f+gx)^{3/2}\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx = \int \frac{1}{(f+gx)^{3/2}\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx$$

Mathematica [A] time = 0.78, size = 0, normalized size = 0.00

$$\int \frac{1}{(f+gx)^{3/2}\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((f + g*x)^(3/2)*Sqrt[a + b*Log[c*(d + e*x)^n]]),x]
[Out] Integrate[1/((f + g*x)^(3/2)*Sqrt[a + b*Log[c*(d + e*x)^n]]), x]
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)^(3/2)/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="fricas
")
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(gx+f)^{\frac{3}{2}}\sqrt{b\log\left((ex+d)^n c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)^(3/2)/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="giac")
[Out] integrate(1/((g*x + f)^(3/2)*sqrt(b*log((e*x + d)^n*c) + a)), x)
```

maple [A] time = 0.56, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(gx+f\right)^{\frac{3}{2}} \sqrt{b \ln \left(c \left(ex+d\right)^{n}\right)+a}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(g*x+f)^(3/2)/(b*ln(c*(e*x+d)^n)+a)^(1/2),x)
[Out] int(1/(g*x+f)^(3/2)/(b*ln(c*(e*x+d)^n)+a)^(1/2),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(gx+f\right)^{\frac{3}{2}} \sqrt{b \log \left(\left(ex+d\right)^{n} c\right)+a}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)^(3/2)/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="maxima
")
[Out] integrate(1/((g*x + f)^(3/2)*sqrt(b*log((e*x + d)^n*c) + a)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{{\left(f+g\,x\right)}^{3/2}\,\sqrt{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((f + g*x)^(3/2)*(a + b*log(c*(d + e*x)^n))^(1/2)),x)
[Out] int(1/((f + g*x)^(3/2)*(a + b*log(c*(d + e*x)^n))^(1/2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{a + b \log{\left(c \left(d + e x\right)^{n} \right)}} \left(f + g x\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)**(3/2)/(a+b*ln(c*(e*x+d)**n))**(1/2),x)
[Out] Integral(1/(sqrt(a + b*log(c*(d + e*x)**n))*(f + g*x)**(3/2)), x)
```

3.162 $\int (f+gx)^m \left(a+b\log\left(c(d+ex)^n\right)\right)\,dx$

Optimal. Leaf size=94

$$\frac{(f+gx)^{m+1}\left(a+b\log\left(c(d+ex)^n\right)\right)}{g(m+1)}+\frac{ben(f+gx)^{m+2}\,{}_2F_1\left(1,m+2;m+3;\frac{e(f+gx)}{ef-dg}\right)}{g(m+1)(m+2)(ef-dg)}$$

```
[Out] b*e*n*(g*x+f)^(2+m)*hypergeom([1, 2+m],[3+m],e*(g*x+f)/(-d*g+e*f))/g/(-d*g+
e*f)/(1+m)/(2+m)+(g*x+f)^(1+m)*(a+b*ln(c*(e*x+d)^n))/g/(1+m)
```

Rubi [A] time = 0.05, antiderivative size = 94, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {2395, 68}

$$\frac{(f+gx)^{m+1}\left(a+b\log\left(c(d+ex)^n\right)\right)}{g(m+1)}+\frac{ben(f+gx)^{m+2}\,{}_2F_1\left(1,m+2;m+3;\frac{e(f+gx)}{ef-dg}\right)}{g(m+1)(m+2)(ef-dg)}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^m*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] (b*e*n*(f + g*x)^(2 + m)*Hypergeometric2F1[1, 2 + m, 3 + m, (e*(f + g*x))/(
e*f - d*g)])/(g*(e*f - d*g)*(1 + m)*(2 + m)) + ((f + g*x)^(1 + m)*(a + b*Lo
g[c*(d + e*x)^n]))/(g*(1 + m))
```

Rule 68

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((
b*c - a*d)^n*(a + b*x)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*(a
+ b*x))/(b*c - a*d))])/(b^(n + 1)*(m + 1)), x] /; FreeQ[{a, b, c, d, m}, x]
 && NeQ[b*c - a*d, 0] &&  !IntegerQ[m] && IntegerQ[n]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rubi steps

$$\begin{aligned}\int (f+gx)^m\left(a+b\log\left(c(d+ex)^n\right)\right)\,dx&=\frac{(f+gx)^{1+m}\left(a+b\log\left(c(d+ex)^n\right)\right)}{g(1+m)}-\frac{(ben)\int\frac{(f+gx)^{1+m}}{d+ex}\,dx}{g(1+m)}\\&=\frac{ben(f+gx)^{2+m}\,{}_2F_1\left(1,2+m;3+m;\frac{e(f+gx)}{ef-dg}\right)}{g(ef-dg)(1+m)(2+m)}+\frac{(f+gx)^{1+m}\left(a+b\right.}{g(1+}\end{aligned}$$

Mathematica [A] time = 0.07, size = 81, normalized size = 0.86

$$\frac{(f+gx)^{m+1}\left(a+b\log\left(c(d+ex)^n\right)+\frac{ben(f+gx)\,{}_2F_1\left(1,m+2;m+3;\frac{e(f+gx)}{ef-dg}\right)}{(m+2)(ef-dg)}\right)}{g(m+1)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^m*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] ((f + g*x)^(1 + m)*(a + (b*e*n*(f + g*x)*Hypergeometric2F1[1, 2 + m, 3 + m,
 (e*(f + g*x))/(e*f - d*g)])/((e*f - d*g)*(2 + m)) + b*Log[c*(d + e*x)^n]))
/(g*(1 + m))
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(gx+f\right)^{m} b \log\left(\left(ex+d\right)^{n} c\right) + \left(gx+f\right)^{m} a, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m*(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
```

```
[Out] integral((g*x + f)^m*b*log((e*x + d)^n*c) + (g*x + f)^m*a, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b \log\left(\left(ex+d\right)^{n} c\right) + a\right)\left(gx+f\right)^{m}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m*(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*(g*x + f)^m, x)
```

maple [F] time = 1.01, size = 0, normalized size = 0.00

$$\int \left(b \ln\left(c \left(ex+d\right)^{n}\right) + a\right) \left(gx+f\right)^{m}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^m*(b*ln(c*(e*x+d)^n)+a),x)
```

```
[Out] int((g*x+f)^m*(b*ln(c*(e*x+d)^n)+a),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$b\left(\frac{\left(gx+f\right)\left(gx+f\right)^{m} \log\left(\left(ex+d\right)^{n}\right)}{g(m+1)} + \int \frac{\left(dg(m+1)\log(c) - efn + \left(eg(m+1)\log(c) - egn\right)x\right)\left(gx+f\right)^{m}}{eg(m+1)x + dg(m+1)}\, dx\right) + \cdots$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m*(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
```

```
[Out] b*((g*x + f)*(g*x + f)^m*log((e*x + d)^n)/(g*(m + 1)) + integrate((d*g*(m +
 1)*log(c) - e*f*n + (e*g*(m + 1)*log(c) - e*g*n)*x)*(g*x + f)^m/(e*g*(m +
1)*x + d*g*(m + 1)), x)) + (g*x + f)^(m + 1)*a/(g*(m + 1))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int {\left(f+g\,x\right)}^m\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right) \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^m*(a + b*log(c*(d + e*x)^n)),x)
```

```
[Out] int((f + g*x)^m*(a + b*log(c*(d + e*x)^n)), x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**m*(a+b*ln(c*(e*x+d)**n)),x)
```

```
[Out] Exception raised: HeuristicGCDFailed
```

3.163 $\int \frac{(f+gx)^m}{a+b\log(c(d+ex)^n)}\,dx$

Optimal. Leaf size=27

$$\text{Int}\left(\frac{(f+gx)^m}{a+b\log\left(c(d+ex)^n\right)},x\right)$$

```
[Out] Unintegrable((g*x+f)^m/(a+b*ln(c*(e*x+d)^n)),x)
```

Rubi [A] time = 0.03, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(f+gx)^m}{a+b\log\left(c(d+ex)^n\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(f + g*x)^m/(a + b*Log[c*(d + e*x)^n]),x]
[Out] Defer[Int][(f + g*x)^m/(a + b*Log[c*(d + e*x)^n]), x]
```

Rubi steps

$$\int \frac{(f+gx)^m}{a+b\log\left(c(d+ex)^n\right)}\,dx=\int \frac{(f+gx)^m}{a+b\log\left(c(d+ex)^n\right)}\,dx$$

Mathematica [A] time = 0.34, size = 0, normalized size = 0.00

$$\int \frac{(f+gx)^m}{a+b\log\left(c(d+ex)^n\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(f + g*x)^m/(a + b*Log[c*(d + e*x)^n]),x]
[Out] Integrate[(f + g*x)^m/(a + b*Log[c*(d + e*x)^n]), x]
```

fricas [A] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(gx+f\right)^m}{b\log\left((ex+d)^n c\right)+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m/(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
[Out] integral((g*x + f)^m/(b*log((e*x + d)^n*c) + a), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(gx+f\right)^m}{b\log\left((ex+d)^n c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m/(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
[Out] integrate((g*x + f)^m/(b*log((e*x + d)^n*c) + a), x)
```

maple [A] time = 1.30, size = 0, normalized size = 0.00

$$\int \frac{(gx+f)^m}{b\ln\left(c\,(ex+d)^n\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^m/(b*ln(c*(e*x+d)^n)+a),x)
```

```
[Out] int((g*x+f)^m/(b*ln(c*(e*x+d)^n)+a),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(gx+f)^m}{b\log\left((ex+d)^n c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m/(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
```

```
[Out] integrate((g*x + f)^m/(b*log((e*x + d)^n*c) + a), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{(f+g\,x)^m}{a+b\,\ln\left(c\,(d+e\,x)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^m/(a + b*log(c*(d + e*x)^n)),x)
```

```
[Out] int((f + g*x)^m/(a + b*log(c*(d + e*x)^n)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(f+gx)^m}{a+b\log\left(c\,(d+ex)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**m/(a+b*ln(c*(e*x+d)**n)),x)
```

```
[Out] Integral((f + g*x)**m/(a + b*log(c*(d + e*x)**n)), x)
```

3.164 $\int \frac{(f+gx)^m}{\left(a+b\log(c(d+ex)^n)\right)^2}\,dx$

Optimal. Leaf size=27

$$\text{Int}\left(\frac{(f+gx)^m}{\left(a+b\log\left(c(d+ex)^n\right)\right)^2},x\right)$$

[Out] Unintegrable((g*x+f)^m/(a+b*ln(c*(e*x+d)^n))^2,x)

Rubi [A] time = 0.03, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(f+gx)^m}{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}\,dx$$

Verification is Not applicable to the result.

[In] Int[(f + g*x)^m/(a + b*Log[c*(d + e*x)^n])^2,x]

[Out] Defer[Int][(f + g*x)^m/(a + b*Log[c*(d + e*x)^n])^2, x]

Rubi steps

$$\int \frac{(f+gx)^m}{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}\,dx=\int \frac{(f+gx)^m}{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}\,dx$$

Mathematica [A] time = 2.91, size = 0, normalized size = 0.00

$$\int \frac{(f+gx)^m}{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}\,dx$$

Verification is Not applicable to the result.

[In] Integrate[(f + g*x)^m/(a + b*Log[c*(d + e*x)^n])^2,x]

[Out] Integrate[(f + g*x)^m/(a + b*Log[c*(d + e*x)^n])^2, x]

fricas [A] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(gx+f\right)^m}{b^2\log\left(\left(ex+d\right)^nc\right)^2+2\,ab\log\left(\left(ex+d\right)^nc\right)+a^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((g*x+f)^m/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="fricas")

[Out] integral((g*x + f)^m/(b^2*log((e*x + d)^n*c)^2 + 2*a*b*log((e*x + d)^n*c) + a^2), x)

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(gx+f\right)^m}{\left(b\log\left(\left(ex+d\right)^nc\right)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="giac")
```

```
[Out] integrate((g*x + f)^m/(b*log((e*x + d)^n*c) + a)^2, x)
```

maple [A] time = 8.96, size = 0, normalized size = 0.00

$$\int \frac{\left(gx+f\right)^{m}}{\left(b\ln\left(c\left(ex+d\right)^{n}\right)+a\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^m/(b*ln(c*(e*x+d)^n)+a)^2,x)
```

```
[Out] int((g*x+f)^m/(b*ln(c*(e*x+d)^n)+a)^2,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{(ex+d)\left(gx+f\right)^{m}}{b^{2}en\log\left((ex+d)^{n}\right)+b^{2}en\log(c)+aben}+\int\frac{\left(eg(m+1)x+dgm+ef\right)\left(gx+f\right)^{m}}{b^{2}efn\log(c)+abefn+\left(b^{2}egn\log(c)+abegn\right)x+\left(b^{2}egnx+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="maxima")
```

```
[Out] -(e*x + d)*(g*x + f)^m/(b^2*e*n*log((e*x + d)^n) + b^2*e*n*log(c) + a*b*e*n
) + integrate((e*g*(m + 1)*x + d*g*m + e*f)*(g*x + f)^m/(b^2*e*f*n*log(c) +
 a*b*e*f*n + (b^2*e*g*n*log(c) + a*b*e*g*n)*x + (b^2*e*g*n*x + b^2*e*f*n)*l
og((e*x + d)^n)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{{\left(f+g\,x\right)}^m}{{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^m/(a + b*log(c*(d + e*x)^n))^2,x)
```

```
[Out] int((f + g*x)^m/(a + b*log(c*(d + e*x)^n))^2, x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**m/(a+b*ln(c*(e*x+d)**n))**2,x)
```

```
[Out] Exception raised: HeuristicGCDFailed
```

3.165 $\int (f+gx)^m \left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}\,dx$

Optimal. Leaf size=29

$$\text{Int}\left((f+gx)^m\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2},x\right)$$

```
[Out] Unintegrable((g*x+f)^m*(a+b*ln(c*(e*x+d)^n))^(3/2),x)
```

Rubi [A] time = 0.05, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int (f+gx)^m\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(f + g*x)^m*(a + b*Log[c*(d + e*x)^n])^(3/2),x]
[Out] Defer[Int][(f + g*x)^m*(a + b*Log[c*(d + e*x)^n])^(3/2), x]
```

Rubi steps

$$\int (f+gx)^m\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}\,dx=\int (f+gx)^m\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}\,dx$$

Mathematica [A] time = 6.25, size = 0, normalized size = 0.00

$$\int (f+gx)^m\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(f + g*x)^m*(a + b*Log[c*(d + e*x)^n])^(3/2),x]
[Out] Integrate[(f + g*x)^m*(a + b*Log[c*(d + e*x)^n])^(3/2), x]
```

fricas [A] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(\left(gx+f\right)^m b\log\left((ex+d)^n c\right)+\left(gx+f\right)^m a\right)\sqrt{b\log\left((ex+d)^n c\right)+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m*(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="fricas")
[Out] integral(((g*x + f)^m*b*log((e*x + d)^n*c) + (g*x + f)^m*a)*sqrt(b*log((e*x
 + d)^n*c) + a), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{3}{2}}\left(gx+f\right)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m*(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="giac")
[Out] integrate((b*log((e*x + d)^n*c) + a)^(3/2)*(g*x + f)^m, x)
```

maple [A] time = 0.65, size = 0, normalized size = 0.00

$$\int \left(b\ln\left(c\left(ex+d\right)^{n}\right)+a\right)^{\frac{3}{2}}\left(gx+f\right)^{m}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^m*(b*ln(c*(e*x+d)^n)+a)^(3/2),x)
[Out] int((g*x+f)^m*(b*ln(c*(e*x+d)^n)+a)^(3/2),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b\log\left((ex+d)^{n}c\right)+a\right)^{\frac{3}{2}}\left(gx+f\right)^{m}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m*(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="maxima")
[Out] integrate((b*log((e*x + d)^n*c) + a)^(3/2)*(g*x + f)^m, x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \left(f+g\,x\right)^{m}\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^{n}\right)\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^m*(a + b*log(c*(d + e*x)^n))^(3/2),x)
[Out] int((f + g*x)^m*(a + b*log(c*(d + e*x)^n))^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**m*(a+b*ln(c*(e*x+d)**n))**(3/2),x)
[Out] Timed out
```

3.166 $\int (f+gx)^m \sqrt{a+b\log\left(c(d+ex)^n\right)}\,dx$

Optimal. Leaf size=29

$$\text{Int}\left((f+gx)^m\sqrt{a+b\log\left(c(d+ex)^n\right)},x\right)$$

```
[Out] Unintegrable((g*x+f)^m*(a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

Rubi [A] time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int (f+gx)^m\sqrt{a+b\log\left(c(d+ex)^n\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(f + g*x)^m*Sqrt[a + b*Log[c*(d + e*x)^n]],x]
[Out] Defer[Int][(f + g*x)^m*Sqrt[a + b*Log[c*(d + e*x)^n]], x]
```

Rubi steps

$$\int (f+gx)^m\sqrt{a+b\log\left(c(d+ex)^n\right)}\,dx=\int (f+gx)^m\sqrt{a+b\log\left(c(d+ex)^n\right)}\,dx$$

Mathematica [A] time = 0.07, size = 0, normalized size = 0.00

$$\int (f+gx)^m\sqrt{a+b\log\left(c(d+ex)^n\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(f + g*x)^m*Sqrt[a + b*Log[c*(d + e*x)^n]],x]
[Out] Integrate[(f + g*x)^m*Sqrt[a + b*Log[c*(d + e*x)^n]], x]
```

fricas [A] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\sqrt{b\log\left((ex+d)^n c\right)+a}\,\left(gx+f\right)^m,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m*(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="fricas")
[Out] integral(sqrt(b*log((e*x + d)^n*c) + a)*(g*x + f)^m, x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{b\log\left((ex+d)^n c\right)+a}\,\left(gx+f\right)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m*(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="giac")
[Out] integrate(sqrt(b*log((e*x + d)^n*c) + a)*(g*x + f)^m, x)
```

maple [A] time = 0.64, size = 0, normalized size = 0.00

$$\int \sqrt{b\ln\left(c\left(ex+d\right)^n\right)+a}\,\left(gx+f\right)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^m*(b*ln(c*(e*x+d)^n)+a)^(1/2),x)
```

```
[Out] int((g*x+f)^m*(b*ln(c*(e*x+d)^n)+a)^(1/2),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{b \log \left((ex+d)^n c\right)+a}\,(gx+f)^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m*(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(b*log((e*x + d)^n*c) + a)*(g*x + f)^m, x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int (f+g\,x)^m\,\sqrt{a+b\,\ln\left(c\,(d+e\,x)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^m*(a + b*log(c*(d + e*x)^n))^(1/2),x)
```

```
[Out] int((f + g*x)^m*(a + b*log(c*(d + e*x)^n))^(1/2), x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**m*(a+b*ln(c*(e*x+d)**n))**(1/2),x)
```

```
[Out] Exception raised: HeuristicGCDFailed
```

3.167 $\int \frac{(f+gx)^m}{\sqrt{a+b\log(c(d+ex)^n)}}\,dx$

Optimal. Leaf size=29

$$\text{Int}\left(\frac{(f+gx)^m}{\sqrt{a+b\log\left(c(d+ex)^n\right)}},x\right)$$

```
[Out] Unintegrable((g*x+f)^m/(a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

Rubi [A] time = 0.05, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(f+gx)^m}{\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(f + g*x)^m/Sqrt[a + b*Log[c*(d + e*x)^n]],x]
[Out] Defer[Int][(f + g*x)^m/Sqrt[a + b*Log[c*(d + e*x)^n]], x]
```

Rubi steps

$$\int \frac{(f+gx)^m}{\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx = \int \frac{(f+gx)^m}{\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx$$

Mathematica [A] time = 3.22, size = 0, normalized size = 0.00

$$\int \frac{(f+gx)^m}{\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(f + g*x)^m/Sqrt[a + b*Log[c*(d + e*x)^n]],x]
[Out] Integrate[(f + g*x)^m/Sqrt[a + b*Log[c*(d + e*x)^n]], x]
```

fricas [A] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(gx+f\right)^m}{\sqrt{b\log\left((ex+d)^n c\right)+a}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="fricas")
[Out] integral((g*x + f)^m/sqrt(b*log((e*x + d)^n*c) + a), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(gx+f\right)^m}{\sqrt{b\log\left((ex+d)^n c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="giac")
```

```
[Out] integrate((g*x + f)^m/sqrt(b*log((e*x + d)^n*c) + a), x)
```

maple [A] time = 0.64, size = 0, normalized size = 0.00

$$\int \frac{\left(gx+f\right)^{m}}{\sqrt{b\ln\left(c\left(ex+d\right)^{n}\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^m/(b*ln(c*(e*x+d)^n)+a)^(1/2),x)
[Out] int((g*x+f)^m/(b*ln(c*(e*x+d)^n)+a)^(1/2),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(gx+f\right)^{m}}{\sqrt{b\log\left(\left(ex+d\right)^{n}c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="maxima")
[Out] integrate((g*x + f)^m/sqrt(b*log((e*x + d)^n*c) + a), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\left(f+g\,x\right)^{m}}{\sqrt{a+b\,\ln\left(c\,\left(d+e\,x\right)^{n}\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^m/(a + b*log(c*(d + e*x)^n))^(1/2),x)
[Out] int((f + g*x)^m/(a + b*log(c*(d + e*x)^n))^(1/2), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(f+gx\right)^{m}}{\sqrt{a+b\log\left(c\left(d+ex\right)^{n}\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**m/(a+b*ln(c*(e*x+d)**n))**(1/2),x)
[Out] Integral((f + g*x)**m/sqrt(a + b*log(c*(d + e*x)**n)), x)
```

3.168 $\int \frac{(f+gx)^m}{\left(a+b\log(c(d+ex)^n)\right)^{3/2}}\,dx$

Optimal. Leaf size=29

$$\text{Int}\left(\frac{(f+gx)^m}{\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}},x\right)$$

```
[Out] Unintegrable((g*x+f)^m/(a+b*ln(c*(e*x+d)^n))^(3/2),x)
```

Rubi [A] time = 0.05, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(f+gx)^m}{\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(f + g*x)^m/(a + b*Log[c*(d + e*x)^n])^(3/2),x]
```

```
[Out] Defer[Int][(f + g*x)^m/(a + b*Log[c*(d + e*x)^n])^(3/2), x]
```

Rubi steps

$$\int \frac{(f+gx)^m}{\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}\,dx=\int \frac{(f+gx)^m}{\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}\,dx$$

Mathematica [A] time = 2.87, size = 0, normalized size = 0.00

$$\int \frac{(f+gx)^m}{\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(f + g*x)^m/(a + b*Log[c*(d + e*x)^n])^(3/2),x]
```

```
[Out] Integrate[(f + g*x)^m/(a + b*Log[c*(d + e*x)^n])^(3/2), x]
```

fricas [A] time = 0.50, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{b\log\left((ex+d)^n c\right)+a}\,\left(gx+f\right)^m}{b^2\log\left((ex+d)^n c\right)^2+2\,ab\log\left((ex+d)^n c\right)+a^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(b*log((e*x + d)^n*c) + a)*(g*x + f)^m/(b^2*log((e*x + d)^n*c)
^2 + 2*a*b*log((e*x + d)^n*c) + a^2), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(gx+f\right)^m}{\left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="giac")
[Out] integrate((g*x + f)^m/(b*log((e*x + d)^n*c) + a)^(3/2), x)
```

maple [A] time = 0.64, size = 0, normalized size = 0.00

$$\int \frac{\left(gx+f\right)^{m}}{\left(b\ln\left(c\left(ex+d\right)^{n}\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^m/(b*ln(c*(e*x+d)^n)+a)^(3/2),x)
[Out] int((g*x+f)^m/(b*ln(c*(e*x+d)^n)+a)^(3/2),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(gx+f\right)^{m}}{\left(b\log\left(\left(ex+d\right)^{n}c\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="maxima")
[Out] integrate((g*x + f)^m/(b*log((e*x + d)^n*c) + a)^(3/2), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\left(f+g\,x\right)^{m}}{\left(a+b\,\ln\left(c\,\left(d+e\,x\right)^{n}\right)\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^m/(a + b*log(c*(d + e*x)^n))^(3/2),x)
[Out] int((f + g*x)^m/(a + b*log(c*(d + e*x)^n))^(3/2), x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**m/(a+b*ln(c*(e*x+d)**n))**(3/2),x)
[Out] Exception raised: HeuristicGCDFailed
```

3.169 $\int (f+gx)^m \left(a+b\log\left(c(d+ex)^n\right)\right)^n\,dx$

Optimal. Leaf size=27

$$\mathrm{Int}\left((f+gx)^m \left(a+b\log\left(c(d+ex)^n\right)\right)^n, x\right)$$

```
[Out] Unintegrable((g*x+f)^m*(a+b*ln(c*(e*x+d)^n))^n,x)
```

Rubi [A] time = 0.03, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int (f+gx)^m \left(a+b\log\left(c(d+ex)^n\right)\right)^n\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(f + g*x)^m*(a + b*Log[c*(d + e*x)^n])^n,x]
[Out] Defer[Int][(f + g*x)^m*(a + b*Log[c*(d + e*x)^n])^n, x]
```

Rubi steps

$$\int (f+gx)^m \left(a+b\log\left(c(d+ex)^n\right)\right)^n\,dx = \int (f+gx)^m \left(a+b\log\left(c(d+ex)^n\right)\right)^n\,dx$$

Mathematica [A] time = 0.47, size = 0, normalized size = 0.00

$$\int (f+gx)^m \left(a+b\log\left(c(d+ex)^n\right)\right)^n\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(f + g*x)^m*(a + b*Log[c*(d + e*x)^n])^n,x]
[Out] Integrate[(f + g*x)^m*(a + b*Log[c*(d + e*x)^n])^n, x]
```

fricas [A] time = 0.45, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\left(gx+f\right)^m \left(b\log\left((ex+d)^n c\right)+a\right)^n, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m*(a+b*log(c*(e*x+d)^n))^n,x, algorithm="fricas")
[Out] integral((g*x + f)^m*(b*log((e*x + d)^n*c) + a)^n, x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m*(a+b*log(c*(e*x+d)^n))^n,x, algorithm="giac")
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:Simplification assuming d near 0Simplification assuming d
 near 0Simplification assuming d near 0Simplification assuming d near 0Simp
lification assuming d near 0Evaluation time: 0.67Unable to divide, perhaps
```

```
due to rounding error%%%{1,[0,0,7,4,0,5,0,3,5,0,0,0]%%%}+%%%{5,[0,0,6,4,0,4
,1,3,5,0,0,0]%%%}+%%%{2,[0,0,6,3,1,5,0,3,5,0,0,0]%%%}+%%%{10,[0,0,5,4,0,3,2
,3,5,0,0,0]%%%}+%%%{10,[0,0,5,3,1,4,1,3,5,0,0,0]%%%}+%%%{1,[0,0,5,2,2,5,0,3
,5,0,0,0]%%%}+%%%{10,[0,0,4,4,0,2,3,3,5,0,0,0]%%%}+%%%{20,[0,0,4,3,1,3,2,3,
5,0,0,0]%%%}+%%%{5,[0,0,4,2,2,4,1,3,5,0,0,0]%%%}+%%%{5,[0,0,3,4,0,1,4,3,5,0
,0,0]%%%}+%%%{20,[0,0,3,3,1,2,3,3,5,0,0,0]%%%}+%%%{10,[0,0,3,2,2,3,2,3,5,0,
0,0]%%%}+%%%{1,[0,0,2,4,0,0,5,3,5,0,0,0]%%%}+%%%{10,[0,0,2,3,1,1,4,3,5,0,0,
0]%%%}+%%%{10,[0,0,2,2,2,2,3,3,5,0,0,0]%%%}+%%%{2,[0,0,1,3,1,0,5,3,5,0,0,0]
%%%}+%%%{5,[0,0,1,2,2,1,4,3,5,0,0,0]%%%}+%%%{1,[0,0,0,2,2,0,5,3,5,0,0,0]%%%
} / %%%{1,[0,0,8,5,0,5,0,3,5,0,0,0]%%%}+%%%{5,[0,0,7,5,0,4,1,3,5,0,0,0]%%%}
+%%%{3,[0,0,7,4,1,5,0,3,5,0,0,0]%%%}+%%%{10,[0,0,6,5,0,3,2,3,5,0,0,0]%%%}+%
%%{15,[0,0,6,4,1,4,1,3,5,0,0,0]%%%}+%%%{3,[0,0,6,3,2,5,0,3,5,0,0,0]%%%}+%%%
{10,[0,0,5,5,0,2,3,3,5,0,0,0]%%%}+%%%{30,[0,0,5,4,1,3,2,3,5,0,0,0]%%%}+%%%{
15,[0,0,5,3,2,4,1,3,5,0,0,0]%%%}+%%%{1,[0,0,5,2,3,5,0,3,5,0,0,0]%%%}+%%%{5,
[0,0,4,5,0,1,4,3,5,0,0,0]%%%}+%%%{30,[0,0,4,4,1,2,3,3,5,0,0,0]%%%}+%%%{30,[
0,0,4,3,2,3,2,3,5,0,0,0]%%%}+%%%{5,[0,0,4,2,3,4,1,3,5,0,0,0]%%%}+%%%{1,[0,0
,3,5,0,0,5,3,5,0,0,0]%%%}+%%%{15,[0,0,3,4,1,1,4,3,5,0,0,0]%%%}+%%%{30,[0,0,
3,3,2,2,3,3,5,0,0,0]%%%}+%%%{10,[0,0,3,2,3,3,2,3,5,0,0,0]%%%}+%%%{3,[0,0,2,
4,1,0,5,3,5,0,0,0]%%%}+%%%{15,[0,0,2,3,2,1,4,3,5,0,0,0]%%%}+%%%{10,[0,0,2,2
,3,2,3,3,5,0,0,0]%%%}+%%%{3,[0,0,1,3,2,0,5,3,5,0,0,0]%%%}+%%%{5,[0,0,1,2,3,
1,4,3,5,0,0,0]%%%}+%%%{1,[0,0,0,2,3,0,5,3,5,0,0,0]%%%} Error: Bad Argument
Value
```

maple [A] time = 0.94, size = 0, normalized size = 0.00

$$\int \left(b \ln \left(c \left(ex+d\right)^{n}\right)+a\right)^{n} \left(gx+f\right)^{m}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^m*(b*ln(c*(e*x+d)^n)+a)^n,x)
[Out] int((g*x+f)^m*(b*ln(c*(e*x+d)^n)+a)^n,x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m*(a+b*log(c*(e*x+d)^n))^n,x, algorithm="maxima")
[Out] Exception raised: RuntimeError >> ECL says: In function CAR, the value of t
he first argument is  0which is not of the expected type LIST
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int {\left(f+g\,x\right)}^m\,{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^n \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^m*(a + b*log(c*(d + e*x)^n))^n,x)
[Out] int((f + g*x)^m*(a + b*log(c*(d + e*x)^n))^n, x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**m*(a+b*ln(c*(e*x+d)**n))**n,x)
[Out] Exception raised: HeuristicGCDFailed
```

3.170 $\int (f+gx)^3 \left(a+b\log\left(c(d+ex)^n\right)\right)^n\,dx$

Optimal. Leaf size=474

$$\frac{g^2 3^{-n} e^{-\frac{3a}{bn}} (d+ex)^3 (ef-dg) \left(c(d+ex)^n\right)^{-3/n} \left(a+b\log\left(c(d+ex)^n\right)\right)^n \left(-\frac{a+b\log(c(d+ex)^n)}{bn}\right)^{-n} \Gamma\left(n+1,-\frac{3(a+b\log(c(d+e}{bn}\right.}{e^4}$$

```
[Out] 4^(-1-n)*g^3*(e*x+d)^4*GAMMA(1+n,-4*(a+b*ln(c*(e*x+d)^n))/b/n)*(a+b*ln(c*(e
*x+d)^n))^n/e^4/exp(4*a/b/n)/((c*(e*x+d)^n)^(4/n))/(((-a-b*ln(c*(e*x+d)^n))
/b/n)^n)+g^2*(-d*g+e*f)*(e*x+d)^3*GAMMA(1+n,-3*(a+b*ln(c*(e*x+d)^n))/b/n)*(
a+b*ln(c*(e*x+d)^n))^n/(3^n)/e^4/exp(3*a/b/n)/((c*(e*x+d)^n)^(3/n))/(((-a-b
*ln(c*(e*x+d)^n))/b/n)^n)+3*2^(-1-n)*g*(-d*g+e*f)^2*(e*x+d)^2*GAMMA(1+n,-2*
(a+b*ln(c*(e*x+d)^n))/b/n)*(a+b*ln(c*(e*x+d)^n))^n/e^4/exp(2*a/b/n)/((c*(e*
x+d)^n)^(2/n))/(((-a-b*ln(c*(e*x+d)^n))/b/n)^n)+(-d*g+e*f)^3*(e*x+d)*GAMMA(
1+n,(-a-b*ln(c*(e*x+d)^n))/b/n)*(a+b*ln(c*(e*x+d)^n))^n/e^4/exp(a/b/n)/((c*
(e*x+d)^n)^(1/n))/(((-a-b*ln(c*(e*x+d)^n))/b/n)^n)
```

Rubi [A] time = 0.55, antiderivative size = 474, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.250$, Rules used = {2401, 2389, 2300, 2181, 2390, 2310}

$$\frac{g^2 3^{-n} e^{-\frac{3a}{bn}} (d+ex)^3 (ef-dg) \left(c(d+ex)^n\right)^{-3/n} \left(a+b\log\left(c(d+ex)^n\right)\right)^n \left(-\frac{a+b\log(c(d+ex)^n)}{bn}\right)^{-n} \text{Gamma}\left(n+1,-\frac{3(a+b}{}\right.}{e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^3*(a + b*Log[c*(d + e*x)^n])^n,x]
```

```
[Out] (4^(-1 - n)*g^3*(d + e*x)^4*Gamma[1 + n, (-4*(a + b*Log[c*(d + e*x)^n]))/(b
*n)]*(a + b*Log[c*(d + e*x)^n])^n)/(e^4*E^((4*a)/(b*n))*(c*(d + e*x)^n)^(4/
n)*(-((a + b*Log[c*(d + e*x)^n])/(b*n)))^n) + (g^2*(e*f - d*g)*(d + e*x)^3*
Gamma[1 + n, (-3*(a + b*Log[c*(d + e*x)^n]))/(b*n)]*(a + b*Log[c*(d + e*x)^
n])^n)/(3^n*e^4*E^((3*a)/(b*n))*(c*(d + e*x)^n)^(3/n)*(-((a + b*Log[c*(d +
e*x)^n])/(b*n)))^n) + (3*2^(-1 - n)*g*(e*f - d*g)^2*(d + e*x)^2*Gamma[1 + n
, (-2*(a + b*Log[c*(d + e*x)^n]))/(b*n)]*(a + b*Log[c*(d + e*x)^n])^n)/(e^4
*E^((2*a)/(b*n))*(c*(d + e*x)^n)^(2/n)*(-((a + b*Log[c*(d + e*x)^n])/(b*n))
)^n) + ((e*f - d*g)^3*(d + e*x)*Gamma[1 + n, -((a + b*Log[c*(d + e*x)^n])/(
b*n))]*(a + b*Log[c*(d + e*x)^n])^n)/(e^4*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1
)*(-((a + b*Log[c*(d + e*x)^n])/(b*n)))^n)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] && !I
ntegerQ[m]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
```

```
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rubi steps

$$\int (f+gx)^3 \left(a+b\log\left(c(d+ex)^n\right)\right)^n dx = \int \left(\frac{(ef-dg)^3\left(a+b\log\left(c(d+ex)^n\right)\right)^n}{e^3}+\frac{3g(ef-dg)^2(d+ex)\left(a+\right.}{e^3}\right.$$

$$=\frac{g^3\int (d+ex)^3\left(a+b\log\left(c(d+ex)^n\right)\right)^n dx}{e^3}+\frac{\left(3g^2(ef-dg)\right)\int (d+e}{}$$

$$=\frac{g^3\,\mathrm{Subst}\left(\int x^3\left(a+b\log\left(cx^n\right)\right)^n dx, x, d+ex\right)}{e^4}+\frac{\left(3g^2(ef-dg)\right)\mathrm{Su}}{}$$

$$=\frac{\left(g^3(d+ex)^4\left(c(d+ex)^n\right)^{-4/n}\right)\mathrm{Subst}\left(\int e^{\frac{4x}{n}}(a+bx)^n dx, x, \log\left(c(d+\right.\right.}{e^4 n}$$

$$=\frac{4^{-1-n}e^{-\frac{4a}{bn}}g^3(d+ex)^4\left(c(d+ex)^n\right)^{-4/n}\Gamma\left(1+n,-\frac{4\left(a+b\log\left(c(d+ex)^n\right)\right)}{bn}\right)\left(\right.}{e^4}$$

Mathematica [A] time = 1.85, size = 343, normalized size = 0.72

$$3^{-n}4^{-n-1}e^{-\frac{4a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-4/n}\left(a+b\log\left(c(d+ex)^n\right)\right)^n\left(-\frac{a+b\log\left(c(d+ex)^n\right)}{bn}\right)^{-n}\left(2^{n+1}e^{\frac{a}{bn}}(ef-dg)\left(c(d+ex\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^3*(a + b*Log[c*(d + e*x)^n])^n,x]
```

```
[Out] (4^(-1 - n)*(d + e*x)*(3^n*g^3*(d + e*x)^3*Gamma[1 + n, (-4*(a + b*Log[c*(d
 + e*x)^n]))/(b*n)] + 2^(1 + n)*E^(a/(b*n))*(e*f - d*g)*(c*(d + e*x)^n)^n^(
-1)*(2^(1 + n)*g^2*(d + e*x)^2*Gamma[1 + n, (-3*(a + b*Log[c*(d + e*x)^n]))
/(b*n)] + 3^n*E^(a/(b*n))*(e*f - d*g)*(c*(d + e*x)^n)^n^(-1)*(3*g*(d + e*x)
*Gamma[1 + n, (-2*(a + b*Log[c*(d + e*x)^n]))/(b*n)] + 2^(1 + n)*E^(a/(b*n)
)*(e*f - d*g)*(c*(d + e*x)^n)^n^(-1)*Gamma[1 + n, -((a + b*Log[c*(d + e*x)^
n])/(b*n))])))*(a + b*Log[c*(d + e*x)^n])^n)/(3^n*e^4*E^((4*a)/(b*n))*(c*(d
 + e*x)^n)^(4/n)*(-((a + b*Log[c*(d + e*x)^n])/(b*n)))^n)
```

fricas [F] time = 0.42, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\left(g^3x^3+3\,fg^2x^2+3\,f^2gx+f^3\right)\left(b\log\left((ex+d)^nc\right)+a\right)^n,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*log(c*(e*x+d)^n))^n,x, algorithm="fricas")
```

```
[Out] integral((g^3*x^3 + 3*f*g^2*x^2 + 3*f^2*g*x + f^3)*(b*log((e*x + d)^n*c) +
a)^n, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(gx+f\right)^3\left(b\log\left((ex+d)^nc\right)+a\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*log(c*(e*x+d)^n))^n,x, algorithm="giac")
```

```
[Out] integrate((g*x + f)^3*(b*log((e*x + d)^n*c) + a)^n, x)
```

maple [F] time = 1.33, size = 0, normalized size = 0.00

$$\int\left(gx+f\right)^3\left(b\ln\left(c\,(ex+d)^n\right)+a\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^3*(b*ln(c*(e*x+d)^n)+a)^n,x)
```

```
[Out] int((g*x+f)^3*(b*ln(c*(e*x+d)^n)+a)^n,x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*log(c*(e*x+d)^n))^n,x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: In function CAR, the value of t
he first argument is  0which is not of the expected type LIST
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int {\left(f+g\,x\right)}^3\,{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^3*(a + b*log(c*(d + e*x)^n))^n,x)
```

```
[Out] int((f + g*x)^3*(a + b*log(c*(d + e*x)^n))^n, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(a+b\log\left(c\,(d+ex)^n\right)\right)^n\left(f+gx\right)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**3*(a+b*ln(c*(e*x+d)**n))**n,x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**n*(f + g*x)**3, x)
```

3.171 $\int (f+gx)^2 \left(a+b\log\left(c(d+ex)^n\right)\right)^n \, dx$

Optimal. Leaf size=348

$$\frac{g2^{-n}e^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)\left(c(d+ex)^n\right)^{-2/n}\left(a+b\log\left(c(d+ex)^n\right)\right)^n\left(-\frac{a+b\log(c(d+ex)^n)}{bn}\right)^{-n}\Gamma\left(n+1,-\frac{2(a+b\log(c(d}{bn}\right.}{e^3}$$

```
[Out] 3^(-1-n)*g^2*(e*x+d)^3*GAMMA(1+n,-3*(a+b*ln(c*(e*x+d)^n))/b/n)*(a+b*ln(c*(e
*x+d)^n))^n/e^3/exp(3*a/b/n)/((c*(e*x+d)^n)^(3/n))/(((-a-b*ln(c*(e*x+d)^n))
/b/n)^n)+g*(-d*g+e*f)*(e*x+d)^2*GAMMA(1+n,-2*(a+b*ln(c*(e*x+d)^n))/b/n)*(a+
b*ln(c*(e*x+d)^n))^n/(2^n)/e^3/exp(2*a/b/n)/((c*(e*x+d)^n)^(2/n))/(((-a-b*l
n(c*(e*x+d)^n))/b/n)^n)+(-d*g+e*f)^2*(e*x+d)*GAMMA(1+n,(-a-b*ln(c*(e*x+d)^n
))/b/n)*(a+b*ln(c*(e*x+d)^n))^n/e^3/exp(a/b/n)/((c*(e*x+d)^n)^(1/n))/(((-a-
b*ln(c*(e*x+d)^n))/b/n)^n)
```

Rubi [A] time = 0.36, antiderivative size = 348, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.250$, Rules used = {2401, 2389, 2300, 2181, 2390, 2310}

$$\frac{g2^{-n}e^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)\left(c(d+ex)^n\right)^{-2/n}\left(a+b\log\left(c(d+ex)^n\right)\right)^n\left(-\frac{a+b\log(c(d+ex)^n)}{bn}\right)^{-n}\text{Gamma}\left(n+1,-\frac{2(a-}{}\right.}{e^3}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^2*(a + b*Log[c*(d + e*x)^n])^n,x]
```

```
[Out] (3^(-1 - n)*g^2*(d + e*x)^3*Gamma[1 + n, (-3*(a + b*Log[c*(d + e*x)^n]))/(b
*n)]*(a + b*Log[c*(d + e*x)^n])^n)/(e^3*E^((3*a)/(b*n))*(c*(d + e*x)^n)^(3/
n)*(-((a + b*Log[c*(d + e*x)^n])/(b*n)))^n) + (g*(e*f - d*g)*(d + e*x)^2*Ga
mma[1 + n, (-2*(a + b*Log[c*(d + e*x)^n]))/(b*n)]*(a + b*Log[c*(d + e*x)^n]
)^n)/(2^n*e^3*E^((2*a)/(b*n))*(c*(d + e*x)^n)^(2/n)*(-((a + b*Log[c*(d + e*
x)^n])/(b*n)))^n) + ((e*f - d*g)^2*(d + e*x)*Gamma[1 + n, -((a + b*Log[c*(d
 + e*x)^n])/(b*n))]*(a + b*Log[c*(d + e*x)^n])^n)/(e^3*E^(a/(b*n))*(c*(d +
e*x)^n)^n^(-1)*(-((a + b*Log[c*(d + e*x)^n])/(b*n)))^n)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] && !I
ntegerQ[m]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
```

```
, b, c, d, e, n, p}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rubi steps

$$\int (f+gx)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^n\,dx=\int\left(\frac{(ef-dg)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^n}{e^2}+\frac{2g(ef-dg)(d+ex)\left(a+b\log\right.}{e^2}\right.$$

$$=\frac{g^2\int(d+ex)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^n\,dx}{e^2}+\frac{(2g(ef-dg))\int(d+ex)\left(\right.}{e}$$

$$=\frac{g^2\,\mathrm{Subst}\left(\int x^2\left(a+b\log\left(cx^n\right)\right)^n\,dx,x,d+ex\right)}{e^3}+\frac{(2g(ef-dg))\,\mathrm{Subst}}{}$$

$$=\frac{\left(g^2(d+ex)^3\left(c(d+ex)^n\right)^{-3/n}\right)\mathrm{Subst}\left(\int e^{\frac{3x}{n}}(a+bx)^n\,dx,x,\log\left(c(d+ex\right.\right.}{e^3n}$$

$$=\frac{3^{-1-n}e^{-\frac{3a}{bn}}g^2(d+ex)^3\left(c(d+ex)^n\right)^{-3/n}\Gamma\left(1+n,-\frac{3\left(a+b\log\left(c(d+ex)^n\right)\right)}{bn}\right)\left(a+\right.}{e^3}$$

Mathematica [A] time = 0.62, size = 262, normalized size = 0.75

$$\frac{2^{-n}3^{-n-1}e^{-\frac{3a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-3/n}\left(a+b\log\left(c(d+ex)^n\right)\right)^n\left(-\frac{a+b\log\left(c(d+ex)^n\right)}{bn}\right)^{-n}\left(3^{n+1}e^{\frac{a}{bn}}(ef-dg)\left(c(d+ex)^n\right)\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^2*(a + b*Log[c*(d + e*x)^n])^n,x]
```

```
[Out] (3^(-1 - n)*(d + e*x)*(2^n*g^2*(d + e*x)^2*Gamma[1 + n, (-3*(a + b*Log[c*(d
 + e*x)^n]))/(b*n)] + 3^(1 + n)*E^(a/(b*n))*(e*f - d*g)*(c*(d + e*x)^n)^n^(
-1)*(g*(d + e*x)*Gamma[1 + n, (-2*(a + b*Log[c*(d + e*x)^n]))/(b*n)] + 2^n*
E^(a/(b*n))*(e*f - d*g)*(c*(d + e*x)^n)^n^(-1)*Gamma[1 + n, -((a + b*Log[c*
(d + e*x)^n])/(b*n))]))*(a + b*Log[c*(d + e*x)^n])^n)/(2^n*e^3*E^((3*a)/(b*
n))*(c*(d + e*x)^n)^(3/n)*(-((a + b*Log[c*(d + e*x)^n])/(b*n)))^n)
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\left(g^2x^2+2\,fgx+f^2\right)\left(b\log\left((ex+d)^nc\right)+a\right)^n,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*log(c*(e*x+d)^n))^n,x, algorithm="fricas")
```

```
[Out] integral((g^2*x^2 + 2*f*g*x + f^2)*(b*log((e*x + d)^n*c) + a)^n, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (gx+f)^2 \left(b\log\left((ex+d)^n c\right)+a\right)^n dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*log(c*(e*x+d)^n))^n,x, algorithm="giac")
[Out] integrate((g*x + f)^2*(b*log((e*x + d)^n*c) + a)^n, x)
```

maple [F] time = 2.25, size = 0, normalized size = 0.00

$$\int (gx+f)^2 \left(b\ln\left(c\,(ex+d)^n\right)+a\right)^n dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^2*(b*ln(c*(e*x+d)^n)+a)^n,x)
[Out] int((g*x+f)^2*(b*ln(c*(e*x+d)^n)+a)^n,x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*log(c*(e*x+d)^n))^n,x, algorithm="maxima")
[Out] Exception raised: RuntimeError >> ECL says: In function CAR, the value of t
he first argument is  0which is not of the expected type LIST
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (f+g\,x)^2 \left(a+b\,\ln\left(c\,(d+e\,x)^n\right)\right)^n dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)^2*(a + b*log(c*(d + e*x)^n))^n,x)
[Out] int((f + g*x)^2*(a + b*log(c*(d + e*x)^n))^n, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(a+b\log\left(c\,(d+ex)^n\right)\right)^n (f+gx)^2\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**2*(a+b*ln(c*(e*x+d)**n))**n,x)
[Out] Integral((a + b*log(c*(d + e*x)**n))**n*(f + g*x)**2, x)
```

3.172 $\int (f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^n\,dx$

Optimal. Leaf size=225

$$\frac{e^{-\frac{a}{bn}}(d+ex)(ef-dg)\left(c(d+ex)^n\right)^{-1/n}\left(a+b\log\left(c(d+ex)^n\right)\right)^n\left(-\frac{a+b\log(c(d+ex)^n)}{bn}\right)^{-n}\Gamma\left(n+1,-\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{e^2}+\frac{g2}{}$$

```
[Out] 2^(-1-n)*g*(e*x+d)^2*GAMMA(1+n,-2*(a+b*ln(c*(e*x+d)^n))/b/n)*(a+b*ln(c*(e*x
+d)^n))^n/e^2/exp(2*a/b/n)/((c*(e*x+d)^n)^(2/n))/(((-a-b*ln(c*(e*x+d)^n))/b
/n)^n)+(-d*g+e*f)*(e*x+d)*GAMMA(1+n,(-a-b*ln(c*(e*x+d)^n))/b/n)*(a+b*ln(c*(
e*x+d)^n))^n/e^2/exp(a/b/n)/((c*(e*x+d)^n)^(1/n))/(((-a-b*ln(c*(e*x+d)^n))/
b/n)^n)
```

Rubi [A] time = 0.21, antiderivative size = 225, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.273$, Rules used = {2401, 2389, 2300, 2181, 2390, 2310}

$$\frac{e^{-\frac{a}{bn}}(d+ex)(ef-dg)\left(c(d+ex)^n\right)^{-1/n}\left(a+b\log\left(c(d+ex)^n\right)\right)^n\left(-\frac{a+b\log(c(d+ex)^n)}{bn}\right)^{-n}\text{Gamma}\left(n+1,-\frac{a+b\log(c(d+ex)}{bn}\right.}{e^2}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)*(a + b*Log[c*(d + e*x)^n])^n,x]
```

```
[Out] (2^(-1 - n)*g*(d + e*x)^2*Gamma[1 + n, (-2*(a + b*Log[c*(d + e*x)^n]))/(b*n
)]*(a + b*Log[c*(d + e*x)^n])^n)/(e^2*E^((2*a)/(b*n))*(c*(d + e*x)^n)^(2/n)
*(-((a + b*Log[c*(d + e*x)^n])/(b*n)))^n) + ((e*f - d*g)*(d + e*x)*Gamma[1
+ n, -((a + b*Log[c*(d + e*x)^n])/(b*n))]*(a + b*Log[c*(d + e*x)^n])^n)/(e^
2*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)*(-((a + b*Log[c*(d + e*x)^n])/(b*n)))^
n)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
ntegerQ[m]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rubi steps

$$\int (f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^n\,dx = \int \left(\frac{(ef-dg)\left(a+b\log\left(c(d+ex)^n\right)\right)^n}{e}+\frac{g(d+ex)\left(a+b\log\left(c(d+\right.\right.}{e}\right.$$
$$=\frac{g\int (d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^n\,dx}{e}+\frac{(ef-dg)\int\left(a+b\log\left(c(\right.\right.}{e}$$
$$=\frac{g\,\mathrm{Subst}\left(\int x\left(a+b\log\left(cx^n\right)\right)^n\,dx,x,d+ex\right)}{e^2}+\frac{(ef-dg)\,\mathrm{Subst}\left(\int\left(\right.\right.}{}$$
$$=\frac{\left(g(d+ex)^2\left(c(d+ex)^n\right)^{-2/n}\right)\mathrm{Subst}\left(\int e^{\frac{2x}{n}}(a+bx)^n\,dx,x,\log\left(c(d+e\right.\right.}{e^2n}$$
$$=\frac{2^{-1-n}e^{-\frac{2a}{bn}}g(d+ex)^2\left(c(d+ex)^n\right)^{-2/n}\Gamma\left(1+n,-\frac{2\left(a+b\log\left(c(d+ex)^n\right)\right)}{bn}\right)\left(a\right.}{e^2}$$

Mathematica [A] time = 0.22, size = 181, normalized size = 0.80

$$\frac{2^{-n-1}e^{-\frac{2a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-2/n}\left(a+b\log\left(c(d+ex)^n\right)\right)^n\left(-\frac{a+b\log\left(c(d+ex)^n\right)}{bn}\right)^{-n}\left(2^{n+1}e^{\frac{a}{bn}}(ef-dg)\left(c(d+ex)^n\right)^{\frac{1}{n}}\right.}{e^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)*(a + b*Log[c*(d + e*x)^n])^n,x]
```

```
[Out] (2^(-1 - n)*(d + e*x)*(g*(d + e*x)*Gamma[1 + n, (-2*(a + b*Log[c*(d + e*x)^
n]))/(b*n)] + 2^(1 + n)*E^(a/(b*n))*(e*f - d*g)*(c*(d + e*x)^n)^n^(-1)*Gamm
a[1 + n, -((a + b*Log[c*(d + e*x)^n])/(b*n))])*(a + b*Log[c*(d + e*x)^n])^n
)/(e^2*E^((2*a)/(b*n))*(c*(d + e*x)^n)^(2/n)*(-((a + b*Log[c*(d + e*x)^n])/
(b*n)))^n)
```

fricas [F] time = 0.47, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\left(gx+f\right)\left(b\log\left((ex+d)^n c\right)+a\right)^n,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*log(c*(e*x+d)^n))^n,x, algorithm="fricas")
```

```
[Out] integral((g*x + f)*(b*log((e*x + d)^n*c) + a)^n, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(gx+f\right)\left(b\log\left((ex+d)^n c\right)+a\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*log(c*(e*x+d)^n))^n,x, algorithm="giac")
```

```
[Out] integrate((g*x + f)*(b*log((e*x + d)^n*c) + a)^n, x)
```

maple [F] time = 2.22, size = 0, normalized size = 0.00

$$\int (gx+f)\left(b\ln\left(c\,(ex+d)^{n}\right)+a\right)^{n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(b*ln(c*(e*x+d)^n)+a)^n,x)
```

```
[Out] int((g*x+f)*(b*ln(c*(e*x+d)^n)+a)^n,x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*log(c*(e*x+d)^n))^n,x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: In function CAR, the value of t
he first argument is  0which is not of the expected type LIST
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (f+g\,x)\left(a+b\,\ln\left(c\,(d+e\,x)^{n}\right)\right)^{n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(a + b*log(c*(d + e*x)^n))^n,x)
```

```
[Out] int((f + g*x)*(a + b*log(c*(d + e*x)^n))^n, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(a+b\log\left(c\,(d+ex)^{n}\right)\right)^{n}(f+gx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*ln(c*(e*x+d)**n))**n,x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**n*(f + g*x), x)
```

3.173 $\int \left(a+b\log\left(c(d+ex)^n\right)\right)^n\,dx$

Optimal. Leaf size=103

$$\frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\left(a+b\log\left(c(d+ex)^n\right)\right)^n\left(-\frac{a+b\log(c(d+ex)^n)}{bn}\right)^{-n}\Gamma\left(n+1,-\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{e}$$

```
[Out] (e*x+d)*GAMMA(1+n,(-a-b*ln(c*(e*x+d)^n))/b/n)*(a+b*ln(c*(e*x+d)^n))^n/e/exp
(a/b/n)/((c*(e*x+d)^n)^(1/n))/(((-a-b*ln(c*(e*x+d)^n))/b/n)^n)
```

Rubi [A] time = 0.06, antiderivative size = 103, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.188$, Rules used = {2389, 2300, 2181}

$$\frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\left(a+b\log\left(c(d+ex)^n\right)\right)^n\left(-\frac{a+b\log(c(d+ex)^n)}{bn}\right)^{-n}\text{Gamma}\left(n+1,-\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{e}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^n,x]
```

```
[Out] ((d + e*x)*Gamma[1 + n, -((a + b*Log[c*(d + e*x)^n])/(b*n))]*(a + b*Log[c*(
d + e*x)^n])^n)/(e*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)*(-((a + b*Log[c*(d +
e*x)^n])/(b*n)))^n)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] && !I
ntegerQ[m]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rubi steps

$$\begin{aligned}
\int \left(a+b\log\left(c(d+ex)^n\right)\right)^n\,dx &= \frac{\text{Subst}\left(\int \left(a+b\log\left(cx^n\right)\right)^n\,dx,x,d+ex\right)}{e}\\
&= \frac{\left((d+ex)\left(c(d+ex)^n\right)^{-1/n}\right)\text{Subst}\left(\int e^{\frac{x}{n}}(a+bx)^n\,dx,x,\log\left(c(d+ex)^n\right)\right)}{en}\\
&= \frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\Gamma\left(1+n,-\frac{a+b\log(c(d+ex)^n)}{bn}\right)\left(a+b\log\left(c(d+ex)^n\right)\right.}{e}
\end{aligned}$$

Mathematica [A] time = 0.06, size = 103, normalized size = 1.00

$$\frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\left(a+b\log\left(c(d+ex)^n\right)\right)^n\left(-\frac{a+b\log(c(d+ex)^n)}{bn}\right)^{-n}\Gamma\left(n+1,-\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{e}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^n,x]
```

```
[Out] ((d + e*x)*Gamma[1 + n, -((a + b*Log[c*(d + e*x)^n])/(b*n))]*(a + b*Log[c*(
d + e*x)^n])^n)/(e*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)*(-((a + b*Log[c*(d +
e*x)^n])/(b*n)))^n)
```

fricas [A] time = 0.45, size = 60, normalized size = 0.58

$$\frac{e^{\left(-\frac{bn^2\log\left(-\frac{1}{bn}\right)+b\log(c)+a}{bn}\right)}\Gamma\left(n+1,-\frac{bn\log(ex+d)+b\log(c)+a}{bn}\right)}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^n,x, algorithm="fricas")
```

```
[Out] e^(-(b*n^2*log(-1/(b*n)) + b*log(c) + a)/(b*n))*gamma(n + 1, -(b*n*log(e*x
+ d) + b*log(c) + a)/(b*n))/e
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(b\log\left((ex+d)^n c\right)+a\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^n,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^n, x)
```

maple [F] time = 1.24, size = 0, normalized size = 0.00

$$\int\left(b\ln\left(c\,(ex+d)^n\right)+a\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)^n,x)
```

```
[Out] int((b*ln(c*(e*x+d)^n)+a)^n,x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^n,x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: In function CAR, the value of t
he first argument is  0which is not of the expected type LIST
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^n,x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))^n, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(a + b\log\left(c\left(d + ex\right)^{n}\right)\right)^{n}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**n,x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**n, x)
```

3.174 $\int \frac{(a+b\log(c(d+ex)^n))^n}{f+gx}\,dx$

Optimal. Leaf size=27

$$\text{Int}\left(\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^n}{f+gx},x\right)$$

```
[Out] Unintegrable((a+b*ln(c*(e*x+d)^n))^n/(g*x+f),x)
```

Rubi [A] time = 0.03, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^n}{f+gx}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^n/(f + g*x),x]
[Out] Defer[Int][(a + b*Log[c*(d + e*x)^n])^n/(f + g*x), x]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^n}{f+gx}\,dx=\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^n}{f+gx}\,dx$$

Mathematica [A] time = 0.32, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^n}{f+gx}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^n/(f + g*x),x]
[Out] Integrate[(a + b*Log[c*(d + e*x)^n])^n/(f + g*x), x]
```

fricas [A] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(b\log\left((ex+d)^n c\right)+a\right)^n}{gx+f},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^n/(g*x+f),x, algorithm="fricas")
[Out] integral((b*log((e*x + d)^n*c) + a)^n/(g*x + f), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)^n}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^n/(g*x+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^n/(g*x + f), x)
```

maple [**A**] time = 1.42, size = 0, normalized size = 0.00

$$\int \frac{\left(b \ln \left(c \left(e x+d\right)^{n}\right)+a\right)^{n}}{g x+f}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)^n/(g*x+f),x)
[Out] int((b*ln(c*(e*x+d)^n)+a)^n/(g*x+f),x)
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^n/(g*x+f),x, algorithm="maxima")
[Out] Exception raised: RuntimeError >> ECL says: In function CAR, the value of t
he first argument is  0which is not of the expected type LIST
```

mupad [**A**] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^n}{f+g\,x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^n/(f + g*x),x)
[Out] int((a + b*log(c*(d + e*x)^n))^n/(f + g*x), x)
```

sympy [**A**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a + b \log{\left(c \left(d + e x\right)^{n} \right)}\right)^{n}}{f + g x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**n/(g*x+f),x)
[Out] Integral((a + b*log(c*(d + e*x)**n))**n/(f + g*x), x)
```

3.175 $\int \frac{(h+ix)^4(a+b\log(c(e+fx)))}{de+dfx}\,dx$

Optimal. Leaf size=315

$$\frac{4i^3(e+fx)^3(fh-ei)(a+b\log(c(e+fx)))}{3df^5}+\frac{3i^2(e+fx)^2(fh-ei)^2(a+b\log(c(e+fx)))}{df^5}+\frac{(fh-ei)^4\log(e+fx)(a}{df^5}$$

```
[Out] -4*b*i*(-e*i+f*h)^3*x/d/f^4-3/2*b*i^2*(-e*i+f*h)^2*(f*x+e)^2/d/f^5-4/9*b*i^
3*(-e*i+f*h)*(f*x+e)^3/d/f^5-1/16*b*i^4*(f*x+e)^4/d/f^5-1/2*b*(-e*i+f*h)^4*
ln(f*x+e)^2/d/f^5+4*i*(-e*i+f*h)^3*(f*x+e)*(a+b*ln(c*(f*x+e)))/d/f^5+3*i^2*
(-e*i+f*h)^2*(f*x+e)^2*(a+b*ln(c*(f*x+e)))/d/f^5+4/3*i^3*(-e*i+f*h)*(f*x+e)
^3*(a+b*ln(c*(f*x+e)))/d/f^5+1/4*i^4*(f*x+e)^4*(a+b*ln(c*(f*x+e)))/d/f^5+(-
e*i+f*h)^4*ln(f*x+e)*(a+b*ln(c*(f*x+e)))/d/f^5
```

Rubi [A] time = 0.51, antiderivative size = 260, normalized size of antiderivative = 0.83, number of steps used = 6, number of rules used = 5, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {2411, 12, 43, 2334, 2301}

$$\frac{\left(\frac{36i^2(e+fx)^2(fh-ei)^2}{f^4}+\frac{16i^3(e+fx)^3(fh-ei)}{f^4}+\frac{48i(e+fx)(fh-ei)^3}{f^4}+\frac{12(fh-ei)^4\log(e+fx)}{f^4}+\frac{3i^4(e+fx)^4}{f^4}\right)(a+b\log(c(e+fx)))}{12df}-\frac{3bi^2(}{}$$

Antiderivative was successfully verified.

```
[In] Int[((h + i*x)^4*(a + b*Log[c*(e + f*x)]))/(d*e + d*f*x),x]
```

```
[Out] (-4*b*i*(f*h - e*i)^3*x)/(d*f^4) - (3*b*i^2*(f*h - e*i)^2*(e + f*x)^2)/(2*d
*f^5) - (4*b*i^3*(f*h - e*i)*(e + f*x)^3)/(9*d*f^5) - (b*i^4*(e + f*x)^4)/(
16*d*f^5) - (b*(f*h - e*i)^4*Log[e + f*x]^2)/(2*d*f^5) + (((48*i*(f*h - e*i
)^3*(e + f*x))/f^4 + (36*i^2*(f*h - e*i)^2*(e + f*x)^2)/f^4 + (16*i^3*(f*h
- e*i)*(e + f*x)^3)/f^4 + (3*i^4*(e + f*x)^4)/f^4 + (12*(f*h - e*i)^4*Log[e
 + f*x])/f^4)*(a + b*Log[c*(e + f*x)]))/(12*d*f)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2334

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*(x_)^(m_.)*((d_) + (e_.)*(x_)^(r_
.))^(q_.), x_Symbol] :> With[{u = IntHide[x^m*(d + e*x^r)^q, x]}, Simp[u*(a
 + b*Log[c*x^n]), x] - Dist[b*n, Int[SimplifyIntegrand[u/x, x], x], x]] /;
FreeQ[{a, b, c, d, e, n, r}, x] && IGtQ[q, 0] && IntegerQ[m] &&  !(EqQ[q, 1
] && EqQ[m, -1])
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rubi steps

$$\int \frac{(h+175x)^4(a+b\log(c(e+fx)))}{de+dfx}\,dx = \frac{\text{Subst}\left(\int \frac{\left(\frac{-175e+fh}{f}+\frac{175x}{f}\right)^4(a+b\log(cx))}{dx}\,dx, x, e+fx\right)}{f}$$

$$= \frac{\text{Subst}\left(\int \frac{\left(\frac{-175e+fh}{f}+\frac{175x}{f}\right)^4(a+b\log(cx))}{x}\,dx, x, e+fx\right)}{df}$$

$$= -\frac{\left(\frac{8400(175e-fh)^3(e+fx)}{f^4} - \frac{1102500(175e-fh)^2(e+fx)^2}{f^4} + \frac{85750000(175e-fh)(e+fx)}{f^4}\right.}{12d}$$

$$= -\frac{\left(\frac{8400(175e-fh)^3(e+fx)}{f^4} - \frac{1102500(175e-fh)^2(e+fx)^2}{f^4} + \frac{85750000(175e-fh)(e+fx)}{f^4}\right.}{12d}$$

$$= \frac{700b(175e-fh)^3x}{df^4} - \frac{91875b(175e-fh)^2(e+fx)^2}{2df^5} + \frac{21437500b(1}{}$$

$$= \frac{700b(175e-fh)^3x}{df^4} - \frac{91875b(175e-fh)^2(e+fx)^2}{2df^5} + \frac{21437500b(1}{}$$

Mathematica [A] time = 0.64, size = 589, normalized size = 1.87

$$72a^2e^4i^4 - 288a^2e^3fhi^3 + 432a^2e^2f^2h^2i^2 - 288a^2ef^3h^3i + 72a^2f^4h^4 + 12b\log(c(e+fx))\left(12a(fh-ei)^4 + bi\left(\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((h + i*x)^4*(a + b*Log[c*(e + f*x)]))/(d*e + d*f*x),x]
```

```
[Out] (72*a^2*f^4*h^4 - 288*a^2*e*f^3*h^3*i + 432*a^2*e^2*f^2*h^2*i^2 - 288*a^2*e
^3*f*h*i^3 + 72*a^2*e^4*i^4 + 576*a*b*f^4*h^3*i*x - 576*b^2*f^4*h^3*i*x - 8
64*a*b*e*f^3*h^2*i^2*x + 1296*b^2*e*f^3*h^2*i^2*x + 576*a*b*e^2*f^2*h*i^3*x
 - 1056*b^2*e^2*f^2*h*i^3*x - 144*a*b*e^3*f*i^4*x + 300*b^2*e^3*f*i^4*x + 4
32*a*b*f^4*h^2*i^2*x^2 - 216*b^2*f^4*h^2*i^2*x^2 - 288*a*b*e*f^3*h*i^3*x^2
+ 240*b^2*e*f^3*h*i^3*x^2 + 72*a*b*e^2*f^2*i^4*x^2 - 78*b^2*e^2*f^2*i^4*x^2
 + 192*a*b*f^4*h*i^3*x^3 - 64*b^2*f^4*h*i^3*x^3 - 48*a*b*e*f^3*i^4*x^3 + 28
*b^2*e*f^3*i^4*x^3 + 36*a*b*f^4*i^4*x^4 - 9*b^2*f^4*i^4*x^4 - 12*b^2*e^2*i^
2*(36*f^2*h^2 - 40*e*f*h*i + 13*e^2*i^2)*Log[e + f*x] + 12*b*(12*a*(f*h - e
*i)^4 + b*i*(-12*e^4*i^3 - 12*e^3*f*i^2*(-4*h + i*x) + 6*e^2*f^2*i*(-12*h^2
 + 8*h*i*x + i^2*x^2) + 4*e*f^3*(12*h^3 - 18*h^2*i*x - 6*h*i^2*x^2 - i^3*x^
3) + f^4*x*(48*h^3 + 36*h^2*i*x + 16*h*i^2*x^2 + 3*i^3*x^3)))*Log[c*(e + f*
x)] + 72*b^2*(f*h - e*i)^4*Log[c*(e + f*x)]^2)/(144*b*d*f^5)
```

fricas [A] time = 0.43, size = 478, normalized size = 1.52

$$9(4a-b)f^4i^4x^4 + 4\left(16(3a-b)f^4hi^3 - (12a-7b)ef^3i^4\right)x^3 + 6\left(36(2a-b)f^4h^2i^2 - 8(6a-5b)ef^3hi^3 + (12\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^4*(a+b*log(c*(f*x+e)))/(d*f*x+d*e),x, algorithm="fricas")
```

```
[Out] 1/144*(9*(4*a - b)*f^4*i^4*x^4 + 4*(16*(3*a - b)*f^4*h*i^3 - (12*a - 7*b)*e
*f^3*i^4)*x^3 + 6*(36*(2*a - b)*f^4*h^2*i^2 - 8*(6*a - 5*b)*e*f^3*h*i^3 + (
12*a - 13*b)*e^2*f^2*i^4)*x^2 + 72*(b*f^4*h^4 - 4*b*e*f^3*h^3*i + 6*b*e^2*f
^2*h^2*i^2 - 4*b*e^3*f*h*i^3 + b*e^4*i^4)*log(c*f*x + c*e)^2 + 12*(48*(a -
b)*f^4*h^3*i - 36*(2*a - 3*b)*e*f^3*h^2*i^2 + 8*(6*a - 11*b)*e^2*f^2*h*i^3
- (12*a - 25*b)*e^3*f*i^4)*x + 12*(3*b*f^4*i^4*x^4 + 12*a*f^4*h^4 - 48*(a -
 b)*e*f^3*h^3*i + 36*(2*a - 3*b)*e^2*f^2*h^2*i^2 - 8*(6*a - 11*b)*e^3*f*h*i
^3 + (12*a - 25*b)*e^4*i^4 + 4*(4*b*f^4*h*i^3 - b*e*f^3*i^4)*x^3 + 6*(6*b*f
^4*h^2*i^2 - 4*b*e*f^3*h*i^3 + b*e^2*f^2*i^4)*x^2 + 12*(4*b*f^4*h^3*i - 6*b
*e*f^3*h^2*i^2 + 4*b*e^2*f^2*h*i^3 - b*e^3*f*i^4)*x)*log(c*f*x + c*e))/(d*f
^5)
```

giac [B] time = 0.24, size = 682, normalized size = 2.17

$$\frac{576\,bf^4h^3ix\log\left(cfx+ce\right)-192\,bf^4hix^3\log\left(cfx+ce\right)+72\,bf^4h^4\log\left(cfx+ce\right)^2-288\,bf^3h^3ie\log\left(cfx+ce\right)^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^4*(a+b*log(c*(f*x+e)))/(d*f*x+d*e),x, algorithm="giac")
```

```
[Out] 1/144*(576*b*f^4*h^3*i*x*log(c*f*x + c*e) - 192*b*f^4*h*i*x^3*log(c*f*x + c
*e) + 72*b*f^4*h^4*log(c*f*x + c*e)^2 - 288*b*f^3*h^3*i*e*log(c*f*x + c*e)^
2 + 576*a*f^4*h^3*i*x - 576*b*f^4*h^3*i*x - 192*a*f^4*h*i*x^3 + 64*b*f^4*h*
i*x^3 - 432*b*f^4*h^2*x^2*log(c*f*x + c*e) + 36*b*f^4*x^4*log(c*f*x + c*e)
+ 288*b*f^3*h*i*x^2*e*log(c*f*x + c*e) + 144*a*f^4*h^4*log(f*x + e) - 576*a
*f^3*h^3*i*e*log(f*x + e) + 576*b*f^3*h^3*i*e*log(f*x + e) - 432*a*f^4*h^2*
x^2 + 216*b*f^4*h^2*x^2 + 36*a*f^4*x^4 - 9*b*f^4*x^4 + 288*a*f^3*h*i*x^2*e
- 240*b*f^3*h*i*x^2*e + 864*b*f^3*h^2*x*e*log(c*f*x + c*e) - 48*b*f^3*x^3*e
*log(c*f*x + c*e) + 864*a*f^3*h^2*x*e - 1296*b*f^3*h^2*x*e - 48*a*f^3*x^3*e
 + 28*b*f^3*x^3*e - 576*b*f^2*h*i*x*e^2*log(c*f*x + c*e) - 432*b*f^2*h^2*e^
2*log(c*f*x + c*e)^2 - 576*a*f^2*h*i*x*e^2 + 1056*b*f^2*h*i*x*e^2 + 72*b*f^
2*x^2*e^2*log(c*f*x + c*e) + 288*b*f*h*i*e^3*log(c*f*x + c*e)^2 - 864*a*f^2
*h^2*e^2*log(f*x + e) + 1296*b*f^2*h^2*e^2*log(f*x + e) + 72*a*f^2*x^2*e^2
- 78*b*f^2*x^2*e^2 + 576*a*f*h*i*e^3*log(f*x + e) - 1056*b*f*h*i*e^3*log(f*
x + e) - 144*b*f*x*e^3*log(c*f*x + c*e) - 144*a*f*x*e^3 + 300*b*f*x*e^3 + 7
2*b*e^4*log(c*f*x + c*e)^2 + 144*a*e^4*log(f*x + e) - 300*b*e^4*log(f*x + e
))/(d*f^5)
```

maple [B] time = 0.05, size = 1057, normalized size = 3.36

$$\frac{b\,i^4x^4\ln\left(cfx+ce\right)}{4df}+\frac{a\,i^4x^4}{4df}-\frac{be\,i^4x^3\ln\left(cfx+ce\right)}{3d\,f^2}+\frac{4bh\,i^3x^3\ln\left(cfx+ce\right)}{3df}-\frac{b\,i^4x^4}{16df}-\frac{ae\,i^4x^3}{3d\,f^2}+\frac{4ah\,i^3x^3}{3df}+\frac{b\,e^2i^4x^2\ln\left(\right.}{2d\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)^4*(a+b*ln(c*(f*x+e)))/(d*f*x+d*e),x)
```

```
[Out] 415/144/f^5/d*b*e^4*i^4-25/12/f^5/d*a*e^4*i^4+22/3/f^4/d*b*e^3*h*i^3*ln(c*f
*x+c*e)-2/f^4/d*b*e^3*h*i^3*ln(c*f*x+c*e)^2-4/f^4/d*a*e^3*h*i^3*ln(c*f*x+c*
e)+3/f/d*b*h^2*i^2*ln(c*f*x+c*e)*x^2+4/f/d*b*h^3*i*ln(c*f*x+c*e)*x+6/f^3/d*
a*e^2*h^2*i^2*ln(c*f*x+c*e)+4/3/f/d*b*h*i^3*ln(c*f*x+c*e)*x^3+3/f^3/d*b*e^2
*h^2*i^2*ln(c*f*x+c*e)^2+4/f^2/d*b*h^3*i*ln(c*f*x+c*e)*e-2/f^2/d*b*e*h^3*i*
ln(c*f*x+c*e)^2-1/f^4/d*b*e^3*i^4*ln(c*f*x+c*e)*x+5/3/f^2/d*b*h*i^3*x^2*e+4
/f/d*a*h^3*i*x-1/f^4/d*a*e^3*i^4*x+1/f^5/d*a*e^4*i^4*ln(c*f*x+c*e)-25/12/f^
5/d*b*e^4*i^4*ln(c*f*x+c*e)+1/4/f/d*b*i^4*ln(c*f*x+c*e)*x^4+1/2/f^5/d*b*e^4
*i^4*ln(c*f*x+c*e)^2+1/2/f^3/d*a*i^4*x^2*e^2-1/3/f^2/d*a*i^4*x^3*e+3/f/d*a*
```

```
h^2*i^2*x^2-4/9/f/d*b*h*i^3*x^3+4/3/f/d*a*h*i^3*x^3-3/2/f/d*b*h^2*i^2*x^2+7
/36/f^2/d*b*e*i^4*x^3-13/24/f^3/d*b*e^2*i^4*x^2+25/12/f^4/d*b*e^3*i^4*x-4/f
/d*b*h^3*i*x+1/4/f/d*a*i^4*x^4-6/f^2/d*b*e*h^2*i^2*ln(c*f*x+c*e)*x+4/f^3/d*
b*e^2*h*i^3*ln(c*f*x+c*e)*x-2/f^2/d*b*h*i^3*ln(c*f*x+c*e)*x^2*e+22/3/f^4/d*
a*e^3*h*i^3+4/f^2/d*a*e*h^3*i-9/f^3/d*a*e^2*h^2*i^2-85/9/f^4/d*b*e^3*h*i^3-
4/f^2/d*b*e*h^3*i+21/2/f^3/d*b*e^2*h^2*i^2-22/3/f^3/d*b*e^2*h*i^3*x+4/f^3/d
*a*e^2*h*i^3*x-6/f^2/d*a*e*h^2*i^2*x-4/f^2/d*a*e*h^3*i*ln(c*f*x+c*e)-1/16/f
/d*b*i^4*x^4+1/f/d*a*h^4*ln(c*f*x+c*e)+1/2/f/d*b*h^4*ln(c*f*x+c*e)^2-2/f^2/
d*a*e*h*i^3*x^2+9/f^2/d*b*e*h^2*i^2*x-9/f^3/d*b*e^2*h^2*i^2*ln(c*f*x+c*e)-1
/3/f^2/d*b*e*i^4*ln(c*f*x+c*e)*x^3+1/2/f^3/d*b*e^2*i^4*ln(c*f*x+c*e)*x^2
```

maxima [B] time = 0.62, size = 757, normalized size = 2.40

$$4\,bh^3i\left(\frac{x}{df}-\frac{e\log\left(fx+e\right)}{df^2}\right)\log\left(cfx+ce\right)+\frac{1}{12}\,bi^4\left(\frac{12\,e^4\log\left(fx+e\right)}{df^5}+\frac{3\,f^3x^4-4\,ef^2x^3+6\,e^2fx^2-12\,e^3x}{df^4}\right)1$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^4*(a+b*log(c*(f*x+e)))/(d*f*x+d*e),x, algorithm="maxima")
```

```
[Out] 4*b*h^3*i*(x/(d*f) - e*log(f*x + e)/(d*f^2))*log(c*f*x + c*e) + 1/12*b*i^4*
(12*e^4*log(f*x + e)/(d*f^5) + (3*f^3*x^4 - 4*e*f^2*x^3 + 6*e^2*f*x^2 - 12*
e^3*x)/(d*f^4))*log(c*f*x + c*e) - 2/3*b*h*i^3*(6*e^3*log(f*x + e)/(d*f^4)
- (2*f^2*x^3 - 3*e*f*x^2 + 6*e^2*x)/(d*f^3))*log(c*f*x + c*e) + 3*b*h^2*i^2
*(2*e^2*log(f*x + e)/(d*f^3) + (f*x^2 - 2*e*x)/(d*f^2))*log(c*f*x + c*e) -
1/2*b*h^4*(2*log(c*f*x + c*e)*log(d*f*x + d*e)/(d*f) - (log(f*x + e)^2 + 2*
log(f*x + e)*log(c))/(d*f)) + 4*a*h^3*i*(x/(d*f) - e*log(f*x + e)/(d*f^2))
+ 1/12*a*i^4*(12*e^4*log(f*x + e)/(d*f^5) + (3*f^3*x^4 - 4*e*f^2*x^3 + 6*e^
2*f*x^2 - 12*e^3*x)/(d*f^4)) - 2/3*a*h*i^3*(6*e^3*log(f*x + e)/(d*f^4) - (2
*f^2*x^3 - 3*e*f*x^2 + 6*e^2*x)/(d*f^3)) + 3*a*h^2*i^2*(2*e^2*log(f*x + e)/
(d*f^3) + (f*x^2 - 2*e*x)/(d*f^2)) + b*h^4*log(c*f*x + c*e)*log(d*f*x + d*e
)/(d*f) + a*h^4*log(d*f*x + d*e)/(d*f) + 2*(e*log(f*x + e)^2 - 2*f*x + 2*e*
log(f*x + e))*b*h^3*i/(d*f^2) - 3/2*(f^2*x^2 + 2*e^2*log(f*x + e)^2 - 6*e*f
*x + 6*e^2*log(f*x + e))*b*h^2*i^2/(d*f^3) - 1/9*(4*f^3*x^3 - 15*e*f^2*x^2
- 18*e^3*log(f*x + e)^2 + 66*e^2*f*x - 66*e^3*log(f*x + e))*b*h*i^3/(d*f^4)
 - 1/144*(9*f^4*x^4 - 28*e*f^3*x^3 + 78*e^2*f^2*x^2 + 72*e^4*log(f*x + e)^2
 - 300*e^3*f*x + 300*e^4*log(f*x + e))*b*i^4/(d*f^5)
```

mupad [B] time = 0.55, size = 661, normalized size = 2.10

$$x^3\left(\frac{i^3\,\left(12\,a\,f\,h+b\,e\,i-4\,b\,f\,h\right)}{9\,d\,f^2}-\frac{e\,i^4\,\left(4\,a-b\right)}{12\,d\,f^2}\right)-x^2\left(\frac{e\,\left(\frac{i^3\,\left(12\,a\,f\,h+b\,e\,i-4\,b\,f\,h\right)}{3\,d\,f^2}-\frac{e\,i^4\,\left(4\,a-b\right)}{4\,d\,f^2}\right)}{2\,f}-\frac{i^2\,\left(12\,a\,f^2\,h^2-b\,e^2\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((h + i*x)^4*(a + b*log(c*(e + f*x))))/(d*e + d*f*x),x)
```

```
[Out] x^3*((i^3*(12*a*f*h + b*e*i - 4*b*f*h))/(9*d*f^2) - (e*i^4*(4*a - b))/(12*d
*f^2)) - x^2*((e*((i^3*(12*a*f*h + b*e*i - 4*b*f*h))/(3*d*f^2) - (e*i^4*(4*
a - b))/(4*d*f^2)))/(2*f) - (i^2*(12*a*f^2*h^2 - b*e^2*i^2 - 6*b*f^2*h^2 +
4*b*e*f*h*i))/(4*d*f^3)) + x*((12*b*e^3*i^4 + 48*a*f^3*h^3*i - 48*b*f^3*h^3
*i - 48*b*e^2*f*h*i^3 + 72*b*e*f^2*h^2*i^2)/(12*d*f^4) + (e*((e*((i^3*(12*a
*f*h + b*e*i - 4*b*f*h))/(3*d*f^2) - (e*i^4*(4*a - b))/(4*d*f^2)))/f - (i^2
*(12*a*f^2*h^2 - b*e^2*i^2 - 6*b*f^2*h^2 + 4*b*e*f*h*i))/(2*d*f^3)))/f) + f
*log(c*(e + f*x))*((b*i^4*x^4)/(4*d*f^2) + (b*i^2*x^2*(e^2*i^2 + 6*f^2*h^2
```

```
- 4*e*f*h*i))/(2*d*f^4) - (b*i^3*x^3*(e*i - 4*f*h))/(3*d*f^3) - (b*i*x*(e^3
*i^3 - 4*f^3*h^3 + 6*e*f^2*h^2*i - 4*e^2*f*h*i^2))/(d*f^5)) + (log(e + f*x)
*(12*a*e^4*i^4 + 12*a*f^4*h^4 - 25*b*e^4*i^4 - 48*a*e*f^3*h^3*i - 48*a*e^3*
f*h*i^3 + 48*b*e*f^3*h^3*i + 88*b*e^3*f*h*i^3 + 72*a*e^2*f^2*h^2*i^2 - 108*
b*e^2*f^2*h^2*i^2))/(12*d*f^5) + (b*log(c*(e + f*x))^2*(e^4*i^4 + f^4*h^4 +
 6*e^2*f^2*h^2*i^2 - 4*e*f^3*h^3*i - 4*e^3*f*h*i^3))/(2*d*f^5) + (i^4*x^4*(
4*a - b))/(16*d*f)
```

sympy [B] time = 3.04, size = 682, normalized size = 2.17

$$x^4\left(\frac{ai^4}{4df}-\frac{bi^4}{16df}\right)+x^3\left(-\frac{aei^4}{3df^2}+\frac{4ahi^3}{3df}+\frac{7bei^4}{36df^2}-\frac{4bhi^3}{9df}\right)+x^2\left(\frac{ae^2i^4}{2df^3}-\frac{2aehi^3}{df^2}+\frac{3ah^2i^2}{df}-\frac{13be^2i^4}{24df^3}+\frac{5behi^3}{3df^2}-\frac{3b}{2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)**4*(a+b*ln(c*(f*x+e)))/(d*f*x+d*e),x)
```

```
[Out] x**4*(a*i**4/(4*d*f) - b*i**4/(16*d*f)) + x**3*(-a*e*i**4/(3*d*f**2) + 4*a*
h*i**3/(3*d*f) + 7*b*e*i**4/(36*d*f**2) - 4*b*h*i**3/(9*d*f)) + x**2*(a*e**
2*i**4/(2*d*f**3) - 2*a*e*h*i**3/(d*f**2) + 3*a*h**2*i**2/(d*f) - 13*b*e**2
*i**4/(24*d*f**3) + 5*b*e*h*i**3/(3*d*f**2) - 3*b*h**2*i**2/(2*d*f)) + x*(-
a*e**3*i**4/(d*f**4) + 4*a*e**2*h*i**3/(d*f**3) - 6*a*e*h**2*i**2/(d*f**2)
+ 4*a*h**3*i/(d*f) + 25*b*e**3*i**4/(12*d*f**4) - 22*b*e**2*h*i**3/(3*d*f**
3) + 9*b*e*h**2*i**2/(d*f**2) - 4*b*h**3*i/(d*f)) + (-12*b*e**3*i**4*x + 48
*b*e**2*f*h*i**3*x + 6*b*e**2*f*i**4*x**2 - 72*b*e*f**2*h**2*i**2*x - 24*b*
e*f**2*h*i**3*x**2 - 4*b*e*f**2*i**4*x**3 + 48*b*f**3*h**3*i*x + 36*b*f**3*
h**2*i**2*x**2 + 16*b*f**3*h*i**3*x**3 + 3*b*f**3*i**4*x**4)*log(c*(e + f*x
))/(12*d*f**4) + (b*e**4*i**4 - 4*b*e**3*f*h*i**3 + 6*b*e**2*f**2*h**2*i**2
 - 4*b*e*f**3*h**3*i + b*f**4*h**4)*log(c*(e + f*x))**2/(2*d*f**5) + (12*a*
e**4*i**4 - 48*a*e**3*f*h*i**3 + 72*a*e**2*f**2*h**2*i**2 - 48*a*e*f**3*h**
3*i + 12*a*f**4*h**4 - 25*b*e**4*i**4 + 88*b*e**3*f*h*i**3 - 108*b*e**2*f**
2*h**2*i**2 + 48*b*e*f**3*h**3*i)*log(e + f*x)/(12*d*f**5)
```

3.176 $\int \frac{(h+ix)^3(a+b\log(c(e+fx)))}{de+dfx} dx$

Optimal. Leaf size=244

$$\frac{3i^2(e+fx)^2(fh-ei)(a+b\log(c(e+fx)))}{2df^4}+\frac{(fh-ei)^3\log(e+fx)(a+b\log(c(e+fx)))}{df^4}+\frac{3i(e+fx)(fh-ei)^2(}{d}$$

```
[Out] -3*b*i*(-e*i+f*h)^2*x/d/f^3-3/4*b*i^2*(-e*i+f*h)*(f*x+e)^2/d/f^4-1/9*b*i^3*
(f*x+e)^3/d/f^4-1/2*b*(-e*i+f*h)^3*ln(f*x+e)^2/d/f^4+3*i*(-e*i+f*h)^2*(f*x+
e)*(a+b*ln(c*(f*x+e)))/d/f^4+3/2*i^2*(-e*i+f*h)*(f*x+e)^2*(a+b*ln(c*(f*x+e)
))/d/f^4+1/3*i^3*(f*x+e)^3*(a+b*ln(c*(f*x+e)))/d/f^4+(-e*i+f*h)^3*ln(f*x+e)
*(a+b*ln(c*(f*x+e)))/d/f^4
```

Rubi [A] time = 0.38, antiderivative size = 204, normalized size of antiderivative = 0.84, number of steps used = 8, number of rules used = 6, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {2411, 12, 43, 2334, 14, 2301}

$$\frac{\left(\frac{9i^2(e+fx)^2(fh-ei)}{f^3}+\frac{18i(e+fx)(fh-ei)^2}{f^3}+\frac{6(fh-ei)^3\log(e+fx)}{f^3}+\frac{2i^3(e+fx)^3}{f^3}\right)(a+b\log(c(e+fx)))}{6df}-\frac{3bi^2(e+fx)^2(fh-ei)}{4df^4}$$

Antiderivative was successfully verified.

```
[In] Int[((h + i*x)^3*(a + b*Log[c*(e + f*x)]))/(d*e + d*f*x),x]
```

```
[Out] (-3*b*i*(f*h - e*i)^2*x)/(d*f^3) - (3*b*i^2*(f*h - e*i)*(e + f*x)^2)/(4*d*f
^4) - (b*i^3*(e + f*x)^3)/(9*d*f^4) - (b*(f*h - e*i)^3*Log[e + f*x]^2)/(2*d
*f^4) + (((18*i*(f*h - e*i)^2*(e + f*x))/f^3 + (9*i^2*(f*h - e*i)*(e + f*x)
^2)/f^3 + (2*i^3*(e + f*x)^3)/f^3 + (6*(f*h - e*i)^3*Log[e + f*x])/f^3)*(a
+ b*Log[c*(e + f*x)]))/(6*d*f)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2334

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*(x_)^(m_.)*((d_) + (e_.)*(x_)^(r_
.))^(q_.), x_Symbol] :> With[{u = IntHide[x^m*(d + e*x^r)^q, x]}, Simp[u*(a
 + b*Log[c*x^n]), x] - Dist[b*n, Int[SimplifyIntegrand[u/x, x], x], x]] /;
FreeQ[{a, b, c, d, e, n, r}, x] && IGtQ[q, 0] && IntegerQ[m] &&  !(EqQ[q, 1
```

```
] && EqQ[m, -1])
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rubi steps

$$\int \frac{(h+176x)^3(a+b\log(c(e+fx)))}{de+dfx}\,dx = \frac{\text{Subst}\left(\int \frac{\left(\frac{-176e+fh}{f}+\frac{176x}{f}\right)^3(a+b\log(cx))}{dx}dx, x, e+fx\right)}{f}$$

$$= \frac{\text{Subst}\left(\int \frac{\left(\frac{-176e+fh}{f}+\frac{176x}{f}\right)^3(a+b\log(cx))}{x}dx, x, e+fx\right)}{df}$$

$$= \frac{\left(\frac{1584(176e-fh)^2(e+fx)}{f^3}-\frac{139392(176e-fh)(e+fx)^2}{f^3}+\frac{5451776(e+fx)^3}{f^3}-\frac{3(176e-fh)^3 \text{lo}}{f^3}\right.}{3df}$$

$$= \frac{\left(\frac{1584(176e-fh)^2(e+fx)}{f^3}-\frac{139392(176e-fh)(e+fx)^2}{f^3}+\frac{5451776(e+fx)^3}{f^3}-\frac{3(176e-fh)^3 \text{lo}}{f^3}\right.}{3df}$$

$$= \frac{\left(\frac{1584(176e-fh)^2(e+fx)}{f^3}-\frac{139392(176e-fh)(e+fx)^2}{f^3}+\frac{5451776(e+fx)^3}{f^3}-\frac{3(176e-fh)^3 \text{lo}}{f^3}\right.}{3df}$$

$$= \frac{\left(\frac{1584(176e-fh)^2(e+fx)}{f^3}-\frac{139392(176e-fh)(e+fx)^2}{f^3}+\frac{5451776(e+fx)^3}{f^3}-\frac{3(176e-fh)^3 \text{lo}}{f^3}\right.}{3df}$$

$$= -\frac{528b(176e-fh)^2x}{df^3}+\frac{23232b(176e-fh)(e+fx)^2}{df^4}-\frac{5451776b(e+f}{9df^4}$$

Mathematica [A] time = 0.36, size = 375, normalized size = 1.54

$$\frac{-18a^2e^3i^3+54a^2e^2fhi^2-54a^2ef^2h^2i+18a^2f^3h^3+6b\log(c(e+fx))\left(6a(fh-ei)^3+bi\left(6e^3i^2+6e^2fi(ix-3h)+\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((h + i*x)^3*(a + b*Log[c*(e + f*x)]))/(d*e + d*f*x),x]
```

```
[Out] (18*a^2*f^3*h^3 - 54*a^2*e*f^2*h^2*i + 54*a^2*e^2*f*h*i^2 - 18*a^2*e^3*i^3
+ 108*a*b*f^3*h^2*i*x - 108*b^2*f^3*h^2*i*x - 108*a*b*e*f^2*h*i^2*x + 162*b
^2*e*f^2*h*i^2*x + 36*a*b*e^2*f*i^3*x - 66*b^2*e^2*f*i^3*x + 54*a*b*f^3*h*i
^2*x^2 - 27*b^2*f^3*h*i^2*x^2 - 18*a*b*e*f^2*i^3*x^2 + 15*b^2*e*f^2*i^3*x^2
 + 12*a*b*f^3*i^3*x^3 - 4*b^2*f^3*i^3*x^3 + 6*b^2*e^2*i^2*(-9*f*h + 5*e*i)*
Log[e + f*x] + 6*b*(6*a*(f*h - e*i)^3 + b*i*(6*e^3*i^2 + 6*e^2*f*i*(-3*h +
i*x) + 3*e*f^2*(6*h^2 - 6*h*i*x - i^2*x^2) + f^3*x*(18*h^2 + 9*h*i*x + 2*i^
2*x^2)))*Log[c*(e + f*x)] + 18*b^2*(f*h - e*i)^3*Log[c*(e + f*x)]^2)/(36*b*
d*f^4)
```

fricas [A] time = 0.42, size = 308, normalized size = 1.26

$$\frac{4\,(3\,a-b)f^3i^3x^3+3\left(9\,(2\,a-b)f^3hi^2-(6\,a-5\,b)ef^2i^3\right)x^2+18\left(bf^3h^3-3\,bef^2h^2i+3\,be^2fhi^2-be^3i^3\right)\log\left(c\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^3*(a+b*log(c*(f*x+e)))/(d*f*x+d*e),x, algorithm="fricas")
```

```
[Out] 1/36*(4*(3*a - b)*f^3*i^3*x^3 + 3*(9*(2*a - b)*f^3*h*i^2 - (6*a - 5*b)*e*f^
2*i^3)*x^2 + 18*(b*f^3*h^3 - 3*b*e*f^2*h^2*i + 3*b*e^2*f*h*i^2 - b*e^3*i^3)
*log(c*f*x + c*e)^2 + 6*(18*(a - b)*f^3*h^2*i - 9*(2*a - 3*b)*e*f^2*h*i^2 +
 (6*a - 11*b)*e^2*f*i^3)*x + 6*(2*b*f^3*i^3*x^3 + 6*a*f^3*h^3 - 18*(a - b)*
e*f^2*h^2*i + 9*(2*a - 3*b)*e^2*f*h*i^2 - (6*a - 11*b)*e^3*i^3 + 3*(3*b*f^3
*h*i^2 - b*e*f^2*i^3)*x^2 + 6*(3*b*f^3*h^2*i - 3*b*e*f^2*h*i^2 + b*e^2*f*i^
3)*x)*log(c*f*x + c*e))/(d*f^4)
```

giac [A] time = 0.19, size = 442, normalized size = 1.81

$$\frac{108\,bf^3h^2ix\log\left(cfx+ce\right)-12\,bf^3ix^3\log\left(cfx+ce\right)+18\,bf^3h^3\log\left(cfx+ce\right)^2-54\,bf^2h^2ie\log\left(cfx+ce\right)^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^3*(a+b*log(c*(f*x+e)))/(d*f*x+d*e),x, algorithm="giac")
```

```
[Out] 1/36*(108*b*f^3*h^2*i*x*log(c*f*x + c*e) - 12*b*f^3*i*x^3*log(c*f*x + c*e)
+ 18*b*f^3*h^3*log(c*f*x + c*e)^2 - 54*b*f^2*h^2*i*e*log(c*f*x + c*e)^2 + 1
08*a*f^3*h^2*i*x - 108*b*f^3*h^2*i*x - 12*a*f^3*i*x^3 + 4*b*f^3*i*x^3 - 54*
b*f^3*h*x^2*log(c*f*x + c*e) + 18*b*f^2*i*x^2*e*log(c*f*x + c*e) + 36*a*f^3
*h^3*log(f*x + e) - 108*a*f^2*h^2*i*e*log(f*x + e) + 108*b*f^2*h^2*i*e*log(
f*x + e) - 54*a*f^3*h*x^2 + 27*b*f^3*h*x^2 + 18*a*f^2*i*x^2*e - 15*b*f^2*i*
x^2*e + 108*b*f^2*h*x*e*log(c*f*x + c*e) + 108*a*f^2*h*x*e - 162*b*f^2*h*x*
e - 36*b*f*i*x*e^2*log(c*f*x + c*e) - 54*b*f*h*e^2*log(c*f*x + c*e)^2 - 36*
a*f*i*x*e^2 + 66*b*f*i*x*e^2 + 18*b*i*e^3*log(c*f*x + c*e)^2 - 108*a*f*h*e^
2*log(f*x + e) + 162*b*f*h*e^2*log(f*x + e) + 36*a*i*e^3*log(f*x + e) - 66*
b*i*e^3*log(f*x + e))/(d*f^4)
```

maple [B] time = 0.05, size = 685, normalized size = 2.81

$$\frac{b\,i^3x^3\ln\left(cfx+ce\right)}{3df}+\frac{a\,i^3x^3}{3df}-\frac{be\,i^3x^2\ln\left(cfx+ce\right)}{2d\,f^2}+\frac{3bh\,i^2x^2\ln\left(cfx+ce\right)}{2df}-\frac{b\,i^3x^3}{9df}-\frac{ae\,i^3x^2}{2d\,f^2}+\frac{3ah\,i^2x^2}{2df}-\frac{b\,e^3i^3\ln\left(\right.}{2\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)^3*(a+b*ln(c*(f*x+e)))/(d*f*x+d*e),x)
```

```
[Out] -85/36/f^4/d*b*e^3*i^3+11/6/f^4/d*a*e^3*i^3-3/2/f^2/d*b*e*h^2*i*ln(c*f*x+c*
e)^2+3/2/f^3/d*b*e^2*h*i^2*ln(c*f*x+c*e)^2-1/2/f^2/d*b*e*i^3*ln(c*f*x+c*e)*
x^2+3/f/d*b*h^2*i*ln(c*f*x+c*e)*x-3/f^2/d*a*e*h^2*i*ln(c*f*x+c*e)+3/f^3/d*a
*e^2*h*i^2*ln(c*f*x+c*e)+3/2/f/d*b*h*i^2*ln(c*f*x+c*e)*x^2+1/f^3/d*b*e^2*i^
3*ln(c*f*x+c*e)*x+3/f^2/d*b*h^2*i*ln(c*f*x+c*e)*e-9/2/f^3/d*b*e^2*h*i^2*ln(
c*f*x+c*e)+1/3/f/d*a*i^3*x^3+1/2/f/d*b*h^3*ln(c*f*x+c*e)^2+1/f/d*a*h^3*ln(c
*f*x+c*e)-1/9/f/d*b*i^3*x^3-1/2/f^4/d*b*e^3*i^3*ln(c*f*x+c*e)^2-1/f^4/d*a*e
^3*i^3*ln(c*f*x+c*e)+21/4/f^3/d*b*e^2*h*i^2-3/f^2/d*b*e*h^2*i+3/f^2/d*a*e*h
^2*i-9/2/f^3/d*a*e^2*h*i^2+9/2/f^2/d*b*e*h*i^2*x-3/f^2/d*a*e*h*i^2*x+1/f^3/
d*a*e^2*i^3*x+3/f/d*a*h^2*i*x+11/6/f^4/d*b*e^3*i^3*ln(c*f*x+c*e)-3/f/d*b*h^
2*i*x-1/2/f^2/d*a*e*i^3*x^2+3/2/f/d*a*h*i^2*x^2-11/6/f^3/d*b*e^2*i^3*x+5/12
/f^2/d*b*e*i^3*x^2-3/4/f/d*b*h*i^2*x^2+1/3/f/d*b*i^3*ln(c*f*x+c*e)*x^3-3/f^
2/d*b*e*h*i^2*ln(c*f*x+c*e)*x
```

maxima [B] time = 0.57, size = 539, normalized size = 2.21

$$3\,bh^2i\left(\frac{x}{df}-\frac{e\log\left(fx+e\right)}{df^2}\right)\log\left(cfx+ce\right)-\frac{1}{6}\,bi^3\left(\frac{6\,e^3\log\left(fx+e\right)}{df^4}-\frac{2\,f^2x^3-3\,efx^2+6\,e^2x}{df^3}\right)\log\left(cfx+ce\right)+\frac{3}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^3*(a+b*log(c*(f*x+e)))/(d*f*x+d*e),x, algorithm="maxima")
```

```
[Out] 3*b*h^2*i*(x/(d*f) - e*log(f*x + e)/(d*f^2))*log(c*f*x + c*e) - 1/6*b*i^3*(
6*e^3*log(f*x + e)/(d*f^4) - (2*f^2*x^3 - 3*e*f*x^2 + 6*e^2*x)/(d*f^3))*log
(c*f*x + c*e) + 3/2*b*h*i^2*(2*e^2*log(f*x + e)/(d*f^3) + (f*x^2 - 2*e*x)/(
d*f^2))*log(c*f*x + c*e) - 1/2*b*h^3*(2*log(c*f*x + c*e)*log(d*f*x + d*e)/(
d*f) - (log(f*x + e)^2 + 2*log(f*x + e)*log(c))/(d*f)) + 3*a*h^2*i*(x/(d*f)
 - e*log(f*x + e)/(d*f^2)) - 1/6*a*i^3*(6*e^3*log(f*x + e)/(d*f^4) - (2*f^2
*x^3 - 3*e*f*x^2 + 6*e^2*x)/(d*f^3)) + 3/2*a*h*i^2*(2*e^2*log(f*x + e)/(d*f
^3) + (f*x^2 - 2*e*x)/(d*f^2)) + b*h^3*log(c*f*x + c*e)*log(d*f*x + d*e)/(d
*f) + a*h^3*log(d*f*x + d*e)/(d*f) + 3/2*(e*log(f*x + e)^2 - 2*f*x + 2*e*lo
g(f*x + e))*b*h^2*i/(d*f^2) - 3/4*(f^2*x^2 + 2*e^2*log(f*x + e)^2 - 6*e*f*x
 + 6*e^2*log(f*x + e))*b*h*i^2/(d*f^3) - 1/36*(4*f^3*x^3 - 15*e*f^2*x^2 - 1
8*e^3*log(f*x + e)^2 + 66*e^2*f*x - 66*e^3*log(f*x + e))*b*i^3/(d*f^4)
```

mupad [B] time = 0.41, size = 393, normalized size = 1.61

$$x^2\left(\frac{i^2\,\left(6\,a\,f\,h+b\,e\,i-3\,b\,f\,h\right)}{4\,d\,f^2}-\frac{e\,i^3\,\left(3\,a-b\right)}{6\,d\,f^2}\right)-x\left(\frac{e\,\left(\frac{i^2\,\left(6\,a\,f\,h+b\,e\,i-3\,b\,f\,h\right)}{2\,d\,f^2}-\frac{e\,i^3\,\left(3\,a-b\right)}{3\,d\,f^2}\right)}{f}-\frac{i\,\left(3\,a\,f^2\,h^2-b\,e^2\,i^2-3\,b\right.}{d\,f^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((h + i*x)^3*(a + b*log(c*(e + f*x))))/(d*e + d*f*x),x)
```

```
[Out] x^2*((i^2*(6*a*f*h + b*e*i - 3*b*f*h))/(4*d*f^2) - (e*i^3*(3*a - b))/(6*d*f
^2)) - x*((e*((i^2*(6*a*f*h + b*e*i - 3*b*f*h))/(2*d*f^2) - (e*i^3*(3*a - b
))/(3*d*f^2)))/f - (i*(3*a*f^2*h^2 - b*e^2*i^2 - 3*b*f^2*h^2 + 3*b*e*f*h*i)
)/(d*f^3)) + f*log(c*(e + f*x))*((b*i^3*x^3)/(3*d*f^2) + (b*i*x*(e^2*i^2 +
3*f^2*h^2 - 3*e*f*h*i))/(d*f^4) - (b*i^2*x^2*(e*i - 3*f*h))/(2*d*f^3)) + (l
og(e + f*x)*(6*a*f^3*h^3 - 6*a*e^3*i^3 + 11*b*e^3*i^3 - 18*a*e*f^2*h^2*i +
18*a*e^2*f*h*i^2 + 18*b*e*f^2*h^2*i - 27*b*e^2*f*h*i^2))/(6*d*f^4) + (i^3*x
^3*(3*a - b))/(9*d*f) - (b*log(c*(e + f*x))^2*(e^3*i^3 - f^3*h^3 + 3*e*f^2*
h^2*i - 3*e^2*f*h*i^2))/(2*d*f^4)
```

sympy [A] time = 2.31, size = 427, normalized size = 1.75

$$x^3\left(\frac{ai^3}{3df}-\frac{bi^3}{9df}\right)+x^2\left(-\frac{aei^3}{2df^2}+\frac{3ahi^2}{2df}+\frac{5bei^3}{12df^2}-\frac{3bhi^2}{4df}\right)+x\left(\frac{ae^2i^3}{df^3}-\frac{3aehi^2}{df^2}+\frac{3ah^2i}{df}-\frac{11be^2i^3}{6df^3}+\frac{9behi^2}{2df^2}-\frac{3bh^2i}{df}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)**3*(a+b*ln(c*(f*x+e)))/(d*f*x+d*e),x)
```

```
[Out] x**3*(a*i**3/(3*d*f) - b*i**3/(9*d*f)) + x**2*(-a*e*i**3/(2*d*f**2) + 3*a*h
*i**2/(2*d*f) + 5*b*e*i**3/(12*d*f**2) - 3*b*h*i**2/(4*d*f)) + x*(a*e**2*i*
*3/(d*f**3) - 3*a*e*h*i**2/(d*f**2) + 3*a*h**2*i/(d*f) - 11*b*e**2*i**3/(6*
d*f**3) + 9*b*e*h*i**2/(2*d*f**2) - 3*b*h**2*i/(d*f)) + (6*b*e**2*i**3*x -
18*b*e*f*h*i**2*x - 3*b*e*f*i**3*x**2 + 18*b*f**2*h**2*i*x + 9*b*f**2*h*i**
2*x**2 + 2*b*f**2*i**3*x**3)*log(c*(e + f*x))/(6*d*f**3) + (-b*e**3*i**3 +
3*b*e**2*f*h*i**2 - 3*b*e*f**2*h**2*i + b*f**3*h**3)*log(c*(e + f*x))**2/(2
*d*f**4) - (6*a*e**3*i**3 - 18*a*e**2*f*h*i**2 + 18*a*e*f**2*h**2*i - 6*a*f
**3*h**3 - 11*b*e**3*i**3 + 27*b*e**2*f*h*i**2 - 18*b*e*f**2*h**2*i)*log(e
+ f*x)/(6*d*f**4)
```

3.177 $\int \frac{(h+ix)^2(a+b\log(c(e+fx)))}{de+dfx}\,dx$

Optimal. Leaf size=157

$$\frac{(fh-ei)^2\log(e+fx)(a+b\log(c(e+fx)))}{df^3}+\frac{2i(e+fx)(fh-ei)(a+b\log(c(e+fx)))}{df^3}+\frac{i^2(e+fx)^2(a+b\log(c$$

```
[Out] -1/4*b*(f*i*x-3*e*i+4*f*h)^2/d/f^3-1/2*b*(-e*i+f*h)^2*ln(f*x+e)^2/d/f^3+2*i
*(-e*i+f*h)*(f*x+e)*(a+b*ln(c*(f*x+e)))/d/f^3+1/2*i^2*(f*x+e)^2*(a+b*ln(c*(
f*x+e)))/d/f^3+(-e*i+f*h)^2*ln(f*x+e)*(a+b*ln(c*(f*x+e)))/d/f^3
```

Rubi [A] time = 0.26, antiderivative size = 133, normalized size of antiderivative = 0.85, number of steps used = 7, number of rules used = 6, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {2411, 12, 43, 2334, 14, 2301}

$$\frac{\left(\frac{4i(e+fx)(fh-ei)}{f^2}+\frac{2(fh-ei)^2\log(e+fx)}{f^2}+\frac{i^2(e+fx)^2}{f^2}\right)(a+b\log(c(e+fx)))}{2df}-\frac{b(-3ei+4fh+fix)^2}{4df^3}-\frac{b(fh-ei)^2\log^2(e+$$

Antiderivative was successfully verified.

```
[In] Int[((h + i*x)^2*(a + b*Log[c*(e + f*x)]))/(d*e + d*f*x),x]
```

```
[Out] -(b*(4*f*h - 3*e*i + f*i*x)^2)/(4*d*f^3) - (b*(f*h - e*i)^2*Log[e + f*x]^2)
/(2*d*f^3) + (((4*i*(f*h - e*i)*(e + f*x))/f^2 + (i^2*(e + f*x)^2)/f^2 + (2
*(f*h - e*i)^2*Log[e + f*x])/f^2)*(a + b*Log[c*(e + f*x)]))/(2*d*f)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2334

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*(x_)^(m_.)*((d_) + (e_.)*(x_)^(r_
.))^(q_.), x_Symbol] :> With[{u = IntHide[x^m*(d + e*x^r)^q, x]}, Simp[u*(a
 + b*Log[c*x^n]), x] - Dist[b*n, Int[SimplifyIntegrand[u/x, x], x], x]] /;
FreeQ[{a, b, c, d, e, n, r}, x] && IGtQ[q, 0] && IntegerQ[m] &&  !(EqQ[q, 1
] && EqQ[m, -1])
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rubi steps

$$\int \frac{(h+177x)^2(a+b\log(c(e+fx)))}{de+dfx}\,dx = \frac{\text{Subst}\left(\int \frac{\left(\frac{-177e+fh}{f}+\frac{177x}{f}\right)^2(a+b\log(cx))}{dx}\,dx, x, e+fx\right)}{f}$$

$$= \frac{\text{Subst}\left(\int \frac{\left(\frac{-177e+fh}{f}+\frac{177x}{f}\right)^2(a+b\log(cx))}{x}\,dx, x, e+fx\right)}{df}$$

$$= -\frac{\left(\frac{708(177e-fh)(e+fx)}{f^2}-\frac{31329(e+fx)^2}{f^2}-\frac{2(177e-fh)^2\log(e+fx)}{f^2}\right)(a+b\log(c(e+$$

$$= -\frac{\left(\frac{708(177e-fh)(e+fx)}{f^2}-\frac{31329(e+fx)^2}{f^2}-\frac{2(177e-fh)^2\log(e+fx)}{f^2}\right)(a+b\log(c(e+$$

$$= -\frac{\left(\frac{708(177e-fh)(e+fx)}{f^2}-\frac{31329(e+fx)^2}{f^2}-\frac{2(177e-fh)^2\log(e+fx)}{f^2}\right)(a+b\log(c(e+$$

$$= -\frac{b(531e-4fh-177fx)^2}{4df^3}-\frac{\left(\frac{708(177e-fh)(e+fx)}{f^2}-\frac{31329(e+fx)^2}{f^2}-\frac{2(177e-fh}{}\right.}{2df}$$

$$= -\frac{b(531e-4fh-177fx)^2}{4df^3}-\frac{b(177e-fh)^2\log^2(e+fx)}{2df^3}-\frac{\left(\frac{708(177e-fh)}{f^2}\right.}{}$$

Mathematica [A] time = 0.15, size = 214, normalized size = 1.36

$$\frac{2a^2e^2i^2-4a^2efhi+2a^2f^2h^2+2b\log(c(e+fx))\left(2a(fh-ei)^2+bi\left(-2e^2i+ef(4h-2ix)+f^2x(4h+ix)\right)\right)-4abe}{4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((h + i*x)^2*(a + b*Log[c*(e + f*x)]))/(d*e + d*f*x),x]
```

```
[Out] (2*a^2*f^2*h^2 - 4*a^2*e*f*h*i + 2*a^2*e^2*i^2 + 8*a*b*f^2*h*i*x - 8*b^2*f^
2*h*i*x - 4*a*b*e*f*i^2*x + 6*b^2*e*f*i^2*x + 2*a*b*f^2*i^2*x^2 - b^2*f^2*i
^2*x^2 - 2*b^2*e^2*i^2*Log[e + f*x] + 2*b*(2*a*(f*h - e*i)^2 + b*i*(-2*e^2*
i + e*f*(4*h - 2*i*x) + f^2*x*(4*h + i*x)))*Log[c*(e + f*x)] + 2*b^2*(f*h -
 e*i)^2*Log[c*(e + f*x)]^2)/(4*b*d*f^3)
```

fricas [A] time = 0.44, size = 170, normalized size = 1.08

$$\frac{(2a-b)f^2i^2x^2+2\left(bf^2h^2-2befhi+be^2i^2\right)\log\left(cfx+ce\right)^2+2\left(4(a-b)f^2hi-(2a-3b)efi^2\right)x+2\left(bf^2i^2x^2+\right.}{4df^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2*(a+b*log(c*(f*x+e)))/(d*f*x+d*e),x, algorithm="fricas")
```

```
[Out] 1/4*((2*a - b)*f^2*i^2*x^2 + 2*(b*f^2*h^2 - 2*b*e*f*h*i + b*e^2*i^2)*log(c*
f*x + c*e)^2 + 2*(4*(a - b)*f^2*h*i - (2*a - 3*b)*e*f*i^2)*x + 2*(b*f^2*i^2
*x^2 + 2*a*f^2*h^2 - 4*(a - b)*e*f*h*i + (2*a - 3*b)*e^2*i^2 + 2*(2*b*f^2*h
*i - b*e*f*i^2)*x)*log(c*f*x + c*e))/(d*f^3)
```

giac [A] time = 0.18, size = 241, normalized size = 1.54

$$\frac{8\,bf^2hix\log\left(cfx+ce\right)+2\,bf^2h^2\log\left(cfx+ce\right)^2-4\,bfhie\log\left(cfx+ce\right)^2+8\,af^2hix-8\,bf^2hix-2\,bf^2x^2\log}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2*(a+b*log(c*(f*x+e)))/(d*f*x+d*e),x, algorithm="giac")
```

```
[Out] 1/4*(8*b*f^2*h*i*x*log(c*f*x + c*e) + 2*b*f^2*h^2*log(c*f*x + c*e)^2 - 4*b*
f*h*i*e*log(c*f*x + c*e)^2 + 8*a*f^2*h*i*x - 8*b*f^2*h*i*x - 2*b*f^2*x^2*lo
g(c*f*x + c*e) + 4*a*f^2*h^2*log(f*x + e) - 8*a*f*h*i*e*log(f*x + e) + 8*b*
f*h*i*e*log(f*x + e) - 2*a*f^2*x^2 + b*f^2*x^2 + 4*b*f*x*e*log(c*f*x + c*e)
 + 4*a*f*x*e - 6*b*f*x*e - 2*b*e^2*log(c*f*x + c*e)^2 - 4*a*e^2*log(f*x + e
) + 6*b*e^2*log(f*x + e))/(d*f^3)
```

maple [B] time = 0.05, size = 387, normalized size = 2.46

$$\frac{b\,i^2x^2\ln\left(cfx+ce\right)}{2df}+\frac{a\,i^2x^2}{2df}+\frac{b\,e^2i^2\ln\left(cfx+ce\right)^2}{2d\,f^3}-\frac{behi\ln\left(cfx+ce\right)^2}{d\,f^2}-\frac{be\,i^2x\ln\left(cfx+ce\right)}{d\,f^2}+\frac{b\,h^2\ln\left(cfx+ce\right)}{2df}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)^2*(a+b*ln(c*(f*x+e)))/(d*f*x+d*e),x)
```

```
[Out] 2/f^2/d*b*h*i*ln(c*f*x+c*e)*e-1/f^2/d*b*e*i^2*ln(c*f*x+c*e)*x-2/f^2/d*a*e*h
*i*ln(c*f*x+c*e)-1/f^2/d*b*e*h*i*ln(c*f*x+c*e)^2-2/f^2/d*b*e*h*i+2/f^2/d*a*
e*h*i+2/f/d*a*h*i*x-1/f^2/d*a*e*i^2*x+1/f^3/d*a*e^2*i^2*ln(c*f*x+c*e)+1/2/f
^3/d*b*e^2*i^2*ln(c*f*x+c*e)^2+1/2/f/d*b*i^2*ln(c*f*x+c*e)*x^2-1/4/f/d*b*i^
2*x^2+1/2/f/d*a*i^2*x^2+7/4/f^3/d*b*e^2*i^2-3/2/f^3/d*a*e^2*i^2+1/f/d*a*h^2
*ln(c*f*x+c*e)+1/2/f/d*b*h^2*ln(c*f*x+c*e)^2-2/f/d*b*h*i*x+2/f/d*b*h*i*ln(c
*f*x+c*e)*x+3/2/f^2/d*b*e*i^2*x-3/2/f^3/d*b*e^2*i^2*ln(c*f*x+c*e)
```

maxima [B] time = 0.53, size = 351, normalized size = 2.24

$$2\,bhi\left(\frac{x}{df}-\frac{e\log\left(fx+e\right)}{df^2}\right)\log\left(cfx+ce\right)+\frac{1}{2}\,bi^2\left(\frac{2\,e^2\log\left(fx+e\right)}{df^3}+\frac{fx^2-2\,ex}{df^2}\right)\log\left(cfx+ce\right)-\frac{1}{2}\,bh^2\left(\frac{2\log}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2*(a+b*log(c*(f*x+e)))/(d*f*x+d*e),x, algorithm="maxima")
```

```
[Out] 2*b*h*i*(x/(d*f) - e*log(f*x + e)/(d*f^2))*log(c*f*x + c*e) + 1/2*b*i^2*(2*
e^2*log(f*x + e)/(d*f^3) + (f*x^2 - 2*e*x)/(d*f^2))*log(c*f*x + c*e) - 1/2*
b*h^2*(2*log(c*f*x + c*e)*log(d*f*x + d*e)/(d*f) - (log(f*x + e)^2 + 2*log(
f*x + e)*log(c))/(d*f)) + 2*a*h*i*(x/(d*f) - e*log(f*x + e)/(d*f^2)) + 1/2*
a*i^2*(2*e^2*log(f*x + e)/(d*f^3) + (f*x^2 - 2*e*x)/(d*f^2)) + b*h^2*log(c*
f*x + c*e)*log(d*f*x + d*e)/(d*f) + a*h^2*log(d*f*x + d*e)/(d*f) + (e*log(f
*x + e)^2 - 2*f*x + 2*e*log(f*x + e))*b*h*i/(d*f^2) - 1/4*(f^2*x^2 + 2*e^2*
log(f*x + e)^2 - 6*e*f*x + 6*e^2*log(f*x + e))*b*i^2/(d*f^3)
```

mupad [B] time = 0.35, size = 208, normalized size = 1.32

$$x\,\left(\frac{i\,\left(2\,a\,f\,h+b\,e\,i-2\,b\,f\,h\right)}{d\,f^2}-\frac{e\,i^2\,\left(2\,a-b\right)}{2\,d\,f^2}\right)+f\,\ln\left(c\,\left(e+f\,x\right)\right)\,\left(\frac{b\,i^2\,x^2}{2\,d\,f^2}-\frac{b\,i\,x\,\left(e\,i-2\,f\,h\right)}{d\,f^3}\right)+\frac{\ln\left(e+f\,x\right)\,\left(2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((h + i*x)^2*(a + b*log(c*(e + f*x))))/(d*e + d*f*x),x)
```

```
[Out] x*((i*(2*a*f*h + b*e*i - 2*b*f*h))/(d*f^2) - (e*i^2*(2*a - b))/(2*d*f^2)) +
 f*log(c*(e + f*x))*((b*i^2*x^2)/(2*d*f^2) - (b*i*x*(e*i - 2*f*h))/(d*f^3))
 + (log(e + f*x)*(2*a*e^2*i^2 + 2*a*f^2*h^2 - 3*b*e^2*i^2 - 4*a*e*f*h*i + 4
*b*e*f*h*i))/(2*d*f^3) + (b*log(c*(e + f*x))^2*(e^2*i^2 + f^2*h^2 - 2*e*f*h
*i))/(2*d*f^3) + (i^2*x^2*(2*a - b))/(4*d*f)
```

sympy [A] time = 1.66, size = 226, normalized size = 1.44

$$x^2\left(\frac{ai^2}{2df}-\frac{bi^2}{4df}\right)+x\left(-\frac{aei^2}{df^2}+\frac{2ahi}{df}+\frac{3bei^2}{2df^2}-\frac{2bhi}{df}\right)+\frac{\left(-2bei^2x+4bfhix+bfi^2x^2\right)\log\left(c\left(e+fx\right)\right)}{2df^2}+\frac{\left(be^2i^2-2be\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)**2*(a+b*ln(c*(f*x+e)))/(d*f*x+d*e),x)
```

```
[Out] x**2*(a*i**2/(2*d*f) - b*i**2/(4*d*f)) + x*(-a*e*i**2/(d*f**2) + 2*a*h*i/(d
*f) + 3*b*e*i**2/(2*d*f**2) - 2*b*h*i/(d*f)) + (-2*b*e*i**2*x + 4*b*f*h*i*x
 + b*f*i**2*x**2)*log(c*(e + f*x))/(2*d*f**2) + (b*e**2*i**2 - 2*b*e*f*h*i
+ b*f**2*h**2)*log(c*(e + f*x))**2/(2*d*f**3) + (2*a*e**2*i**2 - 4*a*e*f*h*
i + 2*a*f**2*h**2 - 3*b*e**2*i**2 + 4*b*e*f*h*i)*log(e + f*x)/(2*d*f**3)
```

3.178 $\int \frac{(h+ix)(a+b\log(c(e+fx)))}{de+dfx}\,dx$

Optimal. Leaf size=79

$$\frac{(fh-ei)(a+b\log(c(e+fx)))^2}{2bdf^2}+\frac{aix}{df}+\frac{bi(e+fx)\log(c(e+fx))}{df^2}-\frac{bix}{df}$$

```
[Out] a*i*x/d/f-b*i*x/d/f+b*i*(f*x+e)*ln(c*(f*x+e))/d/f^2+1/2*(-e*i+f*h)*(a+b*ln(
c*(f*x+e)))^2/b/d/f^2
```

Rubi [A] time = 0.13, antiderivative size = 79, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {2411, 12, 2346, 2301, 2295}

$$\frac{(fh-ei)(a+b\log(c(e+fx)))^2}{2bdf^2}+\frac{aix}{df}+\frac{bi(e+fx)\log(c(e+fx))}{df^2}-\frac{bix}{df}$$

Antiderivative was successfully verified.

```
[In] Int[((h + i*x)*(a + b*Log[c*(e + f*x)]))/(d*e + d*f*x),x]
```

```
[Out] (a*i*x)/(d*f) - (b*i*x)/(d*f) + (b*i*(e + f*x)*Log[c*(e + f*x)])/(d*f^2) +
((f*h - e*i)*(a + b*Log[c*(e + f*x)])^2)/(2*b*d*f^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2346

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.))
/(x_), x_Symbol] :> Dist[d, Int[((d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p)/x,
 x], x] + Dist[e, Int[(d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p, x], x] /; Fre
eQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0] && GtQ[q, 0] && IntegerQ[2*q]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rubi steps

$$\int \frac{(h+178x)(a+b\log(c(e+fx)))}{de+dfx}\,dx = \frac{\text{Subst}\left(\int \frac{\left(\frac{-178e+fh}{f}+\frac{178x}{f}\right)(a+b\log(cx))}{dx}\,dx,x,e+fx\right)}{f}$$

$$= \frac{\text{Subst}\left(\int \frac{\left(\frac{-178e+fh}{f}+\frac{178x}{f}\right)(a+b\log(cx))}{x}\,dx,x,e+fx\right)}{df}$$

$$= \frac{178\,\text{Subst}(\int (a+b\log(cx))\,dx,x,e+fx)}{df^2} - \frac{(178e-fh)\,\text{Subst}\left(\int \frac{a+b\log}{x}\right.}{df^2}$$

$$= \frac{178ax}{df} - \frac{(178e-fh)(a+b\log(c(e+fx)))^2}{2bdf^2} + \frac{(178b)\,\text{Subst}(\int \log(cx)\,d}{df^2}$$

$$= \frac{178ax}{df} - \frac{178bx}{df} + \frac{178b(e+fx)\log(c(e+fx))}{df^2} - \frac{(178e-fh)(a+b\log(}{2bdf^2}$$

Mathematica [A] time = 0.05, size = 66, normalized size = 0.84

$$\frac{\frac{(fh-ei)(a+b\log(c(e+fx)))^2}{b}+2afix+2bi(e+fx)\log(c(e+fx))-2bfix}{2df^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((h + i*x)*(a + b*Log[c*(e + f*x)]))/(d*e + d*f*x),x]
```

```
[Out] (2*a*f*i*x - 2*b*f*i*x + 2*b*i*(e + f*x)*Log[c*(e + f*x)] + ((f*h - e*i)*(a
 + b*Log[c*(e + f*x)])^2)/b)/(2*d*f^2)
```

fricas [A] time = 0.42, size = 71, normalized size = 0.90

$$\frac{2\,(a-b)fix+\left(bfh-bei\right)\log\left(cfx+ce\right)^2+2\left(bfix+afh-(a-b)ei\right)\log\left(cfx+ce\right)}{2\,df^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*log(c*(f*x+e)))/(d*f*x+d*e),x, algorithm="fricas")
```

```
[Out] 1/2*(2*(a - b)*f*i*x + (b*f*h - b*e*i)*log(c*f*x + c*e)^2 + 2*(b*f*i*x + a*
f*h - (a - b)*e*i)*log(c*f*x + c*e))/(d*f^2)
```

giac [A] time = 0.17, size = 109, normalized size = 1.38

$$\frac{2\,bfix\log\left(cfx+ce\right)+bfh\log\left(cfx+ce\right)^2-bie\log\left(cfx+ce\right)^2+2\,afix-2\,bfix+2\,afh\log\left(fx+e\right)-2\,aie\,\text{lo}}{2\,df^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*log(c*(f*x+e)))/(d*f*x+d*e),x, algorithm="giac")
```

```
[Out] 1/2*(2*b*f*i*x*log(c*f*x + c*e) + b*f*h*log(c*f*x + c*e)^2 - b*i*e*log(c*f*
x + c*e)^2 + 2*a*f*i*x - 2*b*f*i*x + 2*a*f*h*log(f*x + e) - 2*a*i*e*log(f*x
 + e) + 2*b*i*e*log(f*x + e))/(d*f^2)
```

maple [B] time = 0.05, size = 163, normalized size = 2.06

$$-\frac{bei\ln\left(cfx+ce\right)^2}{2df^2}+\frac{bh\ln\left(cfx+ce\right)^2}{2df}+\frac{bix\ln\left(cfx+ce\right)}{df}-\frac{aei\ln\left(cfx+ce\right)}{df^2}+\frac{ah\ln\left(cfx+ce\right)}{df}+\frac{aix}{df}+\frac{bei\ln\left(cfx+\right.}{df^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)*(a+b*ln(c*(f*x+e)))/(d*f*x+d*e),x)
```

```
[Out] -1/f^2/d*a*e*i*ln(c*f*x+c*e)+1/f/d*a*h*ln(c*f*x+c*e)+a*i*x/d/f+1/f^2/d*a*e*
i-1/2/f^2/d*b*e*i*ln(c*f*x+c*e)^2+1/2/f/d*b*h*ln(c*f*x+c*e)^2+1/f/d*b*i*ln(
c*f*x+c*e)*x+1/f^2/d*b*i*ln(c*f*x+c*e)*e-b*i*x/d/f-1/f^2/d*b*e*i
```

maxima [B] time = 0.52, size = 201, normalized size = 2.54

$$bi\left(\frac{x}{df} - \frac{e\log\left(fx+e\right)}{df^2}\right)\log\left(cfx+ce\right) - \frac{1}{2}bh\left(\frac{2\log\left(cfx+ce\right)\log\left(dfx+de\right)}{df} - \frac{\log\left(fx+e\right)^2 + 2\log\left(fx+e\right.}{df}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*log(c*(f*x+e)))/(d*f*x+d*e),x, algorithm="maxima")
```

```
[Out] b*i*(x/(d*f) - e*log(f*x + e)/(d*f^2))*log(c*f*x + c*e) - 1/2*b*h*(2*log(c*
f*x + c*e)*log(d*f*x + d*e)/(d*f) - (log(f*x + e)^2 + 2*log(f*x + e)*log(c)
)/(d*f)) + a*i*(x/(d*f) - e*log(f*x + e)/(d*f^2)) + b*h*log(c*f*x + c*e)*lo
g(d*f*x + d*e)/(d*f) + a*h*log(d*f*x + d*e)/(d*f) + 1/2*(e*log(f*x + e)^2 -
 2*f*x + 2*e*log(f*x + e))*b*i/(d*f^2)
```

mupad [B] time = 0.64, size = 100, normalized size = 1.27

$$\frac{2\,a\,f\,i\,x - 2\,b\,f\,i\,x - b\,e\,i\ln\left(c\,e + c\,f\,x\right)^2 + b\,f\,h\ln\left(c\,e + c\,f\,x\right)^2 - 2\,a\,e\,i\,\ln\left(e + f\,x\right) + 2\,a\,f\,h\,\ln\left(e + f\,x\right) + 2\,b}{2\,d\,f^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((h + i*x)*(a + b*log(c*(e + f*x))))/(d*e + d*f*x),x)
```

```
[Out] (2*a*f*i*x - 2*b*f*i*x - b*e*i*log(c*e + c*f*x)^2 + b*f*h*log(c*e + c*f*x)^
2 - 2*a*e*i*log(e + f*x) + 2*a*f*h*log(e + f*x) + 2*b*e*i*log(e + f*x) + 2*
b*f*i*x*log(c*e + c*f*x))/(2*d*f^2)
```

sympy [A] time = 1.12, size = 85, normalized size = 1.08

$$\frac{bix\log\left(c\left(e+fx\right)\right)}{df} + x\left(\frac{ai}{df} - \frac{bi}{df}\right) + \frac{\left(-bei+bfh\right)\log\left(c\left(e+fx\right)\right)^2}{2df^2} - \frac{\left(aei-afh-bei\right)\log\left(e+fx\right)}{df^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*ln(c*(f*x+e)))/(d*f*x+d*e),x)
```

```
[Out] b*i*x*log(c*(e + f*x))/(d*f) + x*(a*i/(d*f) - b*i/(d*f)) + (-b*e*i + b*f*h)
*log(c*(e + f*x))**2/(2*d*f**2) - (a*e*i - a*f*h - b*e*i)*log(e + f*x)/(d*f
**2)
```

3.179 $\int \frac{a+b\log(c(e+fx))}{de+dfx}\,dx$

Optimal. Leaf size=27

$$\frac{(a+b\log(c(e+fx)))^2}{2bdf}$$

[Out] 1/2*(a+b*ln(c*(f*x+e)))^2/b/d/f

Rubi [A] time = 0.03, antiderivative size = 27, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.130, Rules used = {2390, 12, 2301}

$$\frac{(a+b\log(c(e+fx)))^2}{2bdf}$$

Antiderivative was successfully verified.

[In] Int[(a + b*Log[c*(e + f*x)])/(d*e + d*f*x),x]

[Out] (a + b*Log[c*(e + f*x)])^2/(2*b*d*f)

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{a+b\log(c(e+fx))}{de+dfx}\,dx &= \frac{\text{Subst}\left(\int \frac{a+b\log(cx)}{dx}\,dx, x, e+fx\right)}{f}\\
&= \frac{\text{Subst}\left(\int \frac{a+b\log(cx)}{x}\,dx, x, e+fx\right)}{df}\\
&= \frac{(a+b\log(c(e+fx)))^2}{2bdf}
\end{aligned}$$

Mathematica [A] time = 0.00, size = 27, normalized size = 1.00

$$\frac{(a+b\log(c(e+fx)))^2}{2bdf}$$

Antiderivative was successfully verified.

[In] Integrate[(a + b*Log[c*(e + f*x)])/(d*e + d*f*x),x]

```
[Out] (a + b*Log[c*(e + f*x)])^2/(2*b*d*f)
```

fricas [A] time = 0.43, size = 34, normalized size = 1.26

$$\frac{b\log\left(cfx+ce\right)^{2}+2\,a\log\left(cfx+ce\right)}{2\,df}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))/(d*f*x+d*e),x, algorithm="fricas")
[Out] 1/2*(b*log(c*f*x + c*e)^2 + 2*a*log(c*f*x + c*e))/(d*f)
```

giac [A] time = 0.20, size = 33, normalized size = 1.22

$$\frac{b\log\left(cfx+ce\right)^{2}+2\,a\log\left(fx+e\right)}{2\,df}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))/(d*f*x+d*e),x, algorithm="giac")
[Out] 1/2*(b*log(c*f*x + c*e)^2 + 2*a*log(f*x + e))/(d*f)
```

maple [A] time = 0.05, size = 39, normalized size = 1.44

$$\frac{b\ln\left(cfx+ce\right)^{2}}{2df}+\frac{a\ln\left(cfx+ce\right)}{df}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(f*x+e)))/(d*f*x+d*e),x)
[Out] 1/f/d*a*ln(c*f*x+c*e)+1/2/f*b/d*ln(c*f*x+c*e)^2
```

maxima [B] time = 0.52, size = 101, normalized size = 3.74

$$-\frac{1}{2}\,b\left(\frac{2\,\log\left(cfx+ce\right)\log\left(dfx+de\right)}{df}-\frac{\log\left(fx+e\right)^{2}+2\,\log\left(fx+e\right)\log(c)}{df}\right)+\frac{b\log\left(cfx+ce\right)\log\left(dfx+d\right.}{df}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))/(d*f*x+d*e),x, algorithm="maxima")
[Out] -1/2*b*(2*log(c*f*x + c*e)*log(d*f*x + d*e)/(d*f) - (log(f*x + e)^2 + 2*log
(f*x + e)*log(c))/(d*f)) + b*log(c*f*x + c*e)*log(d*f*x + d*e)/(d*f) + a*lo
g(d*f*x + d*e)/(d*f)
```

mupad [B] time = 0.35, size = 31, normalized size = 1.15

$$\frac{b\ln\left(c\,e+c\,f\,x\right)^{2}+2\,a\,\ln\left(e+f\,x\right)}{2\,d\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(e + f*x)))/(d*e + d*f*x),x)
[Out] (2*a*log(e + f*x) + b*log(c*e + c*f*x)^2)/(2*d*f)
```

sympy [A] time = 0.33, size = 31, normalized size = 1.15

$$\frac{a\log\left(de+dfx\right)}{df}+\frac{b\log\left(c\left(e+fx\right)\right)^{2}}{2df}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(f*x+e)))/(d*f*x+d*e),x)
```

```
[Out] a*log(d*e + d*f*x)/(d*f) + b*log(c*(e + f*x))**2/(2*d*f)
```

3.180 $\int \frac{a+b\log(c(e+fx))}{(de+dfx)(h+ix)} dx$

Optimal. Leaf size=87

$$\frac{b\text{Li}_2\left(-\frac{fh-ei}{i(e+fx)}\right)}{d(fh-ei)} - \frac{\log\left(\frac{fh-ei}{i(e+fx)}+1\right)(a+b\log(c(e+fx)))}{d(fh-ei)}$$

```
[Out] -(a+b*ln(c*(f*x+e)))*ln(1+(-e*i+f*h)/i/(f*x+e))/d/(-e*i+f*h)+b*polylog(2,(e
*i-f*h)/i/(f*x+e))/d/(-e*i+f*h)
```

Rubi [A] time = 0.23, antiderivative size = 116, normalized size of antiderivative = 1.33, number of steps used = 6, number of rules used = 6, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {2411, 12, 2344, 2301, 2317, 2391}

$$-\frac{b\text{PolyLog}\left(2,-\frac{i(e+fx)}{fh-ei}\right)}{d(fh-ei)} + \frac{(a+b\log(c(e+fx)))^2}{2bd(fh-ei)} - \frac{\log\left(\frac{f(h+ix)}{fh-ei}\right)(a+b\log(c(e+fx)))}{d(fh-ei)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(e + f*x)])/((d*e + d*f*x)*(h + i*x)),x]
```

```
[Out] (a + b*Log[c*(e + f*x)])^2/(2*b*d*(f*h - e*i)) - ((a + b*Log[c*(e + f*x)])*
Log[(f*(h + i*x))/(f*h - e*i)])/(d*(f*h - e*i)) - (b*PolyLog[2, -((i*(e + f
*x))/(f*h - e*i))])/(d*(f*h - e*i))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
```

```
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rubi steps

$$\int \frac{a+b\log(c(e+fx))}{(h+180x)(de+dfx)}\,dx = \frac{\text{Subst}\left(\int \frac{a+b\log(cx)}{dx\left(\frac{-180e+fh}{f}+\frac{180x}{f}\right)}\,dx, x, e+fx\right)}{f}$$

$$= \frac{\text{Subst}\left(\int \frac{a+b\log(cx)}{x\left(\frac{-180e+fh}{f}+\frac{180x}{f}\right)}\,dx, x, e+fx\right)}{df}$$

$$= -\frac{\text{Subst}\left(\int \frac{a+b\log(cx)}{x}\,dx, x, e+fx\right)}{d(180e-fh)} + \frac{180\,\text{Subst}\left(\int \frac{a+b\log(cx)}{\frac{-180e+fh}{f}+\frac{180x}{f}}\,dx, x, e+fx\right)}{df(180e-fh)}$$

$$= \frac{\log\left(-\frac{f(h+180x)}{180e-fh}\right)(a+b\log(c(e+fx)))}{d(180e-fh)} - \frac{(a+b\log(c(e+fx)))^2}{2bd(180e-fh)} - \frac{b\,\text{Subst}\left(\int \frac{\log(1}{\ }\right.}{d(1}$$

$$= \frac{\log\left(-\frac{f(h+180x)}{180e-fh}\right)(a+b\log(c(e+fx)))}{d(180e-fh)} - \frac{(a+b\log(c(e+fx)))^2}{2bd(180e-fh)} + \frac{b\text{Li}_2\left(\frac{180(e+fx)}{180e-fh}\right)}{d(180e-fh)}$$

Mathematica [A] time = 0.09, size = 91, normalized size = 1.05

$$\frac{(a+b\log(c(e+fx)))\left(a+b\log(c(e+fx))-2b\log\left(\frac{f(h+ix)}{fh-ei}\right)\right)-2b^2\text{Li}_2\left(\frac{i(e+fx)}{ei-fh}\right)}{2bd(fh-ei)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(e + f*x)])/((d*e + d*f*x)*(h + i*x)),x]
```

```
[Out] ((a + b*Log[c*(e + f*x)])*(a + b*Log[c*(e + f*x)] - 2*b*Log[(f*(h + i*x))/(
f*h - e*i)]) - 2*b^2*PolyLog[2, (i*(e + f*x))/(-(f*h) + e*i)])/(2*b*d*(f*h
- e*i))
```

fricas [F] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b\log\left(cfx+ce\right)+a}{dfix^2+deh+\left(dfh+dei\right)x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))/(d*f*x+d*e)/(i*x+h),x, algorithm="fricas")
```

```
[Out] integral((b*log(c*f*x + c*e) + a)/(d*f*i*x^2 + d*e*h + (d*f*h + d*e*i)*x),
x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b\log\left(\left(fx+e\right)c\right)+a}{\left(dfx+de\right)(ix+h)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))/(d*f*x+d*e)/(i*x+h),x, algorithm="giac")
```

```
[Out] integrate((b*log((f*x + e)*c) + a)/((d*f*x + d*e)*(i*x + h)), x)
```

maple [B] time = 0.17, size = 197, normalized size = 2.26

$$\frac{b\ln\left(\frac{-cei+cfh+\left(cfx+ce\right)i}{-cei+cfh}\right)\ln\left(cfx+ce\right)}{\left(ei-fh\right)d}-\frac{b\ln\left(cfx+ce\right)^{2}}{2\left(ei-fh\right)d}+\frac{a\ln\left(-cei+cfh+\left(cfx+ce\right)i\right)}{\left(ei-fh\right)d}-\frac{a\ln\left(cfx+ce\right)}{\left(ei-fh\right)d}+\frac{b\,\mathrm{di}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(f*x+e)))/(d*f*x+d*e)/(i*x+h),x)
```

```
[Out] -1/d*a/(e*i-f*h)*ln(c*f*x+c*e)+1/d*a/(e*i-f*h)*ln(-c*e*i+h*c*f+(c*f*x+c*e)*
i)-1/2/d*b*ln(c*f*x+c*e)^2/(e*i-f*h)+1/d*b/(e*i-f*h)*dilog((-c*e*i+h*c*f+(c
*f*x+c*e)*i)/(-c*e*i+c*f*h))+1/d*b/(e*i-f*h)*ln(c*f*x+c*e)*ln((-c*e*i+h*c*f
+(c*f*x+c*e)*i)/(-c*e*i+c*f*h))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$a\left(\frac{\log\left(fx+e\right)}{dfh-dei}-\frac{\log\left(ix+h\right)}{dfh-dei}\right)+b\int\frac{\log\left(fx+e\right)+\log(c)}{dfix^{2}+deh+\left(fh+ei\right)dx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))/(d*f*x+d*e)/(i*x+h),x, algorithm="maxima")
```

```
[Out] a*(log(f*x + e)/(d*f*h - d*e*i) - log(i*x + h)/(d*f*h - d*e*i)) + b*integra
te((log(f*x + e) + log(c))/(d*f*i*x^2 + d*e*h + (f*h + e*i)*d*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int\frac{a+b\,\ln\left(c\,\left(e+f\,x\right)\right)}{\left(h+i\,x\right)\,\left(d\,e+d\,f\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(e + f*x)))/((h + i*x)*(d*e + d*f*x)),x)
```

```
[Out] int((a + b*log(c*(e + f*x)))/((h + i*x)*(d*e + d*f*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int\frac{a}{eh+eix+fhx+fix^{2}}\,dx+\int\frac{b\log\left(ce+cfx\right)}{eh+eix+fhx+fix^{2}}\,dx}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(f*x+e)))/(d*f*x+d*e)/(i*x+h),x)
```

```
[Out] (Integral(a/(e*h + e*i*x + f*h*x + f*i*x**2), x) + Integral(b*log(c*e + c*f
*x)/(e*h + e*i*x + f*h*x + f*i*x**2), x))/d
```

3.181 $\int \frac{a+b\log(c(e+fx))}{(de+dfx)(h+ix)^2}\,dx$

Optimal. Leaf size=151

$$-\frac{f\log\left(\frac{fh-ei}{i(e+fx)}+1\right)(a+b\log(c(e+fx)))}{d(fh-ei)^2}-\frac{i(e+fx)(a+b\log(c(e+fx)))}{d(h+ix)(fh-ei)^2}+\frac{bf\text{Li}_2\left(-\frac{fh-ei}{i(e+fx)}\right)}{d(fh-ei)^2}+\frac{bf\log(h+ix)}{d(fh-ei)^2}$$

```
[Out] -i*(f*x+e)*(a+b*ln(c*(f*x+e)))/d/(-e*i+f*h)^2/(i*x+h)+b*f*ln(i*x+h)/d/(-e*i
+f*h)^2-f*(a+b*ln(c*(f*x+e)))*ln(1+(-e*i+f*h)/i/(f*x+e))/d/(-e*i+f*h)^2+b*f
*polylog(2,(e*i-f*h)/i/(f*x+e))/d/(-e*i+f*h)^2
```

Rubi [A] time = 0.36, antiderivative size = 181, normalized size of antiderivative = 1.20, number of steps used = 9, number of rules used = 9, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.300, Rules used = {2411, 12, 2347, 2344, 2301, 2317, 2391, 2314, 31}

$$-\frac{bf\text{PolyLog}\left(2,-\frac{i(e+fx)}{fh-ei}\right)}{d(fh-ei)^2}+\frac{f(a+b\log(c(e+fx)))^2}{2bd(fh-ei)^2}-\frac{f\log\left(\frac{f(h+ix)}{fh-ei}\right)(a+b\log(c(e+fx)))}{d(fh-ei)^2}-\frac{i(e+fx)(a+b\log(c(}{d(h+ix)(fh-}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(e + f*x)])/((d*e + d*f*x)*(h + i*x)^2),x]
```

```
[Out] -((i*(e + f*x)*(a + b*Log[c*(e + f*x)]))/(d*(f*h - e*i)^2*(h + i*x))) + (f*
(a + b*Log[c*(e + f*x)])^2)/(2*b*d*(f*h - e*i)^2) + (b*f*Log[h + i*x])/(d*(
f*h - e*i)^2) - (f*(a + b*Log[c*(e + f*x)])*Log[(f*(h + i*x))/(f*h - e*i)])
/(d*(f*h - e*i)^2) - (b*f*PolyLog[2, -((i*(e + f*x))/(f*h - e*i))])/(d*(f*h
 - e*i)^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2314

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_), x
_Symbol] :> Simp[(x*(d + e*x^r)^(q + 1)*(a + b*Log[c*x^n]))/d, x] - Dist[(b
*n)/d, Int[(d + e*x^r)^(q + 1), x], x] /; FreeQ[{a, b, c, d, e, n, q, r}, x
] && EqQ[r*(q + 1) + 1, 0]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2347

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/x
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rubi steps

$$\int \frac{a+b\log(c(e+fx))}{(h+181x)^2(de+dfx)}\,dx = \frac{\text{Subst}\left(\int \frac{a+b\log(cx)}{dx\left(\frac{-181e+fh}{f}+\frac{181x}{f}\right)^2}\,dx,x,e+fx\right)}{f}$$

$$= \frac{\text{Subst}\left(\int \frac{a+b\log(cx)}{x\left(\frac{-181e+fh}{f}+\frac{181x}{f}\right)^2}\,dx,x,e+fx\right)}{df}$$

$$= -\frac{\text{Subst}\left(\int \frac{a+b\log(cx)}{x\left(\frac{-181e+fh}{f}+\frac{181x}{f}\right)}\,dx,x,e+fx\right)}{d(181e-fh)} + \frac{181\,\text{Subst}\left(\int \frac{a+b\log(cx)}{\left(\frac{-181e+fh}{f}+\frac{181x}{f}\right)^2}\,dx,x,e\right.}{df(181e-fh)}$$

$$= -\frac{181(e+fx)(a+b\log(c(e+fx)))}{d(181e-fh)^2(h+181x)} - \frac{181\,\text{Subst}\left(\int \frac{a+b\log(cx)}{\frac{-181e+fh}{f}+\frac{181x}{f}}\,dx,x,e+fx\right)}{d(181e-fh)^2}$$

$$= \frac{bf\log(h+181x)}{d(181e-fh)^2} - \frac{181(e+fx)(a+b\log(c(e+fx)))}{d(181e-fh)^2(h+181x)} - \frac{f\log\left(-\frac{f(h+181x)}{181e-fh}\right)(a+}{d(181e-}$$

$$= \frac{bf\log(h+181x)}{d(181e-fh)^2} - \frac{181(e+fx)(a+b\log(c(e+fx)))}{d(181e-fh)^2(h+181x)} - \frac{f\log\left(-\frac{f(h+181x)}{181e-fh}\right)(a+}{d(181e-}$$

Mathematica [A] time = 0.17, size = 141, normalized size = 0.93

$$\frac{-2f\log\left(\frac{f(h+ix)}{fh-ei}\right)(a+b\log(c(e+fx))) + \frac{2(fh-ei)(a+b\log(c(e+fx)))}{h+ix} + \frac{f(a+b\log(c(e+fx)))^2}{b} - 2bf\,\text{Li}_2\left(\frac{i(e+fx)}{ei-fh}\right) - 2bf(\text{lo}}{2d(fh-ei)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(e + f*x)])/((d*e + d*f*x)*(h + i*x)^2),x]
```

```
[Out] ((2*(f*h - e*i)*(a + b*Log[c*(e + f*x)]))/(h + i*x) + (f*(a + b*Log[c*(e +
f*x)])^2)/b - 2*b*f*(Log[e + f*x] - Log[h + i*x]) - 2*f*(a + b*Log[c*(e + f
*x)])*Log[(f*(h + i*x))/(f*h - e*i)] - 2*b*f*PolyLog[2, (i*(e + f*x))/(-(f*
h) + e*i)])/(2*d*(f*h - e*i)^2)
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b\log\left(cfx+ce\right)+a}{dfi^2x^3+deh^2+\left(2\,dfhi+dei^2\right)x^2+\left(dfh^2+2\,dehi\right)x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))/(d*f*x+d*e)/(i*x+h)^2,x, algorithm="fricas")
```

```
[Out] integral((b*log(c*f*x + c*e) + a)/(d*f*i^2*x^3 + d*e*h^2 + (2*d*f*h*i + d*e
*i^2)*x^2 + (d*f*h^2 + 2*d*e*h*i)*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{b\log\left(\left(fx+e\right)c\right)+a}{\left(dfx+de\right)(ix+h)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))/(d*f*x+d*e)/(i*x+h)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((f*x + e)*c) + a)/((d*f*x + d*e)*(i*x + h)^2), x)
```

maple [B] time = 0.15, size = 355, normalized size = 2.35

$$-\frac{bcf^2ix\ln\left(cfx+ce\right)}{\left(ei-fh\right)^2\left(cfix+cfh\right)d}-\frac{bcefi\ln\left(cfx+ce\right)}{\left(ei-fh\right)^2\left(cfix+cfh\right)d}-\frac{bf\ln\left(\frac{-cei+cfh+\left(cfx+ce\right)i}{-cei+cfh}\right)\ln\left(cfx+ce\right)}{\left(ei-fh\right)^2d}+\frac{bf\ln\left(cfx+ce\right)^2}{2\left(ei-fh\right)^2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(f*x+e)))/(d*f*x+d*e)/(i*x+h)^2,x)
```

```
[Out] f/d*a/(e*i-f*h)^2*ln(c*f*x+c*e)-c*f/d*a/(e*i-f*h)/(c*f*i*x+c*f*h)-f/d*a/(e*
i-f*h)^2*ln(-c*e*i+c*f*h+(c*f*x+c*e)*i)+f/d*b/(e*i-f*h)^2*ln(-c*e*i+c*f*h+(
c*f*x+c*e)*i)-c*f^2/d*b/(e*i-f*h)^2*i*ln(c*f*x+c*e)/(c*f*i*x+c*f*h)*x-c*f/d
*b/(e*i-f*h)^2*i*ln(c*f*x+c*e)/(c*f*i*x+c*f*h)*e+1/2*f/d*b*ln(c*f*x+c*e)^2/
(e*i-f*h)^2-f/d*b/(e*i-f*h)^2*dilog((-c*e*i+c*f*h+(c*f*x+c*e)*i)/(-c*e*i+c*
f*h))-f/d*b/(e*i-f*h)^2*ln(c*f*x+c*e)*ln((-c*e*i+c*f*h+(c*f*x+c*e)*i)/(-c*e
*i+c*f*h))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$a\left(\frac{f\log\left(fx+e\right)}{df^2h^2-2\,defhi+de^2i^2}-\frac{f\log\left(ix+h\right)}{df^2h^2-2\,defhi+de^2i^2}+\frac{1}{dfh^2-dehi+\left(dfhi-dei^2\right)x}\right)+b\int\frac{\log\left(\right.}{dfi^2x^3+deh^2+\left(2\,f\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))/(d*f*x+d*e)/(i*x+h)^2,x, algorithm="maxima")
```

```
[Out] a*(f*log(f*x + e)/(d*f^2*h^2 - 2*d*e*f*h*i + d*e^2*i^2) - f*log(i*x + h)/(d
*f^2*h^2 - 2*d*e*f*h*i + d*e^2*i^2) + 1/(d*f*h^2 - d*e*h*i + (d*f*h*i - d*e
```

```
*i^2)*x)) + b*integrate((log(f*x + e) + log(c))/(d*f*i^2*x^3 + d*e*h^2 + (2
*f*h*i + e*i^2)*d*x^2 + (f*h^2 + 2*e*h*i)*d*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a + b\ln\left(c\left(e + f x\right)\right)}{\left(h + i x\right)^2\left(d e + d f x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(e + f*x)))/((h + i*x)^2*(d*e + d*f*x)),x)
```

```
[Out] int((a + b*log(c*(e + f*x)))/((h + i*x)^2*(d*e + d*f*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{a}{eh^2+2ehix+ei^2x^2+fh^2x+2fhix^2+fi^2x^3}\,dx + \int \frac{b\log\left(ce+cfx\right)}{eh^2+2ehix+ei^2x^2+fh^2x+2fhix^2+fi^2x^3}\,dx}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(f*x+e)))/(d*f*x+d*e)/(i*x+h)**2,x)
```

```
[Out] (Integral(a/(e*h**2 + 2*e*h*i*x + e*i**2*x**2 + f*h**2*x + 2*f*h*i*x**2 + f
*i**2*x**3), x) + Integral(b*log(c*e + c*f*x)/(e*h**2 + 2*e*h*i*x + e*i**2*
x**2 + f*h**2*x + 2*f*h*i*x**2 + f*i**2*x**3), x))/d
```

3.182 $\int \frac{a+b\log(c(e+fx))}{(de+dfx)(h+ix)^3} dx$

Optimal. Leaf size=250

$$-\frac{f^2\log\left(\frac{fh-ei}{i(e+fx)}+1\right)(a+b\log(c(e+fx)))}{d(fh-ei)^3}-\frac{fi(e+fx)(a+b\log(c(e+fx)))}{d(h+ix)(fh-ei)^3}+\frac{a+b\log(c(e+fx))}{2d(h+ix)^2(fh-ei)}+\frac{bf^2\text{Li}_2\left(-\frac{fh}{i(e+}\right.}{d(fh-ei}$$

```
[Out] -1/2*b*f/d/(-e*i+f*h)^2/(i*x+h)-1/2*b*f^2*ln(f*x+e)/d/(-e*i+f*h)^3+1/2*(a+b
*ln(c*(f*x+e)))/d/(-e*i+f*h)/(i*x+h)^2-f*i*(f*x+e)*(a+b*ln(c*(f*x+e)))/d/(-
e*i+f*h)^3/(i*x+h)+3/2*b*f^2*ln(i*x+h)/d/(-e*i+f*h)^3-f^2*(a+b*ln(c*(f*x+e)
))*ln(1+(-e*i+f*h)/i/(f*x+e))/d/(-e*i+f*h)^3+b*f^2*polylog(2,(e*i-f*h)/i/(f
*x+e))/d/(-e*i+f*h)^3
```

Rubi [A] time = 0.57, antiderivative size = 282, normalized size of antiderivative = 1.13, number of steps used = 13, number of rules used = 11, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.367, Rules used = {2411, 12, 2347, 2344, 2301, 2317, 2391, 2314, 31, 2319, 44}

$$-\frac{bf^2\text{PolyLog}\left(2,-\frac{i(e+fx)}{fh-ei}\right)}{d(fh-ei)^3}+\frac{f^2(a+b\log(c(e+fx)))^2}{2bd(fh-ei)^3}-\frac{f^2\log\left(\frac{f(h+ix)}{fh-ei}\right)(a+b\log(c(e+fx)))}{d(fh-ei)^3}-\frac{fi(e+fx)(a+b\log}{d(h+ix)(f}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(e + f*x)])/((d*e + d*f*x)*(h + i*x)^3),x]
```

```
[Out] -(b*f)/(2*d*(f*h - e*i)^2*(h + i*x)) - (b*f^2*Log[e + f*x])/(2*d*(f*h - e*i
)^3) + (a + b*Log[c*(e + f*x)])/(2*d*(f*h - e*i)*(h + i*x)^2) - (f*i*(e + f
*x)*(a + b*Log[c*(e + f*x)]))/(d*(f*h - e*i)^3*(h + i*x)) + (f^2*(a + b*Log
[c*(e + f*x)])^2)/(2*b*d*(f*h - e*i)^3) + (3*b*f^2*Log[h + i*x])/(2*d*(f*h
- e*i)^3) - (f^2*(a + b*Log[c*(e + f*x)])*Log[(f*(h + i*x))/(f*h - e*i)])/(
d*(f*h - e*i)^3) - (b*f^2*PolyLog[2, -((i*(e + f*x))/(f*h - e*i))])/(d*(f*h
 - e*i)^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2314

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_), x
_Symbol] :> Simp[(x*(d + e*x^r)^(q + 1)*(a + b*Log[c*x^n]))/d, x] - Dist[(b
```

```
*n)/d, Int[(d + e*x^r)^(q + 1), x], x] /; FreeQ[{a, b, c, d, e, n, q, r}, x
] && EqQ[r*(q + 1) + 1, 0]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2319

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/(e*(q + 1)), x]
- Dist[(b*n*p)/(e*(q + 1)), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2347

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/x
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rubi steps

$$\int \frac{a+b\log(c(e+fx))}{(h+182x)^3(de+dfx)}\,dx = \frac{\text{Subst}\left(\int \frac{a+b\log(cx)}{dx\left(\frac{-182e+fh}{f}+\frac{182x}{f}\right)^3}\,dx, x, e+fx\right)}{f}$$

$$= \frac{\text{Subst}\left(\int \frac{a+b\log(cx)}{x\left(\frac{-182e+fh}{f}+\frac{182x}{f}\right)^3}\,dx, x, e+fx\right)}{df}$$

$$= -\frac{\text{Subst}\left(\int \frac{a+b\log(cx)}{x\left(\frac{-182e+fh}{f}+\frac{182x}{f}\right)^2}\,dx, x, e+fx\right)}{d(182e-fh)} + \frac{182\,\text{Subst}\left(\int \frac{a+b\log(cx)}{\left(\frac{-182e+fh}{f}+\frac{182x}{f}\right)^3}\,dx, x, e+\right.}{df(182e-fh)}$$

$$= -\frac{a+b\log(c(e+fx))}{2d(182e-fh)(h+182x)^2} - \frac{182\,\text{Subst}\left(\int \frac{a+b\log(cx)}{\left(\frac{-182e+fh}{f}+\frac{182x}{f}\right)^2}\,dx, x, e+fx\right)}{d(182e-fh)^2} + \frac{f\,\text{Sub}}{}$$

$$= -\frac{a+b\log(c(e+fx))}{2d(182e-fh)(h+182x)^2} + \frac{182f(e+fx)(a+b\log(c(e+fx)))}{d(182e-fh)^3(h+182x)} + \frac{(182f)\,\text{Subst}}{}$$

$$= -\frac{bf}{2d(182e-fh)^2(h+182x)} - \frac{3bf^2\log(h+182x)}{2d(182e-fh)^3} + \frac{bf^2\log(e+fx)}{2d(182e-fh)^3} - \frac{a+b\,\mathrm{l}}{2d(182e-}$$

$$= -\frac{bf}{2d(182e-fh)^2(h+182x)} - \frac{3bf^2\log(h+182x)}{2d(182e-fh)^3} + \frac{bf^2\log(e+fx)}{2d(182e-fh)^3} - \frac{a+b\,\mathrm{l}}{2d(182e-}$$

Mathematica [A] time = 0.24, size = 226, normalized size = 0.90

$$\frac{-2f^2\log\left(\frac{f(h+ix)}{fh-ei}\right)(a+b\log(c(e+fx))) + \frac{f^2(a+b\log(c(e+fx)))^2}{b} + \frac{2f(fh-ei)(a+b\log(c(e+fx)))}{h+ix} + \frac{(fh-ei)^2(a+b\log(c(e+fx)))}{(h+ix)^2} - 2b}{2d(fh-ei)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(e + f*x)])/((d*e + d*f*x)*(h + i*x)^3),x]
```

```
[Out] (((f*h - e*i)^2*(a + b*Log[c*(e + f*x)]))/(h + i*x)^2 + (2*f*(f*h - e*i)*(a
 + b*Log[c*(e + f*x)]))/(h + i*x) + (f^2*(a + b*Log[c*(e + f*x)])^2)/b - 2*
b*f^2*(Log[e + f*x] - Log[h + i*x]) - (b*f*(f*h - e*i + f*(h + i*x)*Log[e +
 f*x] - f*(h + i*x)*Log[h + i*x]))/(h + i*x) - 2*f^2*(a + b*Log[c*(e + f*x)
])*Log[(f*(h + i*x))/(f*h - e*i)] - 2*b*f^2*PolyLog[2, (i*(e + f*x))/(-(f*h
) + e*i)])/(2*d*(f*h - e*i)^3)
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b\log\left(cfx+ce\right)+a}{dfi^3x^4+deh^3+\left(3\,dfhi^2+dei^3\right)x^3+3\left(dfh^2i+dehi^2\right)x^2+\left(dfh^3+3\,deh^2i\right)x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))/(d*f*x+d*e)/(i*x+h)^3,x, algorithm="fricas")
```

```
[Out] integral((b*log(c*f*x + c*e) + a)/(d*f*i^3*x^4 + d*e*h^3 + (3*d*f*h*i^2 + d
*e*i^3)*x^3 + 3*(d*f*h^2*i + d*e*h*i^2)*x^2 + (d*f*h^3 + 3*d*e*h^2*i)*x), x
)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b \log\left(\left(fx+e\right)c\right)+a}{\left(dfx+de\right)(ix+h)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))/(d*f*x+d*e)/(i*x+h)^3,x, algorithm="giac")
```

```
[Out] integrate((b*log((f*x + e)*c) + a)/((d*f*x + d*e)*(i*x + h)^3), x)
```

maple [B] time = 0.17, size = 656, normalized size = 2.62

$$\frac{b\,c^2 f^4 i^2 x^2 \ln\left(cfx+ce\right)}{2\left(ei-fh\right)^3\left(cfix+cfh\right)^2 d}+\frac{b\,c^2 f^4 hix \ln\left(cfx+ce\right)}{\left(ei-fh\right)^3\left(cfix+cfh\right)^2 d}-\frac{b\,c^2 e^2 f^2 i^2 \ln\left(cfx+ce\right)}{2\left(ei-fh\right)^3\left(cfix+cfh\right)^2 d}+\frac{b\,c^2 e\, f^3 hi \ln\left(cfx+c\right.}{\left(ei-fh\right)^3\left(cfix+cfh\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(f*x+e)))/(d*f*x+d*e)/(i*x+h)^3,x)
```

```
[Out] -f^2/d*a/(e*i-f*h)^3*ln(c*f*x+c*e)+f^2/d*a/(e*i-f*h)^3*ln(-c*e*i+c*f*h+(c*f
*x+c*e)*i)-1/2*c^2*f^2/d*a/(e*i-f*h)/(c*f*i*x+c*f*h)^2+c*f^2/d*a/(e*i-f*h)^
2/(c*f*i*x+c*f*h)-1/2*c*f^2/d*b/(e*i-f*h)^3*i/(c*f*i*x+c*f*h)*e+1/2*c*f^3/d
*b/(e*i-f*h)^3/(c*f*i*x+c*f*h)*h-3/2*f^2/d*b/(e*i-f*h)^3*ln(-c*e*i+c*f*h+(c
*f*x+c*e)*i)-1/2*c^2*f^2/d*b/(e*i-f*h)^3*i^2*ln(c*f*x+c*e)/(c*f*i*x+c*f*h)^
2*e^2+c^2*f^4/d*b/(e*i-f*h)^3*i*ln(c*f*x+c*e)/(c*f*i*x+c*f*h)^2*h*x+c^2*f^3
/d*b/(e*i-f*h)^3*i*ln(c*f*x+c*e)/(c*f*i*x+c*f*h)^2*h*e+1/2*c^2*f^4/d*b/(e*i
-f*h)^3*i^2*ln(c*f*x+c*e)/(c*f*i*x+c*f*h)^2*x^2+c*f^3/d*b/(e*i-f*h)^3*i*ln(
c*f*x+c*e)/(c*f*i*x+c*f*h)*x+c*f^2/d*b/(e*i-f*h)^3*i*ln(c*f*x+c*e)/(c*f*i*x
+c*f*h)*e-1/2*f^2/d*b*ln(c*f*x+c*e)^2/(e*i-f*h)^3+f^2/d*b/(e*i-f*h)^3*dilog
((-c*e*i+c*f*h+(c*f*x+c*e)*i)/(-c*e*i+c*f*h))+f^2/d*b/(e*i-f*h)^3*ln(c*f*x+
c*e)*ln((-c*e*i+c*f*h+(c*f*x+c*e)*i)/(-c*e*i+c*f*h))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{2}\left(\frac{2\,f^2 \log\left(fx+e\right)}{df^3h^3-3\,def^2h^2i+3\,de^2fhi^2-de^3i^3}-\frac{2\,f^2 \log\left(ix+h\right)}{df^3h^3-3\,def^2h^2i+3\,de^2fhi^2-de^3i^3}+\frac{}{df^2h^4-2\,defh^3i+de^2h^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))/(d*f*x+d*e)/(i*x+h)^3,x, algorithm="maxima")
```

```
[Out] 1/2*(2*f^2*log(f*x + e)/(d*f^3*h^3 - 3*d*e*f^2*h^2*i + 3*d*e^2*f*h*i^2 - d*
e^3*i^3) - 2*f^2*log(i*x + h)/(d*f^3*h^3 - 3*d*e*f^2*h^2*i + 3*d*e^2*f*h*i^
2 - d*e^3*i^3) + (2*f*i*x + 3*f*h - e*i)/(d*f^2*h^4 - 2*d*e*f*h^3*i + d*e^2
*h^2*i^2 + (d*f^2*h^2*i^2 - 2*d*e*f*h*i^3 + d*e^2*i^4)*x^2 + 2*(d*f^2*h^3*i
 - 2*d*e*f*h^2*i^2 + d*e^2*h*i^3)*x))*a + b*integrate((log(f*x + e) + log(c
))/(d*f*i^3*x^4 + d*e*h^3 + (3*f*h*i^2 + e*i^3)*d*x^3 + 3*(f*h^2*i + e*h*i^
2)*d*x^2 + (f*h^3 + 3*e*h^2*i)*d*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,\ln\left(c\,\left(e+f\,x\right)\right)}{\left(h+i\,x\right)^3\,\left(d\,e+d\,f\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(e + f*x)))/((h + i*x)^3*(d*e + d*f*x)),x)
```

```
[Out] int((a + b*log(c*(e + f*x)))/((h + i*x)^3*(d*e + d*f*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{a}{eh^3+3eh^2ix+3ehi^2x^2+ei^3x^3+fh^3x+3fh^2ix^2+3fhi^2x^3+fi^3x^4}\,dx+\int \frac{b\log\left(ce+cfx\right)}{eh^3+3eh^2ix+3ehi^2x^2+ei^3x^3+fh^3x+3fh^2ix^2+3fhi^2x^3+fi^3x^4}\,dx}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(f*x+e)))/(d*f*x+d*e)/(i*x+h)**3,x)
```

```
[Out] (Integral(a/(e*h**3 + 3*e*h**2*i*x + 3*e*h*i**2*x**2 + e*i**3*x**3 + f*h**3
*x + 3*f*h**2*i*x**2 + 3*f*h*i**2*x**3 + f*i**3*x**4), x) + Integral(b*log(
c*e + c*f*x)/(e*h**3 + 3*e*h**2*i*x + 3*e*h*i**2*x**2 + e*i**3*x**3 + f*h**
3*x + 3*f*h**2*i*x**2 + 3*f*h*i**2*x**3 + f*i**3*x**4), x))/d
```

3.183 $\int \frac{(h+ix)^4(a+b\log(c(e+fx)))^2}{de+dfx}\,dx$

Optimal. Leaf size=579

$$-\frac{8bi^3(e+fx)^3(fh-ei)(a+b\log(c(e+fx)))}{9df^5}+\frac{i^2(e+fx)^2(fh-ei)^2(a+b\log(c(e+fx)))^2}{2df^5}-\frac{3bi^2(e+fx)^2(fh-}{}$$

```
[Out] -4*a*b*i*(-e*i+f*h)^3*x/d/f^4+8*b^2*i*(-e*i+f*h)^3*x/d/f^4+3/2*b^2*i^2*(-e*
i+f*h)^2*(f*x+e)^2/d/f^5+8/27*b^2*i^3*(-e*i+f*h)*(f*x+e)^3/d/f^5+1/32*b^2*i
^4*(f*x+e)^4/d/f^5+7/12*b^2*(-e*i+f*h)^4*ln(f*x+e)^2/d/f^5-4*b^2*i*(-e*i+f*
h)^3*(f*x+e)*ln(c*(f*x+e))/d/f^5-4*b*i*(-e*i+f*h)^3*(f*x+e)*(a+b*ln(c*(f*x+
e)))/d/f^5-3*b*i^2*(-e*i+f*h)^2*(f*x+e)^2*(a+b*ln(c*(f*x+e)))/d/f^5-8/9*b*i
^3*(-e*i+f*h)*(f*x+e)^3*(a+b*ln(c*(f*x+e)))/d/f^5-1/8*b*i^4*(f*x+e)^4*(a+b*
ln(c*(f*x+e)))/d/f^5-7/6*b*(-e*i+f*h)^4*ln(f*x+e)*(a+b*ln(c*(f*x+e)))/d/f^5
+2*i*(-e*i+f*h)^3*(f*x+e)*(a+b*ln(c*(f*x+e)))^2/d/f^5+1/2*i^2*(-e*i+f*h)^2*
(f*x+e)^2*(a+b*ln(c*(f*x+e)))^2/d/f^5+1/3*(-e*i+f*h)*(i*x+h)^3*(a+b*ln(c*(f
*x+e)))^2/d/f^2+1/4*(i*x+h)^4*(a+b*ln(c*(f*x+e)))^2/d/f+1/3*(-e*i+f*h)^4*(a
+b*ln(c*(f*x+e)))^3/b/d/f^5
```

Rubi [A] time = 1.67, antiderivative size = 672, normalized size of antiderivative = 1.16, number of steps used = 30, number of rules used = 15, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.469, Rules used = {2411, 12, 2346, 2302, 30, 2296, 2295, 2330, 2305, 2304, 2319, 43, 2334, 14, 2301}

$$\frac{i^2(e+fx)^2(fh-ei)^2(a+b\log(c(e+fx)))^2}{2df^5}-\frac{bi^2(e+fx)^2(fh-ei)^2(a+b\log(c(e+fx)))}{2df^5}-\frac{b(fh-ei)\left(\frac{9i^2(e+fx)^2}{f^2}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[((h + i*x)^4*(a + b*Log[c*(e + f*x)])^2)/(d*e + d*f*x),x]
```

```
[Out] (-4*a*b*i*(f*h - e*i)^3*x)/(d*f^4) + (8*b^2*i*(f*h - e*i)^3*x)/(d*f^4) + (3
*b^2*i^2*(f*h - e*i)^2*(e + f*x)^2)/(2*d*f^5) + (8*b^2*i^3*(f*h - e*i)*(e +
 f*x)^3)/(27*d*f^5) + (b^2*i^4*(e + f*x)^4)/(32*d*f^5) + (7*b^2*(f*h - e*i)
^4*Log[e + f*x]^2)/(12*d*f^5) - (4*b^2*i*(f*h - e*i)^3*(e + f*x)*Log[c*(e +
 f*x)])/(d*f^5) - (b*i^2*(f*h - e*i)^2*(e + f*x)^2*(a + b*Log[c*(e + f*x)])
)/(2*d*f^5) - (b*(f*h - e*i)*((18*i*(f*h - e*i)^2*(e + f*x))/f^2 + (9*i^2*(
f*h - e*i)*(e + f*x)^2)/f^2 + (2*i^3*(e + f*x)^3)/f^2 + (6*(f*h - e*i)^3*Lo
g[e + f*x])/f^2)*(a + b*Log[c*(e + f*x)]))/(9*d*f^3) - (b*((48*i*(f*h - e*i
)^3*(e + f*x))/f^3 + (36*i^2*(f*h - e*i)^2*(e + f*x)^2)/f^3 + (16*i^3*(f*h
- e*i)*(e + f*x)^3)/f^3 + (3*i^4*(e + f*x)^4)/f^3 + (12*(f*h - e*i)^4*Log[e
 + f*x])/f^3)*(a + b*Log[c*(e + f*x)])))/(24*d*f^2) + (2*i*(f*h - e*i)^3*(e
+ f*x)*(a + b*Log[c*(e + f*x)])^2)/(d*f^5) + (i^2*(f*h - e*i)^2*(e + f*x)^2
*(a + b*Log[c*(e + f*x)])^2)/(2*d*f^5) + ((f*h - e*i)*(h + i*x)^3*(a + b*Lo
g[c*(e + f*x)])^2)/(3*d*f^2) + ((h + i*x)^4*(a + b*Log[c*(e + f*x)])^2)/(4*
d*f) + ((f*h - e*i)^4*(a + b*Log[c*(e + f*x)])^3)/(3*b*d*f^5)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2319

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/(e*(q + 1)), x]
- Dist[(b*n*p)/(e*(q + 1)), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 2330

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_)^(r_.))^(
q_.), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*x^n])^p, (d + e*x
^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n, p, q, r}, x]
```

```
&& IntegerQ[q] && (GtQ[q, 0] || (IGtQ[p, 0] && IntegerQ[r]))
```

Rule 2334

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*(x_)^(m_.)*((d_) + (e_.)*(x_)^(r_
.))^(q_.), x_Symbol] :> With[{u = IntHide[x^m*(d + e*x^r)^q, x]}, Simp[u*(a
 + b*Log[c*x^n]), x] - Dist[b*n, Int[SimplifyIntegrand[u/x, x], x], x]] /;
FreeQ[{a, b, c, d, e, n, r}, x] && IGtQ[q, 0] && IntegerQ[m] &&  !(EqQ[q, 1
] && EqQ[m, -1])
```

Rule 2346

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.))
/(x_), x_Symbol] :> Dist[d, Int[((d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p)/x,
 x], x] + Dist[e, Int[(d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p, x], x] /; Fre
eQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0] && GtQ[q, 0] && IntegerQ[2*q]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rubi steps

$$\int \frac{(h+183x)^4(a+b\log(c(e+fx)))^2}{de+dfx}\,dx = \frac{\text{Subst}\left(\int \frac{\left(\frac{-183e+fh}{f}+\frac{183x}{f}\right)^4(a+b\log(cx))^2}{dx}\,dx, x, e+fx\right)}{f}$$

$$= \frac{\text{Subst}\left(\int \frac{\left(\frac{-183e+fh}{f}+\frac{183x}{f}\right)^4(a+b\log(cx))^2}{x}\,dx, x, e+fx\right)}{df}$$

$$= \frac{183\,\text{Subst}\left(\int \left(\frac{-183e+fh}{f}+\frac{183x}{f}\right)^3(a+b\log(cx))^2\,dx, x, e+fx\right)}{df^2} - \frac{(183\cdots}{\cdots}$$

$$= \frac{(h+183x)^4(a+b\log(c(e+fx)))^2}{4df} - \frac{b\,\text{Subst}\left(\int \frac{\left(\frac{-183e+fh}{f}+\frac{183x}{f}\right)^4(a+b\log(\cdots}{x}\cdots\right)}{2df}$$

$$= \frac{b\left(\frac{2928(183e-fh)^3(e+fx)}{f^4}-\frac{401868(183e-fh)^2(e+fx)^2}{f^4}+\frac{32685264(183e-fh)(e+fx)^3}{f^4}-\cdots\right)}{8df}$$

$$= \frac{b(183e-fh)\left(\frac{1098(183e-fh)^2(e+fx)}{f^3}-\frac{100467(183e-fh)(e+fx)^2}{f^3}+\frac{4085658(e+fx)^3}{f^3}\cdots\right)}{3df^2}$$

$$= -\frac{366b^2(183e-fh)^3x}{df^4}+\frac{100467b^2(183e-fh)^2(e+fx)^2}{4df^5}-\frac{1361886b^2\cdots}{\cdots}$$

$$= \frac{366ab(183e-fh)^3x}{df^4}-\frac{366b^2(183e-fh)^3x}{df^4}+\frac{100467b^2(183e-fh)^2(\cdots}{4df^5}$$

$$= \frac{732ab(183e-fh)^3x}{df^4}-\frac{732b^2(183e-fh)^3x}{df^4}+\frac{33489b^2(183e-fh)^2(e\cdots}{df^5}$$

$$= \frac{732ab(183e-fh)^3x}{df^4}-\frac{1464b^2(183e-fh)^3x}{df^4}+\frac{100467b^2(183e-fh)^2\cdots}{2df^5}$$

Mathematica [A] time = 0.60, size = 374, normalized size = 0.65

$$\frac{256bi^3(fh-ei)\left(bfx\left(3e^2+3efx+f^2x^2\right)-3(e+fx)^3(a+b\log(c(e+fx)))\right)+27bi^4\left(bfx\left(4e^3+6e^2fx+4ef^2x^2\cdots\right.\right.}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Integrate[((h + i*x)^4*(a + b*Log[c*(e + f*x)])^2)/(d*e + d*f*x),x]
```

```
[Out] (3456*i*(f*h - e*i)^3*(e + f*x)*(a + b*Log[c*(e + f*x)])^2 + 2592*i^2*(f*h
- e*i)^2*(e + f*x)^2*(a + b*Log[c*(e + f*x)])^2 + 1152*i^3*(f*h - e*i)*(e +
 f*x)^3*(a + b*Log[c*(e + f*x)])^2 + 216*i^4*(e + f*x)^4*(a + b*Log[c*(e +
f*x)])^2 + (288*(f*h - e*i)^4*(a + b*Log[c*(e + f*x)])^3)/b - 6912*b*i*(f*h
 - e*i)^3*((a - b)*f*x + b*(e + f*x)*Log[c*(e + f*x)]) + 1296*b*i^2*(f*h -
e*i)^2*(b*f*x*(2*e + f*x) - 2*(e + f*x)^2*(a + b*Log[c*(e + f*x)])) + 256*b
*i^3*(f*h - e*i)*(b*f*x*(3*e^2 + 3*e*f*x + f^2*x^2) - 3*(e + f*x)^3*(a + b*
```

```
Log[c*(e + f*x)])) + 27*b*i^4*(b*f*x*(4*e^3 + 6*e^2*f*x + 4*e*f^2*x^2 + f^3
*x^3) - 4*(e + f*x)^4*(a + b*Log[c*(e + f*x)])))/(864*d*f^5)
```

fricas [A] time = 0.46, size = 939, normalized size = 1.62

$$\frac{27\left(8\,a^2-4\,ab+b^2\right)f^4i^4x^4+4\left(32\left(9\,a^2-6\,ab+2\,b^2\right)f^4hi^3-\left(72\,a^2-84\,ab+37\,b^2\right)ef^3i^4\right)x^3+288\left(b^2f^4h^4-\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^4*(a+b*log(c*(f*x+e)))^2/(d*f*x+d*e),x, algorithm="fricas
")
```

```
[Out] 1/864*(27*(8*a^2 - 4*a*b + b^2)*f^4*i^4*x^4 + 4*(32*(9*a^2 - 6*a*b + 2*b^2)
*f^4*h*i^3 - (72*a^2 - 84*a*b + 37*b^2)*e*f^3*i^4)*x^3 + 288*(b^2*f^4*h^4 -
 4*b^2*e*f^3*h^3*i + 6*b^2*e^2*f^2*h^2*i^2 - 4*b^2*e^3*f*h*i^3 + b^2*e^4*i^
4)*log(c*f*x + c*e)^3 + 6*(216*(2*a^2 - 2*a*b + b^2)*f^4*h^2*i^2 - 16*(18*a
^2 - 30*a*b + 19*b^2)*e*f^3*h*i^3 + (72*a^2 - 156*a*b + 115*b^2)*e^2*f^2*i^
4)*x^2 + 72*(3*b^2*f^4*i^4*x^4 + 12*a*b*f^4*h^4 - 48*(a*b - b^2)*e*f^3*h^3*
i + 36*(2*a*b - 3*b^2)*e^2*f^2*h^2*i^2 - 8*(6*a*b - 11*b^2)*e^3*f*h*i^3 + (
12*a*b - 25*b^2)*e^4*i^4 + 4*(4*b^2*f^4*h*i^3 - b^2*e*f^3*i^4)*x^3 + 6*(6*b
^2*f^4*h^2*i^2 - 4*b^2*e*f^3*h*i^3 + b^2*e^2*f^2*i^4)*x^2 + 12*(4*b^2*f^4*h
^3*i - 6*b^2*e*f^3*h^2*i^2 + 4*b^2*e^2*f^2*h*i^3 - b^2*e^3*f*i^4)*x)*log(c*
f*x + c*e)^2 + 12*(288*(a^2 - 2*a*b + 2*b^2)*f^4*h^3*i - 216*(2*a^2 - 6*a*b
 + 7*b^2)*e*f^3*h^2*i^2 + 16*(18*a^2 - 66*a*b + 85*b^2)*e^2*f^2*h*i^3 - (72
*a^2 - 300*a*b + 415*b^2)*e^3*f*i^4)*x + 12*(9*(4*a*b - b^2)*f^4*i^4*x^4 +
72*a^2*f^4*h^4 - 288*(a^2 - 2*a*b + 2*b^2)*e*f^3*h^3*i + 216*(2*a^2 - 6*a*b
 + 7*b^2)*e^2*f^2*h^2*i^2 - 16*(18*a^2 - 66*a*b + 85*b^2)*e^3*f*h*i^3 + (72
*a^2 - 300*a*b + 415*b^2)*e^4*i^4 + 4*(16*(3*a*b - b^2)*f^4*h*i^3 - (12*a*b
 - 7*b^2)*e*f^3*i^4)*x^3 + 6*(36*(2*a*b - b^2)*f^4*h^2*i^2 - 8*(6*a*b - 5*b
^2)*e*f^3*h*i^3 + (12*a*b - 13*b^2)*e^2*f^2*i^4)*x^2 + 12*(48*(a*b - b^2)*f
^4*h^3*i - 36*(2*a*b - 3*b^2)*e*f^3*h^2*i^2 + 8*(6*a*b - 11*b^2)*e^2*f^2*h*
i^3 - (12*a*b - 25*b^2)*e^3*f*i^4)*x)*log(c*f*x + c*e))/(d*f^5)
```

giac [B] time = 0.25, size = 1624, normalized size = 2.80

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^4*(a+b*log(c*(f*x+e)))^2/(d*f*x+d*e),x, algorithm="giac")
```

```
[Out] 1/864*(3456*b^2*f^4*h^3*i*x*log(c*f*x + c*e)^2 - 1152*b^2*f^4*h*i*x^3*log(c
*f*x + c*e)^2 + 288*b^2*f^4*h^4*log(c*f*x + c*e)^3 - 1152*b^2*f^3*h^3*i*e*l
og(c*f*x + c*e)^3 + 6912*a*b*f^4*h^3*i*x*log(c*f*x + c*e) - 6912*b^2*f^4*h^
3*i*x*log(c*f*x + c*e) - 2304*a*b*f^4*h*i*x^3*log(c*f*x + c*e) + 768*b^2*f^
4*h*i*x^3*log(c*f*x + c*e) + 864*a*b*f^4*h^4*log(c*f*x + c*e)^2 - 2592*b^2*
f^4*h^2*x^2*log(c*f*x + c*e)^2 + 216*b^2*f^4*x^4*log(c*f*x + c*e)^2 - 3456*
a*b*f^3*h^3*i*e*log(c*f*x + c*e)^2 + 3456*b^2*f^3*h^3*i*e*log(c*f*x + c*e)^
2 + 1728*b^2*f^3*h*i*x^2*e*log(c*f*x + c*e)^2 + 3456*a^2*f^4*h^3*i*x - 6912
*a*b*f^4*h^3*i*x + 6912*b^2*f^4*h^3*i*x - 1152*a^2*f^4*h*i*x^3 + 768*a*b*f^
4*h*i*x^3 - 256*b^2*f^4*h*i*x^3 - 5184*a*b*f^4*h^2*x^2*log(c*f*x + c*e) + 2
592*b^2*f^4*h^2*x^2*log(c*f*x + c*e) + 432*a*b*f^4*x^4*log(c*f*x + c*e) - 1
08*b^2*f^4*x^4*log(c*f*x + c*e) + 3456*a*b*f^3*h*i*x^2*e*log(c*f*x + c*e) -
 2880*b^2*f^3*h*i*x^2*e*log(c*f*x + c*e) + 5184*b^2*f^3*h^2*x*e*log(c*f*x +
 c*e)^2 - 288*b^2*f^3*x^3*e*log(c*f*x + c*e)^2 + 864*a^2*f^4*h^4*log(f*x +
e) - 3456*a^2*f^3*h^3*i*e*log(f*x + e) + 6912*a*b*f^3*h^3*i*e*log(f*x + e)
- 6912*b^2*f^3*h^3*i*e*log(f*x + e) - 2592*a^2*f^4*h^2*x^2 + 2592*a*b*f^4*h
^2*x^2 - 1296*b^2*f^4*h^2*x^2 + 216*a^2*f^4*x^4 - 108*a*b*f^4*x^4 + 27*b^2*
f^4*x^4 + 1728*a^2*f^3*h*i*x^2*e - 2880*a*b*f^3*h*i*x^2*e + 1824*b^2*f^3*h*
i*x^2*e + 10368*a*b*f^3*h^2*x*e*log(c*f*x + c*e) - 15552*b^2*f^3*h^2*x*e*lo
```

```
g(c*f*x + c*e) - 576*a*b*f^3*x^3*e*log(c*f*x + c*e) + 336*b^2*f^3*x^3*e*log
(c*f*x + c*e) - 3456*b^2*f^2*h*i*x*e^2*log(c*f*x + c*e)^2 - 1728*b^2*f^2*h^
2*e^2*log(c*f*x + c*e)^3 + 5184*a^2*f^3*h^2*x*e - 15552*a*b*f^3*h^2*x*e + 1
8144*b^2*f^3*h^2*x*e - 288*a^2*f^3*x^3*e + 336*a*b*f^3*x^3*e - 148*b^2*f^3*
x^3*e - 6912*a*b*f^2*h*i*x*e^2*log(c*f*x + c*e) + 12672*b^2*f^2*h*i*x*e^2*l
og(c*f*x + c*e) - 5184*a*b*f^2*h^2*e^2*log(c*f*x + c*e)^2 + 7776*b^2*f^2*h^
2*e^2*log(c*f*x + c*e)^2 + 432*b^2*f^2*x^2*e^2*log(c*f*x + c*e)^2 + 1152*b^
2*f*h*i*e^3*log(c*f*x + c*e)^3 - 3456*a^2*f^2*h*i*x*e^2 + 12672*a*b*f^2*h*i
*x*e^2 - 16320*b^2*f^2*h*i*x*e^2 + 864*a*b*f^2*x^2*e^2*log(c*f*x + c*e) - 9
36*b^2*f^2*x^2*e^2*log(c*f*x + c*e) + 3456*a*b*f*h*i*e^3*log(c*f*x + c*e)^2
 - 6336*b^2*f*h*i*e^3*log(c*f*x + c*e)^2 - 5184*a^2*f^2*h^2*e^2*log(f*x + e
) + 15552*a*b*f^2*h^2*e^2*log(f*x + e) - 18144*b^2*f^2*h^2*e^2*log(f*x + e)
 + 432*a^2*f^2*x^2*e^2 - 936*a*b*f^2*x^2*e^2 + 690*b^2*f^2*x^2*e^2 - 864*b^
2*f*x*e^3*log(c*f*x + c*e)^2 + 3456*a^2*f*h*i*e^3*log(f*x + e) - 12672*a*b*
f*h*i*e^3*log(f*x + e) + 16320*b^2*f*h*i*e^3*log(f*x + e) - 1728*a*b*f*x*e^
3*log(c*f*x + c*e) + 3600*b^2*f*x*e^3*log(c*f*x + c*e) + 288*b^2*e^4*log(c*
f*x + c*e)^3 - 864*a^2*f*x*e^3 + 3600*a*b*f*x*e^3 - 4980*b^2*f*x*e^3 + 864*
a*b*e^4*log(c*f*x + c*e)^2 - 1800*b^2*e^4*log(c*f*x + c*e)^2 + 864*a^2*e^4*
log(f*x + e) - 3600*a*b*e^4*log(f*x + e) + 4980*b^2*e^4*log(f*x + e))/(d*f^
5)
```

maple [B] time = 0.06, size = 2310, normalized size = 3.99

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)^4*(a+b*ln(c*(f*x+e)))^2/(d*f*x+d*e),x)
```

```
[Out] -1/f^4/d*a^2*e^3*i^4*x+4/f/d*a^2*h^3*i*x-415/72/f^4/d*b^2*e^3*i^4*x-1/8/f/d
*a*b*i^4*x^4+3/f/d*a^2*h^2*i^2*x^2-1/3/f^2/d*a^2*e*i^4*x^3+1/2/f^3/d*a^2*e^
2*i^4*x^2+3/2/f/d*b^2*h^2*i^2*x^2+4/3/f/d*a^2*h*i^3*x^3-37/216/f^2/d*b^2*i^
4*x^3*e+115/144/f^3/d*b^2*i^4*x^2*e^2+8/27/f/d*b^2*h*i^3*x^3+8/f/d*b^2*h^3*
i*x-1/8/f/d*b^2*i^4*ln(c*f*x+c*e)*x^4+1/4/f/d*b^2*i^4*ln(c*f*x+c*e)^2*x^4+1
/f/d*a*b*h^4*ln(c*f*x+c*e)^2-25/12/f^5/d*b^2*e^4*i^4*ln(c*f*x+c*e)^2+415/72
/f^5/d*b^2*e^4*i^4*ln(c*f*x+c*e)+1/3/f^5/d*b^2*e^4*i^4*ln(c*f*x+c*e)^3+1/f^
5/d*a^2*e^4*i^4*ln(c*f*x+c*e)-25/12/f^5/d*a^2*e^4*i^4-5845/864/f^5/d*b^2*e^
4*i^4+1/32/f/d*b^2*i^4*x^4+1/4/f/d*a^2*i^4*x^4+1/f/d*a^2*h^4*ln(c*f*x+c*e)+
1/3/f/d*b^2*h^4*ln(c*f*x+c*e)^3+18/f^2/d*a*b*h^2*i^2*x*e-44/3/f^3/d*a*b*e^2
*h*i^3*x+10/3/f^2/d*a*b*h*i^3*x^2*e+8/f^2/d*a*b*h^3*i*ln(c*f*x+c*e)*e-2/f^4
/d*a*b*e^3*i^4*ln(c*f*x+c*e)*x+8/3/f/d*a*b*h*i^3*ln(c*f*x+c*e)*x^3-18/f^3/d
*a*b*h^2*i^2*ln(c*f*x+c*e)*e^2-2/3/f^2/d*a*b*i^4*ln(c*f*x+c*e)*x^3*e+1/f^3/
d*a*b*i^4*ln(c*f*x+c*e)*x^2*e^2+6/f^3/d*a*b*e^2*h^2*i^2*ln(c*f*x+c*e)^2-6/f
^2/d*b^2*e*h^2*i^2*ln(c*f*x+c*e)^2*x+6/f/d*a*b*h^2*i^2*ln(c*f*x+c*e)*x^2+4/
f^3/d*b^2*h*i^3*ln(c*f*x+c*e)^2*x*e^2+10/3/f^2/d*b^2*h*i^3*ln(c*f*x+c*e)*x^
2*e-2/f^2/d*b^2*h*i^3*ln(c*f*x+c*e)^2*x^2*e+18/f^2/d*b^2*e*h^2*i^2*ln(c*f*x
+c*e)*x+8/f/d*a*b*h^3*i*ln(c*f*x+c*e)*x-4/f^4/d*a*b*e^3*h*i^3*ln(c*f*x+c*e)
^2-44/3/f^3/d*b^2*h*i^3*ln(c*f*x+c*e)*x*e^2+44/3/f^4/d*a*b*e^3*h*i^3*ln(c*f
*x+c*e)-4/f^2/d*a*b*e*h^3*i*ln(c*f*x+c*e)^2-8/f^2/d*a*b*e*h^3*i+21/f^3/d*a*
b*e^2*h^2*i^2-170/9/f^4/d*a*b*e^3*h*i^3-12/f^2/d*a*b*h^2*i^2*ln(c*f*x+c*e)*
x*e+8/f^3/d*a*b*e^2*h*i^3*ln(c*f*x+c*e)*x+8/f^2/d*b^2*e*h^3*i-8/9/f/d*b^2*h
*i^3*ln(c*f*x+c*e)*x^3-13/12/f^3/d*b^2*i^4*ln(c*f*x+c*e)*x^2*e^2-1/3/f^2/d*
b^2*i^4*ln(c*f*x+c*e)^2*x^3*e-8/f^2/d*b^2*h^3*i*ln(c*f*x+c*e)*e-9/f^3/d*a^2
*e^2*h^2*i^2-45/2/f^3/d*b^2*e^2*h^2*i^2+4/f^2/d*a^2*e*h^3*i+22/3/f^4/d*a^2*
e^3*h*i^3-4/3/f^4/d*b^2*e^3*h*i^3*ln(c*f*x+c*e)^3+1/2/f^3/d*b^2*i^4*ln(c*f*
x+c*e)^2*x^2*e^2-19/9/f^2/d*b^2*h*i^3*x^2*e+4/f^3/d*a^2*e^2*h*i^3*x-21/f^2/
d*b^2*e*h^2*i^2*x+7/18/f^2/d*a*b*i^4*x^3*e-13/12/f^3/d*a*b*i^4*x^2*e^2-3/f/
d*a*b*h^2*i^2*x^2+25/6/f^4/d*a*b*e^3*i^4*x-2/f^2/d*a^2*h*i^3*x^2*e-6/f^2/d*
a^2*e*h^2*i^2*x-8/9/f/d*a*b*h*i^3*x^3-8/f/d*a*b*h^3*i*x+575/27/f^4/d*b^2*e^
3*h*i^3+415/72/f^5/d*a*b*e^4*i^4+7/18/f^2/d*b^2*i^4*ln(c*f*x+c*e)*x^3*e+25/
6/f^4/d*b^2*e^3*i^4*ln(c*f*x+c*e)*x-4/f^2/d*a*b*h*i^3*ln(c*f*x+c*e)*x^2*e-1
```

```
/f^4/d*b^2*e^3*i^4*ln(c*f*x+c*e)^2*x-4/3/f^2/d*b^2*e*h^3*i*ln(c*f*x+c*e)^3+
22/3/f^4/d*b^2*h*i^3*ln(c*f*x+c*e)^2*e^3+170/9/f^3/d*b^2*h*i^3*x*e^2+3/f/d*
b^2*h^2*i^2*ln(c*f*x+c*e)^2*x^2-3/f/d*b^2*h^2*i^2*ln(c*f*x+c*e)*x^2-9/f^3/d
*b^2*e^2*h^2*i^2*ln(c*f*x+c*e)^2+21/f^3/d*b^2*e^2*h^2*i^2*ln(c*f*x+c*e)+2/f
^3/d*b^2*e^2*h^2*i^2*ln(c*f*x+c*e)^3+1/2/f/d*a*b*i^4*ln(c*f*x+c*e)*x^4-170/
9/f^4/d*b^2*h*i^3*ln(c*f*x+c*e)*e^3+4/3/f/d*b^2*h*i^3*ln(c*f*x+c*e)^2*x^3+6
/f^3/d*a^2*e^2*h^2*i^2*ln(c*f*x+c*e)+1/f^5/d*a*b*e^4*i^4*ln(c*f*x+c*e)^2+4/
f/d*b^2*h^3*i*ln(c*f*x+c*e)^2*x+4/f^2/d*b^2*h^3*i*ln(c*f*x+c*e)^2*e-8/f/d*b
^2*h^3*i*ln(c*f*x+c*e)*x-4/f^4/d*a^2*e^3*h*i^3*ln(c*f*x+c*e)-4/f^2/d*a^2*e*
h^3*i*ln(c*f*x+c*e)-25/6/f^5/d*a*b*e^4*i^4*ln(c*f*x+c*e)
```

maxima [B] time = 0.72, size = 1427, normalized size = 2.46

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^4*(a+b*log(c*(f*x+e)))^2/(d*f*x+d*e),x, algorithm="maxima
")
```

```
[Out] 8*a*b*h^3*i*(x/(d*f) - e*log(f*x + e)/(d*f^2))*log(c*f*x + c*e) + 1/6*a*b*i
^4*(12*e^4*log(f*x + e)/(d*f^5) + (3*f^3*x^4 - 4*e*f^2*x^3 + 6*e^2*f*x^2 -
12*e^3*x)/(d*f^4))*log(c*f*x + c*e) - 4/3*a*b*h*i^3*(6*e^3*log(f*x + e)/(d*
f^4) - (2*f^2*x^3 - 3*e*f*x^2 + 6*e^2*x)/(d*f^3))*log(c*f*x + c*e) + 6*a*b*
h^2*i^2*(2*e^2*log(f*x + e)/(d*f^3) + (f*x^2 - 2*e*x)/(d*f^2))*log(c*f*x +
c*e) - a*b*h^4*(2*log(c*f*x + c*e)*log(d*f*x + d*e)/(d*f) - (log(f*x + e)^2
 + 2*log(f*x + e)*log(c))/(d*f)) + 4*a^2*h^3*i*(x/(d*f) - e*log(f*x + e)/(d
*f^2)) + 1/12*a^2*i^4*(12*e^4*log(f*x + e)/(d*f^5) + (3*f^3*x^4 - 4*e*f^2*x
^3 + 6*e^2*f*x^2 - 12*e^3*x)/(d*f^4)) - 2/3*a^2*h*i^3*(6*e^3*log(f*x + e)/(
d*f^4) - (2*f^2*x^3 - 3*e*f*x^2 + 6*e^2*x)/(d*f^3)) + 3*a^2*h^2*i^2*(2*e^2*
log(f*x + e)/(d*f^3) + (f*x^2 - 2*e*x)/(d*f^2)) + 1/3*b^2*h^4*log(c*f*x + c
*e)^3/(d*f) + 2*a*b*h^4*log(c*f*x + c*e)*log(d*f*x + d*e)/(d*f) + a^2*h^4*l
og(d*f*x + d*e)/(d*f) + 4*(e*log(f*x + e)^2 - 2*f*x + 2*e*log(f*x + e))*a*b
*h^3*i/(d*f^2) - 3*(f^2*x^2 + 2*e^2*log(f*x + e)^2 - 6*e*f*x + 6*e^2*log(f*
x + e))*a*b*h^2*i^2/(d*f^3) - 4/3*(c^2*e*log(c*f*x + c*e)^3 - 3*(c*f*x + c*
e)*(c*log(c*f*x + c*e)^2 - 2*c*log(c*f*x + c*e) + 2*c))*b^2*h^3*i/(c^2*d*f^
2) - 2/9*(4*f^3*x^3 - 15*e*f^2*x^2 - 18*e^3*log(f*x + e)^2 + 66*e^2*f*x - 6
6*e^3*log(f*x + e))*a*b*h*i^3/(d*f^4) - 1/72*(9*f^4*x^4 - 28*e*f^3*x^3 + 78
*e^2*f^2*x^2 + 72*e^4*log(f*x + e)^2 - 300*e^3*f*x + 300*e^4*log(f*x + e))*
a*b*i^4/(d*f^5) + 1/2*(4*c^3*e^2*log(c*f*x + c*e)^3 + 3*(c*f*x + c*e)^2*(2*
c*log(c*f*x + c*e)^2 - 2*c*log(c*f*x + c*e) + c) - 24*(c^2*e*log(c*f*x + c*
e)^2 - 2*c^2*e*log(c*f*x + c*e) + 2*c^2*e)*(c*f*x + c*e))*b^2*h^2*i^2/(c^3*
d*f^3) - 1/27*(36*c^4*e^3*log(c*f*x + c*e)^3 - 4*(c*f*x + c*e)^3*(9*c*log(c
*f*x + c*e)^2 - 6*c*log(c*f*x + c*e) + 2*c) + 81*(2*c^2*e*log(c*f*x + c*e)^
2 - 2*c^2*e*log(c*f*x + c*e) + c^2*e)*(c*f*x + c*e)^2 - 324*(c^3*e^2*log(c*
f*x + c*e)^2 - 2*c^3*e^2*log(c*f*x + c*e) + 2*c^3*e^2)*(c*f*x + c*e))*b^2*h
*i^3/(c^4*d*f^4) + 1/864*(288*c^5*e^4*log(c*f*x + c*e)^3 + 27*(c*f*x + c*e)
^4*(8*c*log(c*f*x + c*e)^2 - 4*c*log(c*f*x + c*e) + c) - 128*(9*c^2*e*log(c
*f*x + c*e)^2 - 6*c^2*e*log(c*f*x + c*e) + 2*c^2*e)*(c*f*x + c*e)^3 + 1296*
(2*c^3*e^2*log(c*f*x + c*e)^2 - 2*c^3*e^2*log(c*f*x + c*e) + c^3*e^2)*(c*f*
x + c*e)^2 - 3456*(c^4*e^3*log(c*f*x + c*e)^2 - 2*c^4*e^3*log(c*f*x + c*e)
+ 2*c^4*e^3)*(c*f*x + c*e))*b^2*i^4/(c^5*d*f^5)
```

mupad [B] time = 0.96, size = 1346, normalized size = 2.32

$$\ln\left(c\,\left(e+f\,x\right)\right)^2\,\left(f\,\left(\frac{b^2\,i^4\,x^4}{4\,d\,f^2}-\frac{b^2\,i^3\,x^3\,\left(e\,i-4\,f\,h\right)}{3\,d\,f^3}-\frac{b^2\,i\,x\,\left(e^3\,i^3-4\,e^2\,f\,h\,i^2+6\,e\,f^2\,h^2\,i-4\,f^3\,h^3\right)}{d\,f^5}+\frac{b^2\,i^2\,x^2}{\vphantom{d}}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((h + i*x)^4*(a + b*log(c*(e + f*x)))^2)/(d*e + d*f*x),x)
```

```
[Out] log(c*(e + f*x))^2*(f*((b^2*i^4*x^4)/(4*d*f^2) - (b^2*i^3*x^3*(e*i - 4*f*h)
)/(3*d*f^3) - (b^2*i*x*(e^3*i^3 - 4*f^3*h^3 + 6*e*f^2*h^2*i - 4*e^2*f*h*i^2
))/(d*f^5) + (b^2*i^2*x^2*(e^2*i^2 + 6*f^2*h^2 - 4*e*f*h*i))/(2*d*f^4)) + (
12*a*b*e^4*i^4 - 25*b^2*e^4*i^4 + 12*a*b*f^4*h^4 - 108*b^2*e^2*f^2*h^2*i^2
+ 48*b^2*e*f^3*h^3*i + 88*b^2*e^3*f*h*i^3 + 72*a*b*e^2*f^2*h^2*i^2 - 48*a*b
*e*f^3*h^3*i - 48*a*b*e^3*f*h*i^3)/(12*d*f^5)) - x^2*((e*((i^3*(72*a^2*f*h
- 7*b^2*e*i + 16*b^2*f*h + 12*a*b*e*i - 48*a*b*f*h))/(18*d*f^2) - (e*i^4*(8
*a^2 - 4*a*b + b^2))/(8*d*f^2)))/(2*f) - (i^2*(72*a^2*f^2*h^2 + 13*b^2*e^2*
i^2 + 36*b^2*f^2*h^2 - 12*a*b*e^2*i^2 - 72*a*b*f^2*h^2 - 40*b^2*e*f*h*i + 4
8*a*b*e*f*h*i))/(24*d*f^3)) + x^3*((i^3*(72*a^2*f*h - 7*b^2*e*i + 16*b^2*f*
h + 12*a*b*e*i - 48*a*b*f*h))/(54*d*f^2) - (e*i^4*(8*a^2 - 4*a*b + b^2))/(2
4*d*f^2)) + x*((288*a^2*f^3*h^3*i - 300*b^2*e^3*i^4 + 576*b^2*f^3*h^3*i + 1
44*a*b*e^3*i^4 - 576*a*b*f^3*h^3*i + 1056*b^2*e^2*f*h*i^3 - 1296*b^2*e*f^2*
h^2*i^2 - 576*a*b*e^2*f*h*i^3 + 864*a*b*e*f^2*h^2*i^2)/(72*d*f^4) + (e*((e*
((i^3*(72*a^2*f*h - 7*b^2*e*i + 16*b^2*f*h + 12*a*b*e*i - 48*a*b*f*h))/(18*
d*f^2) - (e*i^4*(8*a^2 - 4*a*b + b^2))/(8*d*f^2)))/f - (i^2*(72*a^2*f^2*h^2
 + 13*b^2*e^2*i^2 + 36*b^2*f^2*h^2 - 12*a*b*e^2*i^2 - 72*a*b*f^2*h^2 - 40*b
^2*e*f*h*i + 48*a*b*e*f*h*i))/(12*d*f^3)))/f) + f*log(c*(e + f*x))*((x^3*(7
*b^2*e*i^4 - 12*a*b*e*i^4 - 16*b^2*f*h*i^3 + 48*a*b*f*h*i^3))/(18*d*f^3) -
(x^2*(13*b^2*e^2*i^4 + 36*b^2*f^2*h^2*i^2 - 12*a*b*e^2*i^4 - 40*b^2*e*f*h*i
^3 - 72*a*b*f^2*h^2*i^2 + 48*a*b*e*f*h*i^3))/(12*d*f^4) + (x*(25*b^2*e^3*i^
4 - 48*b^2*f^3*h^3*i - 12*a*b*e^3*i^4 + 48*a*b*f^3*h^3*i - 88*b^2*e^2*f*h*i
^3 + 108*b^2*e*f^2*h^2*i^2 + 48*a*b*e^2*f*h*i^3 - 72*a*b*e*f^2*h^2*i^2))/(6
*d*f^5) + (b*i^4*x^4*(4*a - b))/(8*d*f^2)) + (log(e + f*x)*(72*a^2*e^4*i^4
+ 72*a^2*f^4*h^4 + 415*b^2*e^4*i^4 - 300*a*b*e^4*i^4 + 432*a^2*e^2*f^2*h^2*
i^2 + 1512*b^2*e^2*f^2*h^2*i^2 - 288*a^2*e*f^3*h^3*i - 288*a^2*e^3*f*h*i^3
- 576*b^2*e*f^3*h^3*i - 1360*b^2*e^3*f*h*i^3 - 1296*a*b*e^2*f^2*h^2*i^2 + 5
76*a*b*e*f^3*h^3*i + 1056*a*b*e^3*f*h*i^3))/(72*d*f^5) + (b^2*log(c*(e + f*
x))^3*(e^4*i^4 + f^4*h^4 + 6*e^2*f^2*h^2*i^2 - 4*e*f^3*h^3*i - 4*e^3*f*h*i^
3))/(3*d*f^5) + (i^4*x^4*(8*a^2 - 4*a*b + b^2))/(32*d*f)
```

sympy [B] time = 8.48, size = 1479, normalized size = 2.55

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)**4*(a+b*ln(c*(f*x+e)))**2/(d*f*x+d*e),x)
```

```
[Out] x**4*(a**2*i**4/(4*d*f) - a*b*i**4/(8*d*f) + b**2*i**4/(32*d*f)) + x**3*(-a
**2*e*i**4/(3*d*f**2) + 4*a**2*h*i**3/(3*d*f) + 7*a*b*e*i**4/(18*d*f**2) -
8*a*b*h*i**3/(9*d*f) - 37*b**2*e*i**4/(216*d*f**2) + 8*b**2*h*i**3/(27*d*f)
) + x**2*(a**2*e**2*i**4/(2*d*f**3) - 2*a**2*e*h*i**3/(d*f**2) + 3*a**2*h**
2*i**2/(d*f) - 13*a*b*e**2*i**4/(12*d*f**3) + 10*a*b*e*h*i**3/(3*d*f**2) -
3*a*b*h**2*i**2/(d*f) + 115*b**2*e**2*i**4/(144*d*f**3) - 19*b**2*e*h*i**3/
(9*d*f**2) + 3*b**2*h**2*i**2/(2*d*f)) + x*(-a**2*e**3*i**4/(d*f**4) + 4*a*
*2*e**2*h*i**3/(d*f**3) - 6*a**2*e*h**2*i**2/(d*f**2) + 4*a**2*h**3*i/(d*f)
 + 25*a*b*e**3*i**4/(6*d*f**4) - 44*a*b*e**2*h*i**3/(3*d*f**3) + 18*a*b*e*h
**2*i**2/(d*f**2) - 8*a*b*h**3*i/(d*f) - 415*b**2*e**3*i**4/(72*d*f**4) + 1
70*b**2*e**2*h*i**3/(9*d*f**3) - 21*b**2*e*h**2*i**2/(d*f**2) + 8*b**2*h**3
*i/(d*f)) + (-144*a*b*e**3*i**4*x + 576*a*b*e**2*f*h*i**3*x + 72*a*b*e**2*f
*i**4*x**2 - 864*a*b*e*f**2*h**2*i**2*x - 288*a*b*e*f**2*h*i**3*x**2 - 48*a
*b*e*f**2*i**4*x**3 + 576*a*b*f**3*h**3*i*x + 432*a*b*f**3*h**2*i**2*x**2 +
 192*a*b*f**3*h*i**3*x**3 + 36*a*b*f**3*i**4*x**4 + 300*b**2*e**3*i**4*x -
1056*b**2*e**2*f*h*i**3*x - 78*b**2*e**2*f*i**4*x**2 + 1296*b**2*e*f**2*h**
2*i**2*x + 240*b**2*e*f**2*h*i**3*x**2 + 28*b**2*e*f**2*i**4*x**3 - 576*b**
2*f**3*h**3*i*x - 216*b**2*f**3*h**2*i**2*x**2 - 64*b**2*f**3*h*i**3*x**3 -
```

```
 9*b**2*f**3*i**4*x**4)*log(c*(e + f*x))/(72*d*f**4) + (b**2*e**4*i**4 - 4*
b**2*e**3*f*h*i**3 + 6*b**2*e**2*f**2*h**2*i**2 - 4*b**2*e*f**3*h**3*i + b*
*2*f**4*h**4)*log(c*(e + f*x))**3/(3*d*f**5) + (72*a**2*e**4*i**4 - 288*a**
2*e**3*f*h*i**3 + 432*a**2*e**2*f**2*h**2*i**2 - 288*a**2*e*f**3*h**3*i + 7
2*a**2*f**4*h**4 - 300*a*b*e**4*i**4 + 1056*a*b*e**3*f*h*i**3 - 1296*a*b*e*
*2*f**2*h**2*i**2 + 576*a*b*e*f**3*h**3*i + 415*b**2*e**4*i**4 - 1360*b**2*
e**3*f*h*i**3 + 1512*b**2*e**2*f**2*h**2*i**2 - 576*b**2*e*f**3*h**3*i)*log
(e + f*x)/(72*d*f**5) + (12*a*b*e**4*i**4 - 48*a*b*e**3*f*h*i**3 + 72*a*b*e
**2*f**2*h**2*i**2 - 48*a*b*e*f**3*h**3*i + 12*a*b*f**4*h**4 - 25*b**2*e**4
*i**4 + 88*b**2*e**3*f*h*i**3 - 12*b**2*e**3*f*i**4*x - 108*b**2*e**2*f**2*
h**2*i**2 + 48*b**2*e**2*f**2*h*i**3*x + 6*b**2*e**2*f**2*i**4*x**2 + 48*b*
*2*e*f**3*h**3*i - 72*b**2*e*f**3*h**2*i**2*x - 24*b**2*e*f**3*h*i**3*x**2
- 4*b**2*e*f**3*i**4*x**3 + 48*b**2*f**4*h**3*i*x + 36*b**2*f**4*h**2*i**2*
x**2 + 16*b**2*f**4*h*i**3*x**3 + 3*b**2*f**4*i**4*x**4)*log(c*(e + f*x))**
2/(12*d*f**5)
```

3.184 $\int \frac{(h+ix)^3(a+b\log(c(e+fx)))^2}{de+dfx}\,dx$

Optimal. Leaf size=464

$$\frac{i^2(e+fx)^2(fh-ei)(a+b\log(c(e+fx)))^2}{2df^4}-\frac{3bi^2(e+fx)^2(fh-ei)(a+b\log(c(e+fx)))}{2df^4}+\frac{(fh-ei)^3(a+b\log(c(e}{3bdf^4}$$

```
[Out] -4*a*b*i*(-e*i+f*h)^2*x/d/f^3+6*b^2*i*(-e*i+f*h)^2*x/d/f^3+3/4*b^2*i^2*(-e*
i+f*h)*(f*x+e)^2/d/f^4+2/27*b^2*i^3*(f*x+e)^3/d/f^4+1/3*b^2*(-e*i+f*h)^3*ln
(f*x+e)^2/d/f^4-4*b^2*i*(-e*i+f*h)^2*(f*x+e)*ln(c*(f*x+e))/d/f^4-2*b*i*(-e*
i+f*h)^2*(f*x+e)*(a+b*ln(c*(f*x+e)))/d/f^4-3/2*b*i^2*(-e*i+f*h)*(f*x+e)^2*(
a+b*ln(c*(f*x+e)))/d/f^4-2/9*b*i^3*(f*x+e)^3*(a+b*ln(c*(f*x+e)))/d/f^4-2/3*
b*(-e*i+f*h)^3*ln(f*x+e)*(a+b*ln(c*(f*x+e)))/d/f^4+2*i*(-e*i+f*h)^2*(f*x+e)
*(a+b*ln(c*(f*x+e)))^2/d/f^4+1/2*i^2*(-e*i+f*h)*(f*x+e)^2*(a+b*ln(c*(f*x+e)
))^2/d/f^4+1/3*(i*x+h)^3*(a+b*ln(c*(f*x+e)))^2/d/f+1/3*(-e*i+f*h)^3*(a+b*ln
(c*(f*x+e)))^3/b/d/f^4
```

Rubi [A] time = 0.98, antiderivative size = 459, normalized size of antiderivative = 0.99, number of steps used = 24, number of rules used = 15, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.469, Rules used = {2411, 12, 2346, 2302, 30, 2296, 2295, 2330, 2305, 2304, 2319, 43, 2334, 14, 2301}

$$\frac{i^2(e+fx)^2(fh-ei)(a+b\log(c(e+fx)))^2}{2df^4}-\frac{bi^2(e+fx)^2(fh-ei)(a+b\log(c(e+fx)))}{2df^4}-\frac{b\left(\frac{9i^2(e+fx)^2(fh-ei)}{f^2}+\frac{18i(e+}{}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[((h + i*x)^3*(a + b*Log[c*(e + f*x)])^2)/(d*e + d*f*x),x]
```

```
[Out] (-4*a*b*i*(f*h - e*i)^2*x)/(d*f^3) + (6*b^2*i*(f*h - e*i)^2*x)/(d*f^3) + (3
*b^2*i^2*(f*h - e*i)*(e + f*x)^2)/(4*d*f^4) + (2*b^2*i^3*(e + f*x)^3)/(27*d
*f^4) + (b^2*(f*h - e*i)^3*Log[e + f*x]^2)/(3*d*f^4) - (4*b^2*i*(f*h - e*i)
^2*(e + f*x)*Log[c*(e + f*x)])/(d*f^4) - (b*i^2*(f*h - e*i)*(e + f*x)^2*(a
+ b*Log[c*(e + f*x)]))/(2*d*f^4) - (b*((18*i*(f*h - e*i)^2*(e + f*x))/f^2 +
 (9*i^2*(f*h - e*i)*(e + f*x)^2)/f^2 + (2*i^3*(e + f*x)^3)/f^2 + (6*(f*h -
e*i)^3*Log[e + f*x])/f^2)*(a + b*Log[c*(e + f*x)]))/(9*d*f^2) + (2*i*(f*h -
 e*i)^2*(e + f*x)*(a + b*Log[c*(e + f*x)])^2)/(d*f^4) + (i^2*(f*h - e*i)*(e
 + f*x)^2*(a + b*Log[c*(e + f*x)])^2)/(2*d*f^4) + ((h + i*x)^3*(a + b*Log[c
*(e + f*x)])^2)/(3*d*f) + ((f*h - e*i)^3*(a + b*Log[c*(e + f*x)])^3)/(3*b*d
*f^4)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2319

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/(e*(q + 1)), x]
- Dist[(b*n*p)/(e*(q + 1)), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 2330

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_)^(r_.))^(
q_.), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*x^n])^p, (d + e*x
^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n, p, q, r}, x]
&& IntegerQ[q] && (GtQ[q, 0] || (IGtQ[p, 0] && IntegerQ[r]))
```

Rule 2334

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*(x_)^(m_.)*((d_) + (e_.)*(x_)^(r_
.))^(q_.), x_Symbol] :> With[{u = IntHide[x^m*(d + e*x^r)^q, x]}, Simp[u*(a
 + b*Log[c*x^n]), x] - Dist[b*n, Int[SimplifyIntegrand[u/x, x], x], x]] /;
FreeQ[{a, b, c, d, e, n, r}, x] && IGtQ[q, 0] && IntegerQ[m] &&  !(EqQ[q, 1
] && EqQ[m, -1])
```

Rule 2346

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.))
/(x_), x_Symbol] :> Dist[d, Int[((d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p)/x,
 x], x] + Dist[e, Int[(d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p, x], x] /; Fre
eQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0] && GtQ[q, 0] && IntegerQ[2*q]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rubi steps

$$\int \frac{(h+184x)^3(a+b\log(c(e+fx)))^2}{de+dfx}\,dx = \frac{\text{Subst}\left(\int \frac{\left(\frac{-184e+fh}{f}+\frac{184x}{f}\right)^3(a+b\log(cx))^2}{dx}\,dx, x, e+fx\right)}{f}$$

$$= \frac{\text{Subst}\left(\int \frac{\left(\frac{-184e+fh}{f}+\frac{184x}{f}\right)^3(a+b\log(cx))^2}{x}\,dx, x, e+fx\right)}{df}$$

$$= \frac{184\,\text{Subst}\left(\int \left(\frac{-184e+fh}{f}+\frac{184x}{f}\right)^2(a+b\log(cx))^2\,dx, x, e+fx\right)}{df^2} - \frac{(184}{\ldots}$$

$$= \frac{(h+184x)^3(a+b\log(c(e+fx)))^2}{3df} - \frac{(2b)\,\text{Subst}\left(\int \frac{\left(\frac{-184e+fh}{f}+\frac{184x}{f}\right)^3(a+b}{x}\ldots\right.}{3df}$$

$$= -\frac{2b\left(\frac{1656(184e-fh)^2(e+fx)}{f^3} - \frac{152352(184e-fh)(e+fx)^2}{f^3} + \frac{6229504(e+fx)^3}{f^3} - \frac{3(184e-}{\ldots}\right.}{9df}$$

$$= -\frac{2b\left(\frac{1656(184e-fh)^2(e+fx)}{f^3} - \frac{152352(184e-fh)(e+fx)^2}{f^3} + \frac{6229504(e+fx)^3}{f^3} - \frac{3(184e-}{\ldots}\right.}{9df}$$

$$= -\frac{368ab(184e-fh)^2x}{df^3} - \frac{2b\left(\frac{1656(184e-fh)^2(e+fx)}{f^3} - \frac{152352(184e-fh)(e+fx)^2}{f^3}\ldots\right.}{\ldots}$$

$$= -\frac{736ab(184e-fh)^2x}{df^3} + \frac{368b^2(184e-fh)^2x}{df^3} - \frac{8464b^2(184e-fh)(e}{df^4}\ldots$$

$$= -\frac{736ab(184e-fh)^2x}{df^3} + \frac{1104b^2(184e-fh)^2x}{df^3} - \frac{25392b^2(184e-fh)(}{df^4}\ldots$$

Mathematica [A] time = 0.36, size = 267, normalized size = 0.58

$$8bi^3\left(bfx\left(3e^2+3efx+f^2x^2\right)-3(e+fx)^3(a+b\log(c(e+fx)))\right)+162i^2(e+fx)^2(fh-ei)(a+b\log(c(e+f$$

Antiderivative was successfully verified.

```
[In] Integrate[((h + i*x)^3*(a + b*Log[c*(e + f*x)])^2)/(d*e + d*f*x),x]
```

```
[Out] (324*i*(f*h - e*i)^2*(e + f*x)*(a + b*Log[c*(e + f*x)])^2 + 162*i^2*(f*h -
e*i)*(e + f*x)^2*(a + b*Log[c*(e + f*x)])^2 + 36*i^3*(e + f*x)^3*(a + b*Log
[c*(e + f*x)])^2 + (36*(f*h - e*i)^3*(a + b*Log[c*(e + f*x)])^3)/b - 648*b*
i*(f*h - e*i)^2*((a - b)*f*x + b*(e + f*x)*Log[c*(e + f*x)]) + 81*b*i^2*(f*
h - e*i)*(b*f*x*(2*e + f*x) - 2*(e + f*x)^2*(a + b*Log[c*(e + f*x)])) + 8*b
*i^3*(b*f*x*(3*e^2 + 3*e*f*x + f^2*x^2) - 3*(e + f*x)^3*(a + b*Log[c*(e + f
*x)])))/(108*d*f^4)
```

fricas [A] time = 0.44, size = 606, normalized size = 1.31

$$4\left(9a^2-6ab+2b^2\right)f^3i^3x^3+36\left(b^2f^3h^3-3b^2ef^2h^2i+3b^2e^2fhi^2-b^2e^3i^3\right)\log\left(cfx+ce\right)^3+3\left(27\left(2a^2-2a\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^3*(a+b*log(c*(f*x+e)))^2/(d*f*x+d*e),x, algorithm="fricas
")
```

```
[Out] 1/108*(4*(9*a^2 - 6*a*b + 2*b^2)*f^3*i^3*x^3 + 36*(b^2*f^3*h^3 - 3*b^2*e*f^
2*h^2*i + 3*b^2*e^2*f*h*i^2 - b^2*e^3*i^3)*log(c*f*x + c*e)^3 + 3*(27*(2*a^
2 - 2*a*b + b^2)*f^3*h*i^2 - (18*a^2 - 30*a*b + 19*b^2)*e*f^2*i^3)*x^2 + 18
*(2*b^2*f^3*i^3*x^3 + 6*a*b*f^3*h^3 - 18*(a*b - b^2)*e*f^2*h^2*i + 9*(2*a*b
 - 3*b^2)*e^2*f*h*i^2 - (6*a*b - 11*b^2)*e^3*i^3 + 3*(3*b^2*f^3*h*i^2 - b^2
*e*f^2*i^3)*x^2 + 6*(3*b^2*f^3*h^2*i - 3*b^2*e*f^2*h*i^2 + b^2*e^2*f*i^3)*x
)*log(c*f*x + c*e)^2 + 6*(54*(a^2 - 2*a*b + 2*b^2)*f^3*h^2*i - 27*(2*a^2 -
6*a*b + 7*b^2)*e*f^2*h*i^2 + (18*a^2 - 66*a*b + 85*b^2)*e^2*f*i^3)*x + 6*(4
*(3*a*b - b^2)*f^3*i^3*x^3 + 18*a^2*f^3*h^3 - 54*(a^2 - 2*a*b + 2*b^2)*e*f^
2*h^2*i + 27*(2*a^2 - 6*a*b + 7*b^2)*e^2*f*h*i^2 - (18*a^2 - 66*a*b + 85*b^
2)*e^3*i^3 + 3*(9*(2*a*b - b^2)*f^3*h*i^2 - (6*a*b - 5*b^2)*e*f^2*i^3)*x^2
 + 6*(18*(a*b - b^2)*f^3*h^2*i - 9*(2*a*b - 3*b^2)*e*f^2*h*i^2 + (6*a*b - 11
*b^2)*e^2*f*i^3)*x)*log(c*f*x + c*e))/(d*f^4)
```

giac [B] time = 0.26, size = 1041, normalized size = 2.24

$$324b^2f^3h^2ix\log\left(cfx+ce\right)^2-36b^2f^3ix^3\log\left(cfx+ce\right)^2+36b^2f^3h^3\log\left(cfx+ce\right)^3-108b^2f^2h^2ie\log\left(cfx\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^3*(a+b*log(c*(f*x+e)))^2/(d*f*x+d*e),x, algorithm="giac")
```

```
[Out] 1/108*(324*b^2*f^3*h^2*i*x*log(c*f*x + c*e)^2 - 36*b^2*f^3*i*x^3*log(c*f*x
+ c*e)^2 + 36*b^2*f^3*h^3*log(c*f*x + c*e)^3 - 108*b^2*f^2*h^2*i*e*log(c*f*
x + c*e)^3 + 648*a*b*f^3*h^2*i*x*log(c*f*x + c*e) - 648*b^2*f^3*h^2*i*x*log
(c*f*x + c*e) - 72*a*b*f^3*i*x^3*log(c*f*x + c*e) + 24*b^2*f^3*i*x^3*log(c*
f*x + c*e) + 108*a*b*f^3*h^3*log(c*f*x + c*e)^2 - 162*b^2*f^3*h*x^2*log(c*f
*x + c*e)^2 - 324*a*b*f^2*h^2*i*e*log(c*f*x + c*e)^2 + 324*b^2*f^2*h^2*i*e*
log(c*f*x + c*e)^2 + 54*b^2*f^2*i*x^2*e*log(c*f*x + c*e)^2 + 324*a^2*f^3*h^
2*i*x - 648*a*b*f^3*h^2*i*x + 648*b^2*f^3*h^2*i*x - 36*a^2*f^3*i*x^3 + 24*a
*b*f^3*i*x^3 - 8*b^2*f^3*i*x^3 - 324*a*b*f^3*h*x^2*log(c*f*x + c*e) + 162*b
^2*f^3*h*x^2*log(c*f*x + c*e) + 108*a*b*f^2*i*x^2*e*log(c*f*x + c*e) - 90*b
```

```
^2*f^2*i*x^2*e*log(c*f*x + c*e) + 324*b^2*f^2*h*x*e*log(c*f*x + c*e)^2 + 10
8*a^2*f^3*h^3*log(f*x + e) - 324*a^2*f^2*h^2*i*e*log(f*x + e) + 648*a*b*f^2
*h^2*i*e*log(f*x + e) - 648*b^2*f^2*h^2*i*e*log(f*x + e) - 162*a^2*f^3*h*x^
2 + 162*a*b*f^3*h*x^2 - 81*b^2*f^3*h*x^2 + 54*a^2*f^2*i*x^2*e - 90*a*b*f^2*
i*x^2*e + 57*b^2*f^2*i*x^2*e + 648*a*b*f^2*h*x*e*log(c*f*x + c*e) - 972*b^2
*f^2*h*x*e*log(c*f*x + c*e) - 108*b^2*f*i*x*e^2*log(c*f*x + c*e)^2 - 108*b^
2*f*h*e^2*log(c*f*x + c*e)^3 + 324*a^2*f^2*h*x*e - 972*a*b*f^2*h*x*e + 1134
*b^2*f^2*h*x*e - 216*a*b*f*i*x*e^2*log(c*f*x + c*e) + 396*b^2*f*i*x*e^2*log
(c*f*x + c*e) - 324*a*b*f*h*e^2*log(c*f*x + c*e)^2 + 486*b^2*f*h*e^2*log(c*
f*x + c*e)^2 + 36*b^2*i*e^3*log(c*f*x + c*e)^3 - 108*a^2*f*i*x*e^2 + 396*a*
b*f*i*x*e^2 - 510*b^2*f*i*x*e^2 + 108*a*b*i*e^3*log(c*f*x + c*e)^2 - 198*b^
2*i*e^3*log(c*f*x + c*e)^2 - 324*a^2*f*h*e^2*log(f*x + e) + 972*a*b*f*h*e^2
*log(f*x + e) - 1134*b^2*f*h*e^2*log(f*x + e) + 108*a^2*i*e^3*log(f*x + e)
- 396*a*b*i*e^3*log(f*x + e) + 510*b^2*i*e^3*log(f*x + e))/(d*f^4)
```

maple [B] time = 0.06, size = 1485, normalized size = 3.20

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)^3*(a+b*ln(c*(f*x+e)))^2/(d*f*x+d*e),x)
```

```
[Out] 1/3/f/d*a^2*i^3*x^3+2/f^3/d*a*b*e^2*i^3*ln(c*f*x+c*e)*x-1/f^2/d*a*b*e*i^3*l
n(c*f*x+c*e)*x^2+3/f^3/d*a*b*e^2*h*i^2*ln(c*f*x+c*e)^2-3/f^2/d*a*b*e*h^2*i*
ln(c*f*x+c*e)^2+3/f/d*a*b*h*i^2*ln(c*f*x+c*e)*x^2+6/f/d*a*b*h^2*i*ln(c*f*x+
c*e)*x+6/f^2/d*a*b*h^2*i*ln(c*f*x+c*e)*e-3/f^2/d*b^2*e*h*i^2*ln(c*f*x+c*e)^
2*x+9/f^2/d*b^2*e*h*i^2*ln(c*f*x+c*e)*x-9/f^3/d*a*b*e^2*h*i^2*ln(c*f*x+c*e)
+9/f^2/d*a*b*e*h*i^2*x-1/3/f^4/d*b^2*e^3*i^3*ln(c*f*x+c*e)^3+1/f/d*a*b*h^3*
ln(c*f*x+c*e)^2+1/3/f/d*b^2*i^3*ln(c*f*x+c*e)^2*x^3+1/f^3/d*a^2*e^2*i^3*x+3
/f/d*a^2*h^2*i*x+11/6/f^4/d*b^2*e^3*i^3*ln(c*f*x+c*e)^2+575/108/f^4/d*b^2*e
^3*i^3+11/6/f^4/d*a^2*e^3*i^3-6/f^2/d*a*b*e*h^2*i+21/2/f^3/d*a*b*e^2*h*i^2-
11/3/f^3/d*a*b*e^2*i^3*x-3/f^2/d*a^2*e*h*i^2*x-1/f^4/d*a*b*e^3*i^3*ln(c*f*x
+c*e)^2+2/27/f/d*b^2*i^3*x^3+1/f/d*a^2*h^3*ln(c*f*x+c*e)+1/3/f/d*b^2*h^3*ln
(c*f*x+c*e)^3-1/f^4/d*a^2*e^3*i^3*ln(c*f*x+c*e)-6/f/d*b^2*h^2*i*ln(c*f*x+c*
e)*x-6/f^2/d*b^2*h^2*i*ln(c*f*x+c*e)*e+2/3/f/d*a*b*i^3*ln(c*f*x+c*e)*x^3-85
/18/f^4/d*b^2*e^3*i^3*ln(c*f*x+c*e)-2/9/f/d*b^2*i^3*ln(c*f*x+c*e)*x^3-2/9/f
/d*a*b*i^3*x^3+85/18/f^3/d*b^2*e^2*i^3*x+3/4/f/d*b^2*h*i^2*x^2-1/2/f^2/d*a^
2*i^3*x^2*e+6/f/d*b^2*h^2*i*x+3/2/f/d*a^2*h*i^2*x^2-19/36/f^2/d*b^2*e*i^3*x
^2-9/2/f^3/d*b^2*e^2*h*i^2*ln(c*f*x+c*e)^2-1/2/f^2/d*b^2*e*i^3*ln(c*f*x+c*e
)^2*x^2+5/6/f^2/d*b^2*e*i^3*ln(c*f*x+c*e)*x^2-11/3/f^3/d*b^2*e^2*i^3*ln(c*f
*x+c*e)*x+11/3/f^4/d*a*b*e^3*i^3*ln(c*f*x+c*e)+3/f/d*b^2*h^2*i*ln(c*f*x+c*e
)^2*x+3/f^2/d*b^2*h^2*i*ln(c*f*x+c*e)^2*e-1/f^2/d*b^2*e*h^2*i*ln(c*f*x+c*e)
^3+3/2/f/d*b^2*h*i^2*ln(c*f*x+c*e)^2*x^2-3/2/f/d*b^2*h*i^2*ln(c*f*x+c*e)*x^
2+3/f^3/d*a^2*e^2*h*i^2*ln(c*f*x+c*e)-3/f^2/d*a^2*e*h^2*i*ln(c*f*x+c*e)+1/f
^3/d*b^2*e^2*h*i^2*ln(c*f*x+c*e)^3+21/2/f^3/d*b^2*e^2*h*i^2*ln(c*f*x+c*e)+1
/f^3/d*b^2*e^2*i^3*ln(c*f*x+c*e)^2*x-6/f/d*a*b*h^2*i*x-3/2/f/d*a*b*h*i^2*x^
2+5/6/f^2/d*a*b*e*i^3*x^2-21/2/f^2/d*b^2*e*h*i^2*x-45/4/f^3/d*b^2*e^2*h*i^2
+6/f^2/d*b^2*e*h^2*i-85/18/f^4/d*a*b*e^3*i^3-9/2/f^3/d*a^2*e^2*h*i^2+3/f^2/
d*a^2*e*h^2*i-6/f^2/d*a*b*e*h*i^2*ln(c*f*x+c*e)*x
```

maxima [B] time = 0.68, size = 964, normalized size = 2.08

$$6\,abh^2i\left(\frac{x}{df}-\frac{e\log\left(fx+e\right)}{df^2}\right)\log\left(cfx+ce\right)-\frac{1}{3}\,abi^3\left(\frac{6\,e^3\log\left(fx+e\right)}{df^4}-\frac{2\,f^2x^3-3\,efx^2+6\,e^2x}{df^3}\right)\log\left(cfx+ce\right)+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^3*(a+b*log(c*(f*x+e)))^2/(d*f*x+d*e),x, algorithm="maxima
")
```

```
[Out] 6*a*b*h^2*i*(x/(d*f) - e*log(f*x + e)/(d*f^2))*log(c*f*x + c*e) - 1/3*a*b*i
^3*(6*e^3*log(f*x + e)/(d*f^4) - (2*f^2*x^3 - 3*e*f*x^2 + 6*e^2*x)/(d*f^3))
*log(c*f*x + c*e) + 3*a*b*h*i^2*(2*e^2*log(f*x + e)/(d*f^3) + (f*x^2 - 2*e*
x)/(d*f^2))*log(c*f*x + c*e) - a*b*h^3*(2*log(c*f*x + c*e)*log(d*f*x + d*e)
/(d*f) - (log(f*x + e)^2 + 2*log(f*x + e)*log(c))/(d*f)) + 3*a^2*h^2*i*(x/(
d*f) - e*log(f*x + e)/(d*f^2)) - 1/6*a^2*i^3*(6*e^3*log(f*x + e)/(d*f^4) -
(2*f^2*x^3 - 3*e*f*x^2 + 6*e^2*x)/(d*f^3)) + 3/2*a^2*h*i^2*(2*e^2*log(f*x +
 e)/(d*f^3) + (f*x^2 - 2*e*x)/(d*f^2)) + 1/3*b^2*h^3*log(c*f*x + c*e)^3/(d*
f) + 2*a*b*h^3*log(c*f*x + c*e)*log(d*f*x + d*e)/(d*f) + a^2*h^3*log(d*f*x
+ d*e)/(d*f) + 3*(e*log(f*x + e)^2 - 2*f*x + 2*e*log(f*x + e))*a*b*h^2*i/(d
*f^2) - 3/2*(f^2*x^2 + 2*e^2*log(f*x + e)^2 - 6*e*f*x + 6*e^2*log(f*x + e))
*a*b*h*i^2/(d*f^3) - (c^2*e*log(c*f*x + c*e)^3 - 3*(c*f*x + c*e)*(c*log(c*f
*x + c*e)^2 - 2*c*log(c*f*x + c*e) + 2*c))*b^2*h^2*i/(c^2*d*f^2) - 1/18*(4*
f^3*x^3 - 15*e*f^2*x^2 - 18*e^3*log(f*x + e)^2 + 66*e^2*f*x - 66*e^3*log(f*
x + e))*a*b*i^3/(d*f^4) + 1/4*(4*c^3*e^2*log(c*f*x + c*e)^3 + 3*(c*f*x + c*
e)^2*(2*c*log(c*f*x + c*e)^2 - 2*c*log(c*f*x + c*e) + c) - 24*(c^2*e*log(c*
f*x + c*e)^2 - 2*c^2*e*log(c*f*x + c*e) + 2*c^2*e)*(c*f*x + c*e))*b^2*h*i^2
/(c^3*d*f^3) - 1/108*(36*c^4*e^3*log(c*f*x + c*e)^3 - 4*(c*f*x + c*e)^3*(9*
c*log(c*f*x + c*e)^2 - 6*c*log(c*f*x + c*e) + 2*c) + 81*(2*c^2*e*log(c*f*x
+ c*e)^2 - 2*c^2*e*log(c*f*x + c*e) + c^2*e)*(c*f*x + c*e)^2 - 324*(c^3*e^2
*log(c*f*x + c*e)^2 - 2*c^3*e^2*log(c*f*x + c*e) + 2*c^3*e^2)*(c*f*x + c*e)
)*b^2*i^3/(c^4*d*f^4)
```

mupad [B] time = 0.69, size = 803, normalized size = 1.73

$$x^2\left(\frac{i^2\left(18a^2fh-5b^2ei+9b^2fh+6abei-18abfh\right)}{12df^2}-\frac{ei^3\left(9a^2-6ab+2b^2\right)}{18df^2}\right)+\ln\left(c\left(e+fx\right)\right)^2\left(f\left(\frac{b}{3}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((h + i*x)^3*(a + b*log(c*(e + f*x)))^2)/(d*e + d*f*x),x)
```

```
[Out] x^2*((i^2*(18*a^2*f*h - 5*b^2*e*i + 9*b^2*f*h + 6*a*b*e*i - 18*a*b*f*h))/(1
2*d*f^2) - (e*i^3*(9*a^2 - 6*a*b + 2*b^2))/(18*d*f^2)) + log(c*(e + f*x))^2
*(f*((b^2*i^3*x^3)/(3*d*f^2) - (b^2*i^2*x^2*(e*i - 3*f*h))/(2*d*f^3) + (b^2
*i*x*(e^2*i^2 + 3*f^2*h^2 - 3*e*f*h*i))/(d*f^4)) + (11*b^2*e^3*i^3 - 6*a*b*
e^3*i^3 + 6*a*b*f^3*h^3 + 18*b^2*e*f^2*h^2*i - 27*b^2*e^2*f*h*i^2 - 18*a*b*
e*f^2*h^2*i + 18*a*b*e^2*f*h*i^2)/(6*d*f^4)) + x*((66*b^2*e^2*i^3 + 54*a^2*
f^2*h^2*i + 108*b^2*f^2*h^2*i - 36*a*b*e^2*i^3 - 108*a*b*f^2*h^2*i - 162*b^
2*e*f*h*i^2 + 108*a*b*e*f*h*i^2)/(18*d*f^3) - (e*((i^2*(18*a^2*f*h - 5*b^2*
e*i + 9*b^2*f*h + 6*a*b*e*i - 18*a*b*f*h))/(6*d*f^2) - (e*i^3*(9*a^2 - 6*a*
b + 2*b^2))/(9*d*f^2)))/f) + f*log(c*(e + f*x))*((x^2*(5*b^2*e*i^3 - 6*a*b*
e*i^3 - 9*b^2*f*h*i^2 + 18*a*b*f*h*i^2))/(6*d*f^3) - (x*(11*b^2*e^2*i^3 + 1
8*b^2*f^2*h^2*i - 6*a*b*e^2*i^3 - 18*a*b*f^2*h^2*i - 27*b^2*e*f*h*i^2 + 18*
a*b*e*f*h*i^2))/(3*d*f^4) + (2*b*i^3*x^3*(3*a - b))/(9*d*f^2)) - (log(e + f
*x)*(18*a^2*e^3*i^3 - 18*a^2*f^3*h^3 + 85*b^2*e^3*i^3 - 66*a*b*e^3*i^3 + 54
*a^2*e*f^2*h^2*i - 54*a^2*e^2*f*h*i^2 + 108*b^2*e*f^2*h^2*i - 189*b^2*e^2*f
*h*i^2 - 108*a*b*e*f^2*h^2*i + 162*a*b*e^2*f*h*i^2))/(18*d*f^4) + (i^3*x^3*
(9*a^2 - 6*a*b + 2*b^2))/(27*d*f) - (b^2*log(c*(e + f*x))^3*(e^3*i^3 - f^3*
h^3 + 3*e*f^2*h^2*i - 3*e^2*f*h*i^2))/(3*d*f^4)
```

sympy [B] time = 5.63, size = 918, normalized size = 1.98

$$x^3\left(\frac{a^2i^3}{3df}-\frac{2abi^3}{9df}+\frac{2b^2i^3}{27df}\right)+x^2\left(-\frac{a^2ei^3}{2df^2}+\frac{3a^2hi^2}{2df}+\frac{5abei^3}{6df^2}-\frac{3abhi^2}{2df}-\frac{19b^2ei^3}{36df^2}+\frac{3b^2hi^2}{4df}\right)+x\left(\frac{a^2e^2i^3}{df^3}-\frac{3a^2ehi^2}{df^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)**3*(a+b*ln(c*(f*x+e)))**2/(d*f*x+d*e),x)
```

```
[Out] x**3*(a**2*i**3/(3*d*f) - 2*a*b*i**3/(9*d*f) + 2*b**2*i**3/(27*d*f)) + x**2
*(-a**2*e*i**3/(2*d*f**2) + 3*a**2*h*i**2/(2*d*f) + 5*a*b*e*i**3/(6*d*f**2)
 - 3*a*b*h*i**2/(2*d*f) - 19*b**2*e*i**3/(36*d*f**2) + 3*b**2*h*i**2/(4*d*f
)) + x*(a**2*e**2*i**3/(d*f**3) - 3*a**2*e*h*i**2/(d*f**2) + 3*a**2*h**2*i/
(d*f) - 11*a*b*e**2*i**3/(3*d*f**3) + 9*a*b*e*h*i**2/(d*f**2) - 6*a*b*h**2*
i/(d*f) + 85*b**2*e**2*i**3/(18*d*f**3) - 21*b**2*e*h*i**2/(2*d*f**2) + 6*b
**2*h**2*i/(d*f)) + (36*a*b*e**2*i**3*x - 108*a*b*e*f*h*i**2*x - 18*a*b*e*f
*i**3*x**2 + 108*a*b*f**2*h**2*i*x + 54*a*b*f**2*h*i**2*x**2 + 12*a*b*f**2*
i**3*x**3 - 66*b**2*e**2*i**3*x + 162*b**2*e*f*h*i**2*x + 15*b**2*e*f*i**3*
x**2 - 108*b**2*f**2*h**2*i*x - 27*b**2*f**2*h*i**2*x**2 - 4*b**2*f**2*i**3
*x**3)*log(c*(e + f*x))/(18*d*f**3) + (-b**2*e**3*i**3 + 3*b**2*e**2*f*h*i*
*2 - 3*b**2*e*f**2*h**2*i + b**2*f**3*h**3)*log(c*(e + f*x))**3/(3*d*f**4)
- (18*a**2*e**3*i**3 - 54*a**2*e**2*f*h*i**2 + 54*a**2*e*f**2*h**2*i - 18*a
**2*f**3*h**3 - 66*a*b*e**3*i**3 + 162*a*b*e**2*f*h*i**2 - 108*a*b*e*f**2*h
**2*i + 85*b**2*e**3*i**3 - 189*b**2*e**2*f*h*i**2 + 108*b**2*e*f**2*h**2*i
)*log(e + f*x)/(18*d*f**4) + (-6*a*b*e**3*i**3 + 18*a*b*e**2*f*h*i**2 - 18*
a*b*e*f**2*h**2*i + 6*a*b*f**3*h**3 + 11*b**2*e**3*i**3 - 27*b**2*e**2*f*h*
i**2 + 6*b**2*e**2*f*i**3*x + 18*b**2*e*f**2*h**2*i - 18*b**2*e*f**2*h*i**2
*x - 3*b**2*e*f**2*i**3*x**2 + 18*b**2*f**3*h**2*i*x + 9*b**2*f**3*h*i**2*x
**2 + 2*b**2*f**3*i**3*x**3)*log(c*(e + f*x))**2/(6*d*f**4)
```

3.185 $\int \frac{(h+ix)^2(a+b\log(c(e+fx)))^2}{de+dfx}\,dx$

Optimal. Leaf size=238

$$\frac{(fh-ei)^2(a+b\log(c(e+fx)))^3}{3bdf^3}+\frac{2i(e+fx)(fh-ei)(a+b\log(c(e+fx)))^2}{df^3}+\frac{i^2(e+fx)^2(a+b\log(c(e+fx)))}{2df^3}$$

```
[Out] -4*a*b*i*(-e*i+f*h)*x/d/f^2+4*b^2*i*(-e*i+f*h)*x/d/f^2+1/4*b^2*i^2*(f*x+e)^
2/d/f^3-4*b^2*i*(-e*i+f*h)*(f*x+e)*ln(c*(f*x+e))/d/f^3-1/2*b*i^2*(f*x+e)^2*
(a+b*ln(c*(f*x+e)))/d/f^3+2*i*(-e*i+f*h)*(f*x+e)*(a+b*ln(c*(f*x+e)))^2/d/f^
3+1/2*i^2*(f*x+e)^2*(a+b*ln(c*(f*x+e)))^2/d/f^3+1/3*(-e*i+f*h)^2*(a+b*ln(c*
(f*x+e)))^3/b/d/f^3
```

Rubi [A] time = 0.51, antiderivative size = 238, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 10, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.312, Rules used = {2411, 12, 2346, 2302, 30, 2296, 2295, 2330, 2305, 2304}

$$\frac{(fh-ei)^2(a+b\log(c(e+fx)))^3}{3bdf^3}+\frac{2i(e+fx)(fh-ei)(a+b\log(c(e+fx)))^2}{df^3}+\frac{i^2(e+fx)^2(a+b\log(c(e+fx)))}{2df^3}$$

Antiderivative was successfully verified.

```
[In] Int[((h + i*x)^2*(a + b*Log[c*(e + f*x)])^2)/(d*e + d*f*x),x]
```

```
[Out] (-4*a*b*i*(f*h - e*i)*x)/(d*f^2) + (4*b^2*i*(f*h - e*i)*x)/(d*f^2) + (b^2*i
^2*(e + f*x)^2)/(4*d*f^3) - (4*b^2*i*(f*h - e*i)*(e + f*x)*Log[c*(e + f*x)]
)/(d*f^3) - (b*i^2*(e + f*x)^2*(a + b*Log[c*(e + f*x)]))/(2*d*f^3) + (2*i*(
f*h - e*i)*(e + f*x)*(a + b*Log[c*(e + f*x)])^2)/(d*f^3) + (i^2*(e + f*x)^2
*(a + b*Log[c*(e + f*x)])^2)/(2*d*f^3) + ((f*h - e*i)^2*(a + b*Log[c*(e + f
*x)])^3)/(3*b*d*f^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2330

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_)^(r_.))^(
q_.), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*x^n])^p, (d + e*x
^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n, p, q, r}, x]
&& IntegerQ[q] && (GtQ[q, 0] || (IGtQ[p, 0] && IntegerQ[r]))
```

Rule 2346

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.))
/(x_), x_Symbol] :> Dist[d, Int[((d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p)/x,
 x], x] + Dist[e, Int[(d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p, x], x] /; Fre
eQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0] && GtQ[q, 0] && IntegerQ[2*q]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rubi steps

$$\int \frac{(h+185x)^2(a+b\log(c(e+fx)))^2}{de+dfx}\,dx = \frac{\text{Subst}\left(\int \frac{\left(\frac{-185e+fh}{f}+\frac{185x}{f}\right)^2(a+b\log(cx))^2}{dx}\,dx, x, e+fx\right)}{f}$$

$$= \frac{\text{Subst}\left(\int \frac{\left(\frac{-185e+fh}{f}+\frac{185x}{f}\right)^2(a+b\log(cx))^2}{x}\,dx, x, e+fx\right)}{df}$$

$$= \frac{185\,\text{Subst}\left(\int \left(\frac{-185e+fh}{f}+\frac{185x}{f}\right)(a+b\log(cx))^2\,dx, x, e+fx\right)}{df^2} - \text{(18}$$

$$= \frac{185\,\text{Subst}\left(\int \left(\frac{(-185e+fh)(a+b\log(cx))^2}{f}+\frac{185x(a+b\log(cx))^2}{f}\right)dx, x, e+fx\right.}{df^2}$$

$$= -\frac{185(185e-fh)(e+fx)(a+b\log(c(e+fx)))^2}{df^3} + \frac{34225\,\text{Subst}\left(\int\right.}{}$$

$$= \frac{370ab(185e-fh)x}{df^2} - \frac{370(185e-fh)(e+fx)(a+b\log(c(e+fx))}{df^3}$$

$$= \frac{740ab(185e-fh)x}{df^2} - \frac{370b^2(185e-fh)x}{df^2} + \frac{34225b^2(e+fx)^2}{4df^3} + \text{3}$$

$$= \frac{740ab(185e-fh)x}{df^2} - \frac{740b^2(185e-fh)x}{df^2} + \frac{34225b^2(e+fx)^2}{4df^3} + \text{7}$$

Mathematica [A] time = 0.22, size = 171, normalized size = 0.72

$$\frac{\frac{4(fh-ei)^2(a+b\log(c(e+fx)))^3}{b} + 24i(e+fx)(fh-ei)(a+b\log(c(e+fx)))^2 - 48bi(fh-ei)(fx(a-b)+b(e+fx)\log}{12df}$$

Antiderivative was successfully verified.

```
[In] Integrate[((h + i*x)^2*(a + b*Log[c*(e + f*x)])^2)/(d*e + d*f*x),x]
```

```
[Out] (24*i*(f*h - e*i)*(e + f*x)*(a + b*Log[c*(e + f*x)])^2 + 6*i^2*(e + f*x)^2*
(a + b*Log[c*(e + f*x)])^2 + (4*(f*h - e*i)^2*(a + b*Log[c*(e + f*x)])^3)/b
 - 48*b*i*(f*h - e*i)*((a - b)*f*x + b*(e + f*x)*Log[c*(e + f*x)]) + 3*b*i^
2*(b*f*x*(2*e + f*x) - 2*(e + f*x)^2*(a + b*Log[c*(e + f*x)])))/(12*d*f^3)
```

fricas [A] time = 0.42, size = 336, normalized size = 1.41

$$\frac{3\left(2a^2-2ab+b^2\right)f^2i^2x^2 + 4\left(b^2f^2h^2-2b^2efhi+b^2e^2i^2\right)\log\left(cfx+ce\right)^3 + 6\left(b^2f^2i^2x^2+2abf^2h^2-4\left(ab-\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2*(a+b*log(c*(f*x+e)))^2/(d*f*x+d*e),x, algorithm="fricas
")
```

```
[Out] 1/12*(3*(2*a^2 - 2*a*b + b^2)*f^2*i^2*x^2 + 4*(b^2*f^2*h^2 - 2*b^2*e*f*h*i
+ b^2*e^2*i^2)*log(c*f*x + c*e)^3 + 6*(b^2*f^2*i^2*x^2 + 2*a*b*f^2*h^2 - 4*
(a*b - b^2)*e*f*h*i + (2*a*b - 3*b^2)*e^2*i^2 + 2*(2*b^2*f^2*h*i - b^2*e*f*
i^2)*x)*log(c*f*x + c*e)^2 + 6*(4*(a^2 - 2*a*b + 2*b^2)*f^2*h*i - (2*a^2 -
6*a*b + 7*b^2)*e*f*i^2)*x + 6*((2*a*b - b^2)*f^2*i^2*x^2 + 2*a^2*f^2*h^2 -
```

```
4*(a^2 - 2*a*b + 2*b^2)*e*f*h*i + (2*a^2 - 6*a*b + 7*b^2)*e^2*i^2 + 2*(4*(a
*b - b^2)*f^2*h*i - (2*a*b - 3*b^2)*e*f*i^2)*x)*log(c*f*x + c*e))/(d*f^3)
```

giac [B] time = 0.21, size = 560, normalized size = 2.35

$$\frac{24\,b^2f^2hix\log\left(cfx+ce\right)^2+4\,b^2f^2h^2\log\left(cfx+ce\right)^3-8\,b^2fhie\log\left(cfx+ce\right)^3+48\,abf^2hix\log\left(cfx+ce\right)-4}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2*(a+b*log(c*(f*x+e)))^2/(d*f*x+d*e),x, algorithm="giac")
```

```
[Out] 1/12*(24*b^2*f^2*h*i*x*log(c*f*x + c*e)^2 + 4*b^2*f^2*h^2*log(c*f*x + c*e)^
3 - 8*b^2*f*h*i*e*log(c*f*x + c*e)^3 + 48*a*b*f^2*h*i*x*log(c*f*x + c*e) -
48*b^2*f^2*h*i*x*log(c*f*x + c*e) + 12*a*b*f^2*h^2*log(c*f*x + c*e)^2 - 6*b
^2*f^2*x^2*log(c*f*x + c*e)^2 - 24*a*b*f*h*i*e*log(c*f*x + c*e)^2 + 24*b^2*
f*h*i*e*log(c*f*x + c*e)^2 + 24*a^2*f^2*h*i*x - 48*a*b*f^2*h*i*x + 48*b^2*f
^2*h*i*x - 12*a*b*f^2*x^2*log(c*f*x + c*e) + 6*b^2*f^2*x^2*log(c*f*x + c*e)
 + 12*b^2*f*x*e*log(c*f*x + c*e)^2 + 12*a^2*f^2*h^2*log(f*x + e) - 24*a^2*f
*h*i*e*log(f*x + e) + 48*a*b*f*h*i*e*log(f*x + e) - 48*b^2*f*h*i*e*log(f*x
+ e) - 6*a^2*f^2*x^2 + 6*a*b*f^2*x^2 - 3*b^2*f^2*x^2 + 24*a*b*f*x*e*log(c*f
*x + c*e) - 36*b^2*f*x*e*log(c*f*x + c*e) - 4*b^2*e^2*log(c*f*x + c*e)^3 +
12*a^2*f*x*e - 36*a*b*f*x*e + 42*b^2*f*x*e - 12*a*b*e^2*log(c*f*x + c*e)^2
+ 18*b^2*e^2*log(c*f*x + c*e)^2 - 12*a^2*e^2*log(f*x + e) + 36*a*b*e^2*log(
f*x + e) - 42*b^2*e^2*log(f*x + e))/(d*f^3)
```

maple [B] time = 0.05, size = 825, normalized size = 3.47

$$\frac{b^2i^2x^2\ln\left(cfx+ce\right)^2}{2df}+\frac{ab\,i^2x^2\ln\left(cfx+ce\right)}{df}+\frac{b^2e^2i^2\ln\left(cfx+ce\right)^3}{3d\,f^3}-\frac{2b^2ehi\ln\left(cfx+ce\right)^3}{3d\,f^2}-\frac{b^2e\,i^2x\ln\left(cfx+ce\right)^2}{d\,f^2}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)^2*(a+b*ln(c*(f*x+e)))^2/(d*f*x+d*e),x)
```

```
[Out] 1/4/f/d*b^2*i^2*x^2-3/2/f^3/d*b^2*e^2*i^2*ln(c*f*x+c*e)^2+1/3/f^3/d*b^2*e^2
*i^2*ln(c*f*x+c*e)^3+7/2/f^3/d*b^2*e^2*i^2*ln(c*f*x+c*e)+1/f/d*a*b*h^2*ln(c
*f*x+c*e)^2+1/2/f/d*b^2*i^2*ln(c*f*x+c*e)^2*x^2+1/f^3/d*a^2*e^2*i^2*ln(c*f*
x+c*e)-15/4/f^3/d*b^2*e^2*i^2-3/2/f^3/d*a^2*e^2*i^2-1/f^2/d*a^2*e*i^2*x+2/f
/d*a^2*h*i*x-1/2/f/d*b^2*i^2*ln(c*f*x+c*e)*x^2-2/f^2/d*a*b*e*h*i*ln(c*f*x+c
*e)^2-2/f^2/d*a*b*e*i^2*ln(c*f*x+c*e)*x+4/f/d*a*b*h*i*ln(c*f*x+c*e)*x+4/f^2
/d*a*b*h*i*ln(c*f*x+c*e)*e-4/f^2/d*a*b*e*h*i+1/2/f/d*a^2*i^2*x^2+1/3/f/d*b^
2*h^2*ln(c*f*x+c*e)^3+1/f/d*a^2*h^2*ln(c*f*x+c*e)+4/f/d*b^2*h*i*x-1/2/f/d*a
*b*i^2*x^2-7/2/f^2/d*b^2*e*i^2*x+4/f^2/d*b^2*e*h*i+7/2/f^3/d*a*b*e^2*i^2+2/
f^2/d*a^2*e*h*i-4/f/d*b^2*h*i*ln(c*f*x+c*e)*x-4/f^2/d*b^2*h*i*ln(c*f*x+c*e)
*e+3/f^2/d*a*b*e*i^2*x-4/f/d*a*b*h*i*x+2/f^2/d*b^2*h*i*ln(c*f*x+c*e)^2*e+2/
f/d*b^2*h*i*ln(c*f*x+c*e)^2*x+3/f^2/d*b^2*e*i^2*ln(c*f*x+c*e)*x+1/f^3/d*a*b
*e^2*i^2*ln(c*f*x+c*e)^2-2/3/f^2/d*b^2*e*h*i*ln(c*f*x+c*e)^3+1/f/d*a*b*i^2*
ln(c*f*x+c*e)*x^2-3/f^3/d*a*b*e^2*i^2*ln(c*f*x+c*e)-2/f^2/d*a^2*e*h*i*ln(c*
f*x+c*e)-1/f^2/d*b^2*e*i^2*ln(c*f*x+c*e)^2*x
```

maxima [B] time = 0.61, size = 586, normalized size = 2.46

$$4\,abhi\left(\frac{x}{df}-\frac{e\log\left(fx+e\right)}{df^2}\right)\log\left(cfx+ce\right)+abi^2\left(\frac{2\,e^2\log\left(fx+e\right)}{df^3}+\frac{fx^2-2\,ex}{df^2}\right)\log\left(cfx+ce\right)-abh^2\left(\frac{2\,\log\left(cf\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2*(a+b*log(c*(f*x+e)))^2/(d*f*x+d*e),x, algorithm="maxima
")
```

```
[Out] 4*a*b*h*i*(x/(d*f) - e*log(f*x + e)/(d*f^2))*log(c*f*x + c*e) + a*b*i^2*(2*
e^2*log(f*x + e)/(d*f^3) + (f*x^2 - 2*e*x)/(d*f^2))*log(c*f*x + c*e) - a*b*
h^2*(2*log(c*f*x + c*e)*log(d*f*x + d*e)/(d*f) - (log(f*x + e)^2 + 2*log(f*
x + e)*log(c))/(d*f)) + 2*a^2*h*i*(x/(d*f) - e*log(f*x + e)/(d*f^2)) + 1/2*
a^2*i^2*(2*e^2*log(f*x + e)/(d*f^3) + (f*x^2 - 2*e*x)/(d*f^2)) + 1/3*b^2*h^
2*log(c*f*x + c*e)^3/(d*f) + 2*a*b*h^2*log(c*f*x + c*e)*log(d*f*x + d*e)/(d
*f) + a^2*h^2*log(d*f*x + d*e)/(d*f) + 2*(e*log(f*x + e)^2 - 2*f*x + 2*e*lo
g(f*x + e))*a*b*h*i/(d*f^2) - 1/2*(f^2*x^2 + 2*e^2*log(f*x + e)^2 - 6*e*f*x
 + 6*e^2*log(f*x + e))*a*b*i^2/(d*f^3) - 2/3*(c^2*e*log(c*f*x + c*e)^3 - 3*
(c*f*x + c*e)*(c*log(c*f*x + c*e)^2 - 2*c*log(c*f*x + c*e) + 2*c))*b^2*h*i/
(c^2*d*f^2) + 1/12*(4*c^3*e^2*log(c*f*x + c*e)^3 + 3*(c*f*x + c*e)^2*(2*c*l
og(c*f*x + c*e)^2 - 2*c*log(c*f*x + c*e) + c) - 24*(c^2*e*log(c*f*x + c*e)^
2 - 2*c^2*e*log(c*f*x + c*e) + 2*c^2*e)*(c*f*x + c*e))*b^2*i^2/(c^3*d*f^3)
```

mupad [B] time = 0.50, size = 408, normalized size = 1.71

$$x\left(\frac{i\left(2a^2fh-3b^2ei+4b^2fh+2abei-4abfh\right)}{df^2}-\frac{ei^2\left(2a^2-2ab+b^2\right)}{2df^2}\right)+\ln\left(c\left(e+fx\right)\right)^2\left(f\left(\frac{b^2i^2x^2}{2df^2}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((h + i*x)^2*(a + b*log(c*(e + f*x)))^2)/(d*e + d*f*x),x)
```

```
[Out] x*((i*(2*a^2*f*h - 3*b^2*e*i + 4*b^2*f*h + 2*a*b*e*i - 4*a*b*f*h))/(d*f^2)
- (e*i^2*(2*a^2 - 2*a*b + b^2))/(2*d*f^2)) + log(c*(e + f*x))^2*(f*((b^2*i^
2*x^2)/(2*d*f^2) - (b^2*i*x*(e*i - 2*f*h))/(d*f^3)) + (2*a*b*e^2*i^2 - 3*b^
2*e^2*i^2 + 2*a*b*f^2*h^2 + 4*b^2*e*f*h*i - 4*a*b*e*f*h*i)/(2*d*f^3)) + f*l
og(c*(e + f*x))*((x*(3*b^2*e*i^2 - 2*a*b*e*i^2 - 4*b^2*f*h*i + 4*a*b*f*h*i)
)/(d*f^3) + (b*i^2*x^2*(2*a - b))/(2*d*f^2)) + (log(e + f*x)*(2*a^2*e^2*i^2
 + 2*a^2*f^2*h^2 + 7*b^2*e^2*i^2 - 6*a*b*e^2*i^2 - 4*a^2*e*f*h*i - 8*b^2*e*
f*h*i + 8*a*b*e*f*h*i))/(2*d*f^3) + (b^2*log(c*(e + f*x))^3*(e^2*i^2 + f^2*
h^2 - 2*e*f*h*i))/(3*d*f^3) + (i^2*x^2*(2*a^2 - 2*a*b + b^2))/(4*d*f)
```

sympy [B] time = 3.46, size = 473, normalized size = 1.99

$$x^2\left(\frac{a^2i^2}{2df}-\frac{abi^2}{2df}+\frac{b^2i^2}{4df}\right)+x\left(-\frac{a^2ei^2}{df^2}+\frac{2a^2hi}{df}+\frac{3abei^2}{df^2}-\frac{4abhi}{df}-\frac{7b^2ei^2}{2df^2}+\frac{4b^2hi}{df}\right)+\frac{\left(-4abei^2x+8abfhix+2ab\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)**2*(a+b*ln(c*(f*x+e)))**2/(d*f*x+d*e),x)
```

```
[Out] x**2*(a**2*i**2/(2*d*f) - a*b*i**2/(2*d*f) + b**2*i**2/(4*d*f)) + x*(-a**2*
e*i**2/(d*f**2) + 2*a**2*h*i/(d*f) + 3*a*b*e*i**2/(d*f**2) - 4*a*b*h*i/(d*f
) - 7*b**2*e*i**2/(2*d*f**2) + 4*b**2*h*i/(d*f)) + (-4*a*b*e*i**2*x + 8*a*b
*f*h*i*x + 2*a*b*f*i**2*x**2 + 6*b**2*e*i**2*x - 8*b**2*f*h*i*x - b**2*f*i*
*2*x**2)*log(c*(e + f*x))/(2*d*f**2) + (b**2*e**2*i**2 - 2*b**2*e*f*h*i + b
**2*f**2*h**2)*log(c*(e + f*x))**3/(3*d*f**3) + (2*a**2*e**2*i**2 - 4*a**2*
e*f*h*i + 2*a**2*f**2*h**2 - 6*a*b*e**2*i**2 + 8*a*b*e*f*h*i + 7*b**2*e**2*
i**2 - 8*b**2*e*f*h*i)*log(e + f*x)/(2*d*f**3) + (2*a*b*e**2*i**2 - 4*a*b*e
*f*h*i + 2*a*b*f**2*h**2 - 3*b**2*e**2*i**2 + 4*b**2*e*f*h*i - 2*b**2*e*f*i
**2*x + 4*b**2*f**2*h*i*x + b**2*f**2*i**2*x**2)*log(c*(e + f*x))**2/(2*d*f
**3)
```

3.186 $\int \frac{(h+ix)(a+b\log(c(e+fx)))^2}{de+dfx}\,dx$

Optimal. Leaf size=113

$$\frac{(fh-ei)(a+b\log(c(e+fx)))^3}{3bdf^2}+\frac{i(e+fx)(a+b\log(c(e+fx)))^2}{df^2}-\frac{2abix}{df}-\frac{2b^2i(e+fx)\log(c(e+fx))}{df^2}+\frac{2b^2ix}{df}$$

```
[Out] -2*a*b*i*x/d/f+2*b^2*i*x/d/f-2*b^2*i*(f*x+e)*ln(c*(f*x+e))/d/f^2+i*(f*x+e)*
(a+b*ln(c*(f*x+e)))^2/d/f^2+1/3*(-e*i+f*h)*(a+b*ln(c*(f*x+e)))^3/b/d/f^2
```

Rubi [A] time = 0.20, antiderivative size = 113, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.233, Rules used = {2411, 12, 2346, 2302, 30, 2296, 2295}

$$\frac{(fh-ei)(a+b\log(c(e+fx)))^3}{3bdf^2}+\frac{i(e+fx)(a+b\log(c(e+fx)))^2}{df^2}-\frac{2abix}{df}-\frac{2b^2i(e+fx)\log(c(e+fx))}{df^2}+\frac{2b^2ix}{df}$$

Antiderivative was successfully verified.

```
[In] Int[((h + i*x)*(a + b*Log[c*(e + f*x)])^2)/(d*e + d*f*x),x]
```

```
[Out] (-2*a*b*i*x)/(d*f) + (2*b^2*i*x)/(d*f) - (2*b^2*i*(e + f*x)*Log[c*(e + f*x)
])/(d*f^2) + (i*(e + f*x)*(a + b*Log[c*(e + f*x)])^2)/(d*f^2) + ((f*h - e*i
)*(a + b*Log[c*(e + f*x)])^3)/(3*b*d*f^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2346

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.))
/(x_), x_Symbol] :> Dist[d, Int[((d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p)/x,
 x], x] + Dist[e, Int[(d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p, x], x] /; Fre
eQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0] && GtQ[q, 0] && IntegerQ[2*q]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rubi steps

$$\int \frac{(h+186x)(a+b\log(c(e+fx)))^2}{de+dfx}\,dx = \frac{\text{Subst}\left(\int \frac{\left(\frac{-186e+fh}{f}+\frac{186x}{f}\right)(a+b\log(cx))^2}{dx}\,dx, x, e+fx\right)}{f}$$

$$= \frac{\text{Subst}\left(\int \frac{\left(\frac{-186e+fh}{f}+\frac{186x}{f}\right)(a+b\log(cx))^2}{x}\,dx, x, e+fx\right)}{df}$$

$$= \frac{186\,\text{Subst}\left(\int (a+b\log(cx))^2\,dx, x, e+fx\right)}{df^2} - \frac{(186e-fh)\,\text{Subst}\left(\int\right.}{}$$

$$= \frac{186(e+fx)(a+b\log(c(e+fx)))^2}{df^2} - \frac{(372b)\,\text{Subst}(\int (a+b\log(cx))}{df^2}$$

$$= -\frac{372abx}{df} + \frac{186(e+fx)(a+b\log(c(e+fx)))^2}{df^2} - \frac{(186e-fh)(a+b}{3bd}$$

$$= -\frac{372abx}{df} + \frac{372b^2x}{df} - \frac{372b^2(e+fx)\log(c(e+fx))}{df^2} + \frac{186(e+fx)(}{}$$

Mathematica [A] time = 0.06, size = 89, normalized size = 0.79

$$\frac{\frac{(fh-ei)(a+b\log(c(e+fx)))^3}{b} + 3i(e+fx)(a+b\log(c(e+fx)))^2 - 6bfix(a-b) - 6b^2i(e+fx)\log(c(e+fx))}{3df^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((h + i*x)*(a + b*Log[c*(e + f*x)])^2)/(d*e + d*f*x),x]
```

```
[Out] (-6*(a - b)*b*f*i*x - 6*b^2*i*(e + f*x)*Log[c*(e + f*x)] + 3*i*(e + f*x)*(a
 + b*Log[c*(e + f*x)])^2 + ((f*h - e*i)*(a + b*Log[c*(e + f*x)])^3)/b)/(3*d
*f^2)
```

fricas [A] time = 0.42, size = 141, normalized size = 1.25

$$\frac{3\left(a^2-2\,ab+2\,b^2\right)fix + \left(b^2fh-b^2ei\right)\log\left(cfx+ce\right)^3 + 3\left(b^2fix+abfh-\left(ab-b^2\right)ei\right)\log\left(cfx+ce\right)^2 + 3\left(a\right.}{3\,df^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*log(c*(f*x+e)))^2/(d*f*x+d*e),x, algorithm="fricas")
```

```
[Out] 1/3*(3*(a^2 - 2*a*b + 2*b^2)*f*i*x + (b^2*f*h - b^2*e*i)*log(c*f*x + c*e)^3
 + 3*(b^2*f*i*x + a*b*f*h - (a*b - b^2)*e*i)*log(c*f*x + c*e)^2 + 3*(a^2*f*
h + 2*(a*b - b^2)*f*i*x - (a^2 - 2*a*b + 2*b^2)*e*i)*log(c*f*x + c*e))/(d*f
^2)
```

giac [B] time = 0.22, size = 240, normalized size = 2.12

$$\frac{3\,b^2fix\log\left(cfx+ce\right)^2+b^2fh\log\left(cfx+ce\right)^3-b^2ie\log\left(cfx+ce\right)^3+6\,abfix\log\left(cfx+ce\right)-6\,b^2fix\log\left(cfx\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*log(c*(f*x+e)))^2/(d*f*x+d*e),x, algorithm="giac")
```

```
[Out] 1/3*(3*b^2*f*i*x*log(c*f*x + c*e)^2 + b^2*f*h*log(c*f*x + c*e)^3 - b^2*i*e*
log(c*f*x + c*e)^3 + 6*a*b*f*i*x*log(c*f*x + c*e) - 6*b^2*f*i*x*log(c*f*x +
 c*e) + 3*a*b*f*h*log(c*f*x + c*e)^2 - 3*a*b*i*e*log(c*f*x + c*e)^2 + 3*b^2
*i*e*log(c*f*x + c*e)^2 + 3*a^2*f*i*x - 6*a*b*f*i*x + 6*b^2*f*i*x + 3*a^2*f
*h*log(f*x + e) - 3*a^2*i*e*log(f*x + e) + 6*a*b*i*e*log(f*x + e) - 6*b^2*i
*e*log(f*x + e))/(d*f^2)
```

maple [B] time = 0.05, size = 341, normalized size = 3.02

$$-\frac{b^2ei\ln\left(cfx+ce\right)^3}{3df^2}+\frac{b^2h\ln\left(cfx+ce\right)^3}{3df}+\frac{b^2ix\ln\left(cfx+ce\right)^2}{df}-\frac{abei\ln\left(cfx+ce\right)^2}{df^2}+\frac{abh\ln\left(cfx+ce\right)^2}{df}+\frac{2abix\ln\left(\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)*(a+b*ln(c*(f*x+e)))^2/(d*f*x+d*e),x)
```

```
[Out] -1/f^2/d*a^2*e*i*ln(c*f*x+c*e)+1/f/d*a^2*h*ln(c*f*x+c*e)+1/f/d*a^2*i*x+1/f^
2/d*a^2*e*i-1/f^2/d*a*b*e*i*ln(c*f*x+c*e)^2+1/f/d*a*b*h*ln(c*f*x+c*e)^2+2/f
/d*a*b*i*ln(c*f*x+c*e)*x+2/f^2/d*a*b*i*ln(c*f*x+c*e)*e-2*a*b*i*x/d/f-2/f^2/
d*a*b*e*i-1/3/f^2/d*b^2*e*i*ln(c*f*x+c*e)^3+1/3/f/d*b^2*h*ln(c*f*x+c*e)^3+1
/f/d*b^2*i*ln(c*f*x+c*e)^2*x+1/f^2/d*b^2*i*ln(c*f*x+c*e)^2*e-2/f/d*b^2*i*ln
(c*f*x+c*e)*x-2/f^2/d*b^2*i*ln(c*f*x+c*e)*e+2*b^2*i*x/d/f+2/f^2/d*b^2*e*i
```

maxima [B] time = 0.52, size = 304, normalized size = 2.69

$$2\,abi\left(\frac{x}{df}-\frac{e\log\left(fx+e\right)}{df^2}\right)\log\left(cfx+ce\right)-abh\left(\frac{2\,\log\left(cfx+ce\right)\log\left(dfx+de\right)}{df}-\frac{\log\left(fx+e\right)^2+2\,\log\left(fx+e\right)}{df}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*log(c*(f*x+e)))^2/(d*f*x+d*e),x, algorithm="maxima")
```

```
[Out] 2*a*b*i*(x/(d*f) - e*log(f*x + e)/(d*f^2))*log(c*f*x + c*e) - a*b*h*(2*log(
c*f*x + c*e)*log(d*f*x + d*e)/(d*f) - (log(f*x + e)^2 + 2*log(f*x + e)*log(
c))/(d*f)) + a^2*i*(x/(d*f) - e*log(f*x + e)/(d*f^2)) + 1/3*b^2*h*log(c*f*x
 + c*e)^3/(d*f) + 2*a*b*h*log(c*f*x + c*e)*log(d*f*x + d*e)/(d*f) + a^2*h*l
og(d*f*x + d*e)/(d*f) + (e*log(f*x + e)^2 - 2*f*x + 2*e*log(f*x + e))*a*b*i
/(d*f^2) - 1/3*(c^2*e*log(c*f*x + c*e)^3 - 3*(c*f*x + c*e)*(c*log(c*f*x + c
*e)^2 - 2*c*log(c*f*x + c*e) + 2*c))*b^2*i/(c^2*d*f^2)
```

mupad [B] time = 0.34, size = 163, normalized size = 1.44

$$\ln\left(c\,\left(e+f\,x\right)\right)^2\,\left(\frac{b\,\left(a\,f\,h-a\,e\,i+b\,e\,i\right)}{d\,f^2}+\frac{b^2\,i\,x}{d\,f}\right)-\frac{\ln\left(e+f\,x\right)\,\left(a^2\,e\,i-a^2\,f\,h+2\,b^2\,e\,i-2\,a\,b\,e\,i\right)}{d\,f^2}+\frac{i\,x\,\left(a^2-2\,a\,b\right.}{d\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((h + i*x)*(a + b*log(c*(e + f*x)))^2)/(d*e + d*f*x),x)
```

```
[Out] log(c*(e + f*x))^2*((b*(a*f*h - a*e*i + b*e*i))/(d*f^2) + (b^2*i*x)/(d*f))
- (log(e + f*x)*(a^2*e*i - a^2*f*h + 2*b^2*e*i - 2*a*b*e*i))/(d*f^2) + (i*x
```

```
*(a^2 - 2*a*b + 2*b^2))/(d*f) - (b^2*log(c*(e + f*x))^3*(e*i - f*h))/(3*d*f
^2) + (2*b*i*x*log(c*(e + f*x))*(a - b))/(d*f)
```

sympy [A] time = 2.08, size = 175, normalized size = 1.55

$$x\left(\frac{a^2i}{df} - \frac{2abi}{df} + \frac{2b^2i}{df}\right) + \frac{\left(2abix - 2b^2ix\right)\log\left(c\left(e + fx\right)\right)}{df} + \frac{\left(-b^2ei + b^2fh\right)\log\left(c\left(e + fx\right)\right)^3}{3df^2} - \frac{\left(a^2ei - a^2fh - 2al\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*ln(c*(f*x+e)))**2/(d*f*x+d*e),x)
```

```
[Out] x*(a**2*i/(d*f) - 2*a*b*i/(d*f) + 2*b**2*i/(d*f)) + (2*a*b*i*x - 2*b**2*i*x
)*log(c*(e + f*x))/(d*f) + (-b**2*e*i + b**2*f*h)*log(c*(e + f*x))**3/(3*d*
f**2) - (a**2*e*i - a**2*f*h - 2*a*b*e*i + 2*b**2*e*i)*log(e + f*x)/(d*f**2
) + (-a*b*e*i + a*b*f*h + b**2*e*i + b**2*f*i*x)*log(c*(e + f*x))**2/(d*f**
2)
```

3.187 $\int \frac{(a+b\log(c(e+fx)))^2}{de+dfx}\,dx$

Optimal. Leaf size=27

$$\frac{(a+b\log(c(e+fx)))^3}{3bdf}$$

```
[Out] 1/3*(a+b*ln(c*(f*x+e)))^3/b/d/f
```

Rubi [A] time = 0.06, antiderivative size = 27, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.160$, Rules used = {2390, 12, 2302, 30}

$$\frac{(a+b\log(c(e+fx)))^3}{3bdf}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(e + f*x)])^2/(d*e + d*f*x),x]
```

```
[Out] (a + b*Log[c*(e + f*x)])^3/(3*b*d*f)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(a+b\log(c(e+fx)))^2}{de+dfx}\,dx &= \frac{\text{Subst}\left(\int \frac{(a+b\log(cx))^2}{dx}\,dx, x, e+fx\right)}{f}\\
&= \frac{\text{Subst}\left(\int \frac{(a+b\log(cx))^2}{x}\,dx, x, e+fx\right)}{df}\\
&= \frac{\text{Subst}\left(\int x^2\,dx, x, a+b\log(c(e+fx))\right)}{bdf}\\
&= \frac{(a+b\log(c(e+fx)))^3}{3bdf}
\end{aligned}$$

Mathematica [A] time = 0.00, size = 27, normalized size = 1.00

$$\frac{(a+b\log(c(e+fx)))^3}{3bdf}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(e + f*x)])^2/(d*e + d*f*x),x]
```

```
[Out] (a + b*Log[c*(e + f*x)])^3/(3*b*d*f)
```

fricas [B] time = 0.41, size = 53, normalized size = 1.96

$$\frac{b^2\log\left(cfx+ce\right)^3+3\,ab\log\left(cfx+ce\right)^2+3\,a^2\log\left(cfx+ce\right)}{3\,df}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^2/(d*f*x+d*e),x, algorithm="fricas")
```

```
[Out] 1/3*(b^2*log(c*f*x + c*e)^3 + 3*a*b*log(c*f*x + c*e)^2 + 3*a^2*log(c*f*x +
c*e))/(d*f)
```

giac [B] time = 0.22, size = 53, normalized size = 1.96

$$\frac{b^2\log\left(cfx+ce\right)^3+3\,ab\log\left(cfx+ce\right)^2+3\,a^2\log\left(fx+e\right)}{3\,df}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^2/(d*f*x+d*e),x, algorithm="giac")
```

```
[Out] 1/3*(b^2*log(c*f*x + c*e)^3 + 3*a*b*log(c*f*x + c*e)^2 + 3*a^2*log(f*x + e)
)/(d*f)
```

maple [B] time = 0.05, size = 63, normalized size = 2.33

$$\frac{b^2\ln\left(cfx+ce\right)^3}{3df}+\frac{ab\ln\left(cfx+ce\right)^2}{df}+\frac{a^2\ln\left(cfx+ce\right)}{df}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(f*x+e)))^2/(d*f*x+d*e),x)
```

```
[Out] 1/f/d*a^2*ln(c*f*x+c*e)+1/f/d*a*b*ln(c*f*x+c*e)^2+1/3/f/d*b^2*ln(c*f*x+c*e)
^3
```

maxima [B] time = 0.51, size = 128, normalized size = 4.74

$$-ab\left(\frac{2\,\log\left(cfx+ce\right)\log\left(dfx+de\right)}{df}-\frac{\log\left(fx+e\right)^2+2\,\log\left(fx+e\right)\log(c)}{df}\right)+\frac{b^2\log\left(cfx+ce\right)^3}{3\,df}+\frac{2\,ab\log\left(\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^2/(d*f*x+d*e),x, algorithm="maxima")
```

```
[Out] -a*b*(2*log(c*f*x + c*e)*log(d*f*x + d*e)/(d*f) - (log(f*x + e)^2 + 2*log(f
*x + e)*log(c))/(d*f)) + 1/3*b^2*log(c*f*x + c*e)^3/(d*f) + 2*a*b*log(c*f*x
 + c*e)*log(d*f*x + d*e)/(d*f) + a^2*log(d*f*x + d*e)/(d*f)
```

mupad [**B**] time = 0.48, size = 50, normalized size = 1.85

$$\frac{3\,\ln\left(e+f\,x\right)\,a^2+3\,a\,b\ln\left(c\,e+c\,f\,x\right)^2+b^2\ln\left(c\,e+c\,f\,x\right)^3}{3\,d\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(e + f*x)))^2/(d*e + d*f*x),x)
```

```
[Out] (b^2*log(c*e + c*f*x)^3 + 3*a^2*log(e + f*x) + 3*a*b*log(c*e + c*f*x)^2)/(3
*d*f)
```

sympy [**B**] time = 0.50, size = 51, normalized size = 1.89

$$\frac{a^2\log\left(de+dfx\right)}{df}+\frac{ab\log\left(c\left(e+fx\right)\right)^2}{df}+\frac{b^2\log\left(c\left(e+fx\right)\right)^3}{3df}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(f*x+e)))**2/(d*f*x+d*e),x)
```

```
[Out] a**2*log(d*e + d*f*x)/(d*f) + a*b*log(c*(e + f*x))**2/(d*f) + b**2*log(c*(e
 + f*x))**3/(3*d*f)
```

3.188 $\int \frac{(a+b\log(c(e+fx)))^2}{(de+dfx)(h+ix)}\,dx$

Optimal. Leaf size=142

$$\frac{2b\text{Li}_2\left(-\frac{fh-ei}{i(e+fx)}\right)(a+b\log(c(e+fx)))}{d(fh-ei)}-\frac{\log\left(\frac{fh-ei}{i(e+fx)}+1\right)(a+b\log(c(e+fx)))^2}{d(fh-ei)}+\frac{2b^2\text{Li}_3\left(-\frac{fh-ei}{i(e+fx)}\right)}{d(fh-ei)}$$

```
[Out] -(a+b*ln(c*(f*x+e)))^2*ln(1+(-e*i+f*h)/i/(f*x+e))/d/(-e*i+f*h)+2*b*(a+b*ln(
c*(f*x+e)))*polylog(2,(e*i-f*h)/i/(f*x+e))/d/(-e*i+f*h)+2*b^2*polylog(3,(e*
i-f*h)/i/(f*x+e))/d/(-e*i+f*h)
```

Rubi [A] time = 0.38, antiderivative size = 168, normalized size of antiderivative = 1.18, number of steps used = 8, number of rules used = 8, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {2411, 12, 2344, 2302, 30, 2317, 2374, 6589}

$$-\frac{2b\text{PolyLog}\left(2,-\frac{i(e+fx)}{fh-ei}\right)(a+b\log(c(e+fx)))}{d(fh-ei)}+\frac{2b^2\text{PolyLog}\left(3,-\frac{i(e+fx)}{fh-ei}\right)}{d(fh-ei)}+\frac{(a+b\log(c(e+fx)))^3}{3bd(fh-ei)}-\frac{\log\left(\frac{f(h+}{fh-}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(e + f*x)])^2/((d*e + d*f*x)*(h + i*x)),x]
```

```
[Out] (a + b*Log[c*(e + f*x)])^3/(3*b*d*(f*h - e*i)) - ((a + b*Log[c*(e + f*x)])^
2*Log[(f*(h + i*x))/(f*h - e*i)])/(d*(f*h - e*i)) - (2*b*(a + b*Log[c*(e +
f*x)])*PolyLog[2, -((i*(e + f*x))/(f*h - e*i))])/(d*(f*h - e*i)) + (2*b^2*P
olyLog[3, -((i*(e + f*x))/(f*h - e*i))])/(d*(f*h - e*i))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\log(c(e+fx)))^2}{(h+188x)(de+dfx)}\,dx = \frac{\text{Subst}\left(\int \frac{(a+b\log(cx))^2}{dx\left(\frac{-188e+fh}{f}+\frac{188x}{f}\right)}\,dx, x, e+fx\right)}{f}$$
$$= \frac{\text{Subst}\left(\int \frac{(a+b\log(cx))^2}{x\left(\frac{-188e+fh}{f}+\frac{188x}{f}\right)}\,dx, x, e+fx\right)}{df}$$
$$= -\frac{\text{Subst}\left(\int \frac{(a+b\log(cx))^2}{x}\,dx, x, e+fx\right)}{d(188e-fh)} + \frac{188\,\text{Subst}\left(\int \frac{(a+b\log(cx))^2}{\frac{-188e+fh}{f}+\frac{188x}{f}}\,dx, x, e+fx\right)}{df(188e-fh)}$$
$$= \frac{\log\left(-\frac{f(h+188x)}{188e-fh}\right)(a+b\log(c(e+fx)))^2}{d(188e-fh)} - \frac{\text{Subst}\left(\int x^2\,dx, x, a+b\log(c(e+fx))\right)}{bd(188e-fh)}$$
$$= \frac{\log\left(-\frac{f(h+188x)}{188e-fh}\right)(a+b\log(c(e+fx)))^2}{d(188e-fh)} - \frac{(a+b\log(c(e+fx)))^3}{3bd(188e-fh)} + \frac{2b(a+b\log(}{}$$
$$= \frac{\log\left(-\frac{f(h+188x)}{188e-fh}\right)(a+b\log(c(e+fx)))^2}{d(188e-fh)} - \frac{(a+b\log(c(e+fx)))^3}{3bd(188e-fh)} + \frac{2b(a+b\log(}{}$$

Mathematica [A] time = 0.24, size = 189, normalized size = 1.33

$$\frac{3a^2\log(e+fx) - 3a^2\log(h+ix) - 6b\text{Li}_2\left(\frac{i(e+fx)}{ei-fh}\right)(a+b\log(c(e+fx))) - 6ab\log(c(e+fx))\log\left(\frac{f(h+ix)}{fh-ei}\right) + 3ab}{3d(fh-ei)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(e + f*x)])^2/((d*e + d*f*x)*(h + i*x)),x]
```

```
[Out] (3*a^2*Log[e + f*x] + 3*a*b*Log[c*(e + f*x)]^2 + b^2*Log[c*(e + f*x)]^3 - 3
*a^2*Log[h + i*x] - 6*a*b*Log[c*(e + f*x)]*Log[(f*(h + i*x))/(f*h - e*i)] -
```

```
3*b^2*Log[c*(e + f*x)]^2*Log[(f*(h + i*x))/(f*h - e*i)] - 6*b*(a + b*Log[c
*(e + f*x)])*PolyLog[2, (i*(e + f*x))/(-(f*h) + e*i)] + 6*b^2*PolyLog[3, (i
*(e + f*x))/(-(f*h) + e*i)])/(3*d*(f*h - e*i))
```

fricas [F] time = 0.41, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b^2\log\left(cfx+ce\right)^2+2\,ab\log\left(cfx+ce\right)+a^2}{dfix^2+deh+\left(dfh+dei\right)x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^2/(d*f*x+d*e)/(i*x+h),x, algorithm="fricas")
```

```
[Out] integral((b^2*log(c*f*x + c*e)^2 + 2*a*b*log(c*f*x + c*e) + a^2)/(d*f*i*x^2
 + d*e*h + (d*f*h + d*e*i)*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(b\log\left(\left(fx+e\right)c\right)+a\right)^2}{\left(dfx+de\right)(ix+h)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^2/(d*f*x+d*e)/(i*x+h),x, algorithm="giac")
```

```
[Out] integrate((b*log((f*x + e)*c) + a)^2/((d*f*x + d*e)*(i*x + h)), x)
```

maple [B] time = 0.08, size = 383, normalized size = 2.70

$$\frac{b^2\ln\left(\frac{\left(cfx+ce\right)i}{-cei+cfh}+1\right)\ln\left(cfx+ce\right)^2}{\left(ei-fh\right)d}-\frac{b^2\ln\left(cfx+ce\right)^3}{3\left(ei-fh\right)d}+\frac{2ab\ln\left(\frac{-cei+cfh+\left(cfx+ce\right)i}{-cei+cfh}\right)\ln\left(cfx+ce\right)}{\left(ei-fh\right)d}-\frac{ab\ln\left(cfx+ce\right.}{\left(ei-fh\right)d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(f*x+e)))^2/(d*f*x+d*e)/(i*x+h),x)
```

```
[Out] -1/d*a^2/(e*i-f*h)*ln(c*f*x+c*e)+1/d*a^2/(e*i-f*h)*ln(-c*e*i+c*f*h+(c*f*x+c
*e)*i)-1/3/d*b^2/(e*i-f*h)*ln(c*f*x+c*e)^3+1/d*b^2/(e*i-f*h)*ln(c*f*x+c*e)^
2*ln(1+i/(-c*e*i+c*f*h)*(c*f*x+c*e))+2/d*b^2/(e*i-f*h)*ln(c*f*x+c*e)*polylo
g(2,-i/(-c*e*i+c*f*h)*(c*f*x+c*e))-2/d*b^2/(e*i-f*h)*polylog(3,-i/(-c*e*i+c
*f*h)*(c*f*x+c*e))-1/d*a*b*ln(c*f*x+c*e)^2/(e*i-f*h)+2/d*a*b/(e*i-f*h)*dilo
g((-c*e*i+c*f*h+(c*f*x+c*e)*i)/(-c*e*i+c*f*h))+2/d*a*b/(e*i-f*h)*ln(c*f*x+c
*e)*ln((-c*e*i+c*f*h+(c*f*x+c*e)*i)/(-c*e*i+c*f*h))
```

maxima [B] time = 0.73, size = 331, normalized size = 2.33

$$a^2\left(\frac{\log\left(fx+e\right)}{dfh-dei}-\frac{\log\left(ix+h\right)}{dfh-dei}\right)-\frac{\left(\log\left(fx+e\right)^2\log\left(\frac{fix+ei}{fh-ei}+1\right)+2\,\text{Li}_2\left(-\frac{fix+ei}{fh-ei}\right)\log\left(fx+e\right)-2\,\text{Li}_3(-\frac{fix+ei}{fh-ei})\right.}{\left(fh-ei\right)d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^2/(d*f*x+d*e)/(i*x+h),x, algorithm="maxima")
```

```
[Out] a^2*(log(f*x + e)/(d*f*h - d*e*i) - log(i*x + h)/(d*f*h - d*e*i)) - (log(f*
x + e)^2*log((f*i*x + e*i)/(f*h - e*i) + 1) + 2*dilog(-(f*i*x + e*i)/(f*h -
 e*i))*log(f*x + e) - 2*polylog(3, -(f*i*x + e*i)/(f*h - e*i)))*b^2/((f*h -
 e*i)*d) - 2*(b^2*log(c) + a*b)*(log(f*x + e)*log((f*i*x + e*i)/(f*h - e*i)
 + 1) + dilog(-(f*i*x + e*i)/(f*h - e*i)))/((f*h - e*i)*d) - (b^2*log(c)^2
```

```
+ 2*a*b*log(c))*log(i*x + h)/((f*h - e*i)*d) + 1/3*(b^2*log(f*x + e)^3 + 3*
(b^2*log(c) + a*b)*log(f*x + e)^2 + 3*(b^2*log(c)^2 + 2*a*b*log(c))*log(f*x
 + e))/((f*h - e*i)*d)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(a+b\ln\left(c\left(e+fx\right)\right)\right)^2}{\left(h+ix\right)\left(de+dfx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(e + f*x)))^2/((h + i*x)*(d*e + d*f*x)),x)
```

```
[Out] int((a + b*log(c*(e + f*x)))^2/((h + i*x)*(d*e + d*f*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{a^2}{eh+eix+fhx+fix^2}\,dx+\int \frac{b^2\log\left(ce+cfx\right)^2}{eh+eix+fhx+fix^2}\,dx+\int \frac{2ab\log\left(ce+cfx\right)}{eh+eix+fhx+fix^2}\,dx}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(f*x+e)))**2/(d*f*x+d*e)/(i*x+h),x)
```

```
[Out] (Integral(a**2/(e*h + e*i*x + f*h*x + f*i*x**2), x) + Integral(b**2*log(c*e
 + c*f*x)**2/(e*h + e*i*x + f*h*x + f*i*x**2), x) + Integral(2*a*b*log(c*e
+ c*f*x)/(e*h + e*i*x + f*h*x + f*i*x**2), x))/d
```

3.189 $\int \frac{(a+b\log(c(e+fx)))^2}{(de+dfx)(h+ix)^2}\,dx$

Optimal. Leaf size=273

$$\frac{2bf\text{Li}_2\left(-\frac{fh-ei}{i(e+fx)}\right)(a+b\log(c(e+fx)))}{d(fh-ei)^2}+\frac{2bf\log\left(\frac{f(h+ix)}{fh-ei}\right)(a+b\log(c(e+fx)))}{d(fh-ei)^2}-\frac{i(e+fx)(a+b\log(c(e+fx$$

```
[Out] -i*(f*x+e)*(a+b*ln(c*(f*x+e)))^2/d/(-e*i+f*h)^2/(i*x+h)+2*b*f*(a+b*ln(c*(f*
x+e)))*ln(f*(i*x+h)/(-e*i+f*h))/d/(-e*i+f*h)^2-f*(a+b*ln(c*(f*x+e)))^2*ln(1
+(-e*i+f*h)/i/(f*x+e))/d/(-e*i+f*h)^2+2*b*f*(a+b*ln(c*(f*x+e)))*polylog(2,(
e*i-f*h)/i/(f*x+e))/d/(-e*i+f*h)^2+2*b^2*f*polylog(2,-i*(f*x+e)/(-e*i+f*h))
/d/(-e*i+f*h)^2+2*b^2*f*polylog(3,(e*i-f*h)/i/(f*x+e))/d/(-e*i+f*h)^2
```

Rubi [A] time = 0.64, antiderivative size = 300, normalized size of antiderivative = 1.10, number of steps used = 12, number of rules used = 11, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.344, Rules used = {2411, 12, 2347, 2344, 2302, 30, 2317, 2374, 6589, 2318, 2391}

$$-\frac{2bf\text{PolyLog}\left(2,-\frac{i(e+fx)}{fh-ei}\right)(a+b\log(c(e+fx)))}{d(fh-ei)^2}+\frac{2b^2f\text{PolyLog}\left(2,-\frac{i(e+fx)}{fh-ei}\right)}{d(fh-ei)^2}+\frac{2b^2f\text{PolyLog}\left(3,-\frac{i(e+fx)}{fh-ei}\right)}{d(fh-ei)^2}+\frac{f(}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(e + f*x)])^2/((d*e + d*f*x)*(h + i*x)^2),x]
```

```
[Out] -((i*(e + f*x)*(a + b*Log[c*(e + f*x)])^2)/(d*(f*h - e*i)^2*(h + i*x))) + (
f*(a + b*Log[c*(e + f*x)])^3)/(3*b*d*(f*h - e*i)^2) + (2*b*f*(a + b*Log[c*(
e + f*x)])*Log[(f*(h + i*x))/(f*h - e*i)])/(d*(f*h - e*i)^2) - (f*(a + b*Lo
g[c*(e + f*x)])^2*Log[(f*(h + i*x))/(f*h - e*i)])/(d*(f*h - e*i)^2) + (2*b^
2*f*PolyLog[2, -((i*(e + f*x))/(f*h - e*i))])/(d*(f*h - e*i)^2) - (2*b*f*(a
 + b*Log[c*(e + f*x)])*PolyLog[2, -((i*(e + f*x))/(f*h - e*i))])/(d*(f*h -
e*i)^2) + (2*b^2*f*PolyLog[3, -((i*(e + f*x))/(f*h - e*i))])/(d*(f*h - e*i)
^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2318

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_))^2, x_Sy
mbol] :> Simp[(x*(a + b*Log[c*x^n])^p)/(d*(d + e*x)), x] - Dist[(b*n*p)/d,
Int[(a + b*Log[c*x^n])^(p - 1)/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n
, p}, x] && GtQ[p, 0]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2347

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/x
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\log(c(e+fx)))^2}{(h+189x)^2(de+dfx)}\,dx = \frac{\text{Subst}\left(\int \frac{(a+b\log(cx))^2}{dx\left(\frac{-189e+fh}{f}+\frac{189x}{f}\right)^2}\,dx,x,e+fx\right)}{f}$$

$$= \frac{\text{Subst}\left(\int \frac{(a+b\log(cx))^2}{x\left(\frac{-189e+fh}{f}+\frac{189x}{f}\right)^2}\,dx,x,e+fx\right)}{df}$$

$$= -\frac{\text{Subst}\left(\int \frac{(a+b\log(cx))^2}{x\left(\frac{-189e+fh}{f}+\frac{189x}{f}\right)}\,dx,x,e+fx\right)}{d(189e-fh)} + \frac{189\,\text{Subst}\left(\int \frac{(a+b\log(cx))^2}{\left(\frac{-189e+fh}{f}+\frac{189x}{f}\right)^2}\,dx,x,e\right.}{df(189e-fh)}$$

$$= -\frac{189(e+fx)(a+b\log(c(e+fx)))^2}{d(189e-fh)^2(h+189x)} - \frac{189\,\text{Subst}\left(\int \frac{(a+b\log(cx))^2}{\frac{-189e+fh}{f}+\frac{189x}{f}}\,dx,x,e+fx\right.}{d(189e-fh)^2}$$

$$= \frac{2bf\log\left(-\frac{f(h+189x)}{189e-fh}\right)(a+b\log(c(e+fx)))}{d(189e-fh)^2} - \frac{189(e+fx)(a+b\log(c(e+fx))}{d(189e-fh)^2(h+189x)}$$

$$= \frac{2bf\log\left(-\frac{f(h+189x)}{189e-fh}\right)(a+b\log(c(e+fx)))}{d(189e-fh)^2} - \frac{189(e+fx)(a+b\log(c(e+fx))}{d(189e-fh)^2(h+189x)}$$

$$= \frac{2bf\log\left(-\frac{f(h+189x)}{189e-fh}\right)(a+b\log(c(e+fx)))}{d(189e-fh)^2} - \frac{189(e+fx)(a+b\log(c(e+fx))}{d(189e-fh)^2(h+189x)}$$

Mathematica [A] time = 0.54, size = 360, normalized size = 1.32

$$\frac{3a^2f(h+ix)\log(e+fx)+3a^2(fh-ei)-3a^2f(h+ix)\log(h+ix)+3ab\left(-2f(h+ix)\left(\log(c(e+fx))\log\left(\frac{f(h}{fh}\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(e + f*x)])^2/((d*e + d*f*x)*(h + i*x)^2),x]
```

```
[Out] (3*a^2*(f*h - e*i) + 3*a^2*f*(h + i*x)*Log[e + f*x] - 3*a^2*f*(h + i*x)*Log
[h + i*x] + 3*a*b*(-2*f*(h + i*x)*Log[e + f*x] + 2*(f*h - e*i)*Log[c*(e + f
*x)] + f*(h + i*x)*Log[c*(e + f*x)]^2 + 2*f*(h + i*x)*Log[h + i*x] - 2*f*(h
 + i*x)*(Log[c*(e + f*x)]*Log[(f*(h + i*x))/(f*h - e*i)] + PolyLog[2, (i*(e
 + f*x))/(-(f*h) + e*i)])) + b^2*(Log[c*(e + f*x)]*(f*(h + i*x)*Log[c*(e +
f*x)]^2 + 6*f*(h + i*x)*Log[(f*(h + i*x))/(f*h - e*i)] - 3*Log[c*(e + f*x)]
*(i*(e + f*x) + f*(h + i*x)*Log[(f*(h + i*x))/(f*h - e*i)])) - 6*f*(h + i*x
)*(-1 + Log[c*(e + f*x)])*PolyLog[2, (i*(e + f*x))/(-(f*h) + e*i)] + 6*f*(h
 + i*x)*PolyLog[3, (i*(e + f*x))/(-(f*h) + e*i)]))/(3*d*(f*h - e*i)^2*(h +
i*x))
```

fricas [F] time = 0.42, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b^2\log\left(cfx+ce\right)^2+2\,ab\log\left(cfx+ce\right)+a^2}{dfi^2x^3+deh^2+\left(2\,dfhi+dei^2\right)x^2+\left(dfh^2+2\,dehi\right)x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^2/(d*f*x+d*e)/(i*x+h)^2,x, algorithm="fricas
")
```

```
[Out] integral((b^2*log(c*f*x + c*e)^2 + 2*a*b*log(c*f*x + c*e) + a^2)/(d*f*i^2*x
^3 + d*e*h^2 + (2*d*f*h*i + d*e*i^2)*x^2 + (d*f*h^2 + 2*d*e*h*i)*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b \log \left(\left(fx+e\right)c\right)+a\right)^2}{\left(dfx+de\right)(ix+h)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^2/(d*f*x+d*e)/(i*x+h)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((f*x + e)*c) + a)^2/((d*f*x + d*e)*(i*x + h)^2), x)
```

maple [F] time = 1.04, size = 0, normalized size = 0.00

$$\int \frac{\left(b \ln \left(\left(fx+e\right)c\right)+a\right)^2}{\left(dfx+de\right)(ix+h)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(f*x+e)))^2/(d*f*x+d*e)/(i*x+h)^2,x)
```

```
[Out] int((a+b*ln(c*(f*x+e)))^2/(d*f*x+d*e)/(i*x+h)^2,x)
```

maxima [B] time = 0.90, size = 622, normalized size = 2.28

$$a^2\left(\frac{f\log\left(fx+e\right)}{df^2h^2-2\,defhi+de^2i^2}-\frac{f\log\left(ix+h\right)}{df^2h^2-2\,defhi+de^2i^2}+\frac{1}{dfh^2-dehi+\left(dfhi-dei^2\right)x}\right)-\frac{\left(\log\left(fx+e\right)^2\log\left(\frac{fix+e}{fh-e}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^2/(d*f*x+d*e)/(i*x+h)^2,x, algorithm="maxima
")
```

```
[Out] a^2*(f*log(f*x + e)/(d*f^2*h^2 - 2*d*e*f*h*i + d*e^2*i^2) - f*log(i*x + h)/
(d*f^2*h^2 - 2*d*e*f*h*i + d*e^2*i^2) + 1/(d*f*h^2 - d*e*h*i + (d*f*h*i - d
*e*i^2)*x)) - (log(f*x + e)^2*log((f*i*x + e*i)/(f*h - e*i) + 1) + 2*dilog(
-(f*i*x + e*i)/(f*h - e*i))*log(f*x + e) - 2*polylog(3, -(f*i*x + e*i)/(f*h
 - e*i)))*b^2*f/((f^2*h^2 - 2*e*f*h*i + e^2*i^2)*d) + 1/3*(3*(f*h - e*i)*b^
2*log(c)^2 + (b^2*f*i*x + b^2*f*h)*log(f*x + e)^3 + 6*(f*h - e*i)*a*b*log(c
) + 3*(a*b*f*h + (f*h*log(c) - e*i)*b^2 + (a*b*f*i + (f*i*log(c) - f*i)*b^2
)*x)*log(f*x + e)^2 + 3*(2*(f*h*log(c) - e*i)*a*b + (f*h*log(c)^2 - 2*e*i*l
og(c))*b^2 + (2*(f*i*log(c) - f*i)*a*b + (f*i*log(c)^2 - 2*f*i*log(c))*b^2)
*x)*log(f*x + e))/((f^2*h^2*i - 2*e*f*h*i^2 + e^2*i^3)*d*x + (f^2*h^3 - 2*e
*f*h^2*i + e^2*h*i^2)*d) - 2*((f*log(c) - f)*b^2 + a*b*f)*(log(f*x + e)*log
((f*i*x + e*i)/(f*h - e*i) + 1) + dilog(-(f*i*x + e*i)/(f*h - e*i)))/((f^2*
h^2 - 2*e*f*h*i + e^2*i^2)*d) - (2*(f*log(c) - f)*a*b + (f*log(c)^2 - 2*f*l
og(c))*b^2)*log(i*x + h)/((f^2*h^2 - 2*e*f*h*i + e^2*i^2)*d)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(a+b\,\ln\left(c\,\left(e+f\,x\right)\right)\right)}^2}{{\left(h+i\,x\right)}^2\,\left(d\,e+d\,f\,x\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(e + f*x)))^2/((h + i*x)^2*(d*e + d*f*x)),x)
```

```
[Out] int((a + b*log(c*(e + f*x)))^2/((h + i*x)^2*(d*e + d*f*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{a^2}{eh^2+2ehix+ei^2x^2+fh^2x+2fhix^2+fi^2x^3}\,dx + \int \frac{b^2\log\left(ce+cfx\right)^2}{eh^2+2ehix+ei^2x^2+fh^2x+2fhix^2+fi^2x^3}\,dx + \int \frac{2ab\log\left(ce+cfx\right)}{eh^2+2ehix+ei^2x^2+fh^2x+2fhix^2+fi^2x^3}\,dx}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(f*x+e)))**2/(d*f*x+d*e)/(i*x+h)**2,x)
```

```
[Out] (Integral(a**2/(e*h**2 + 2*e*h*i*x + e*i**2*x**2 + f*h**2*x + 2*f*h*i*x**2
+ f*i**2*x**3), x) + Integral(b**2*log(c*e + c*f*x)**2/(e*h**2 + 2*e*h*i*x
+ e*i**2*x**2 + f*h**2*x + 2*f*h*i*x**2 + f*i**2*x**3), x) + Integral(2*a*b
*log(c*e + c*f*x)/(e*h**2 + 2*e*h*i*x + e*i**2*x**2 + f*h**2*x + 2*f*h*i*x*
*2 + f*i**2*x**3), x))/d
```

3.190 $\int \frac{(a+b\log(c(e+fx)))^2}{(de+dfx)(h+ix)^3}\,dx$

Optimal. Leaf size=485

$$\frac{2bf^2\text{Li}_2\left(-\frac{fh-ei}{i(e+fx)}\right)(a+b\log(c(e+fx)))}{d(fh-ei)^3}+\frac{2bf^2\log\left(\frac{f(h+ix)}{fh-ei}\right)(a+b\log(c(e+fx)))}{d(fh-ei)^3}-\frac{f^2\log\left(\frac{fh-ei}{i(e+fx)}+1\right)(a+b\log}{d(fh-ei)^3}$$

```
[Out] b*f*i*(f*x+e)*(a+b*ln(c*(f*x+e)))/d/(-e*i+f*h)^3/(i*x+h)+1/2*(a+b*ln(c*(f*x
+e)))^2/d/(-e*i+f*h)/(i*x+h)^2-f*i*(f*x+e)*(a+b*ln(c*(f*x+e)))^2/d/(-e*i+f*
h)^3/(i*x+h)-b^2*f^2*ln(i*x+h)/d/(-e*i+f*h)^3+2*b*f^2*(a+b*ln(c*(f*x+e)))*l
n(f*(i*x+h)/(-e*i+f*h))/d/(-e*i+f*h)^3+b*f^2*(a+b*ln(c*(f*x+e)))*ln(1+(-e*i
+f*h)/i/(f*x+e))/d/(-e*i+f*h)^3-f^2*(a+b*ln(c*(f*x+e)))^2*ln(1+(-e*i+f*h)/i
/(f*x+e))/d/(-e*i+f*h)^3-b^2*f^2*polylog(2,(e*i-f*h)/i/(f*x+e))/d/(-e*i+f*h
)^3+2*b*f^2*(a+b*ln(c*(f*x+e)))*polylog(2,(e*i-f*h)/i/(f*x+e))/d/(-e*i+f*h)
^3+2*b^2*f^2*polylog(2,-i*(f*x+e)/(-e*i+f*h))/d/(-e*i+f*h)^3+2*b^2*f^2*poly
log(3,(e*i-f*h)/i/(f*x+e))/d/(-e*i+f*h)^3
```

Rubi [A] time = 1.09, antiderivative size = 453, normalized size of antiderivative = 0.93, number of steps used = 21, number of rules used = 15, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.469, Rules used = {2411, 12, 2347, 2344, 2302, 30, 2317, 2374, 6589, 2318, 2391, 2319, 2301, 2314, 31}

$$-\frac{2bf^2\text{PolyLog}\left(2,-\frac{i(e+fx)}{fh-ei}\right)(a+b\log(c(e+fx)))}{d(fh-ei)^3}+\frac{3b^2f^2\text{PolyLog}\left(2,-\frac{i(e+fx)}{fh-ei}\right)}{d(fh-ei)^3}+\frac{2b^2f^2\text{PolyLog}\left(3,-\frac{i(e+fx)}{fh-ei}\right)}{d(fh-ei)^3}+\frac{f^2}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(e + f*x)])^2/((d*e + d*f*x)*(h + i*x)^3),x]
```

```
[Out] (b*f*i*(e + f*x)*(a + b*Log[c*(e + f*x)]))/(d*(f*h - e*i)^3*(h + i*x)) - (f
^2*(a + b*Log[c*(e + f*x)])^2)/(2*d*(f*h - e*i)^3) + (a + b*Log[c*(e + f*x)
])^2/(2*d*(f*h - e*i)*(h + i*x)^2) - (f*i*(e + f*x)*(a + b*Log[c*(e + f*x)]
)^2)/(d*(f*h - e*i)^3*(h + i*x)) + (f^2*(a + b*Log[c*(e + f*x)])^3)/(3*b*d*
(f*h - e*i)^3) - (b^2*f^2*Log[h + i*x])/(d*(f*h - e*i)^3) + (3*b*f^2*(a + b
*Log[c*(e + f*x)])*Log[(f*(h + i*x))/(f*h - e*i)])/(d*(f*h - e*i)^3) - (f^2
*(a + b*Log[c*(e + f*x)])^2*Log[(f*(h + i*x))/(f*h - e*i)])/(d*(f*h - e*i)^
3) + (3*b^2*f^2*PolyLog[2, -((i*(e + f*x))/(f*h - e*i))])/(d*(f*h - e*i)^3)
 - (2*b*f^2*(a + b*Log[c*(e + f*x)])*PolyLog[2, -((i*(e + f*x))/(f*h - e*i)
)])/(d*(f*h - e*i)^3) + (2*b^2*f^2*PolyLog[3, -((i*(e + f*x))/(f*h - e*i))]
)/(d*(f*h - e*i)^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2314

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_), x
_Symbol] :> Simp[(x*(d + e*x^r)^(q + 1)*(a + b*Log[c*x^n]))/d, x] - Dist[(b
*n)/d, Int[(d + e*x^r)^(q + 1), x], x] /; FreeQ[{a, b, c, d, e, n, q, r}, x
] && EqQ[r*(q + 1) + 1, 0]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2318

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_))^2, x_Sy
mbol] :> Simp[(x*(a + b*Log[c*x^n])^p)/(d*(d + e*x)), x] - Dist[(b*n*p)/d,
Int[(a + b*Log[c*x^n])^(p - 1)/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n
, p}, x] && GtQ[p, 0]
```

Rule 2319

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/(e*(q + 1)), x]
- Dist[(b*n*p)/(e*(q + 1)), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2347

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/x
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
```

```
&& EqQ[d*e, 1]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\log(c(e+fx)))^2}{(h+190x)^3(de+dfx)}\,dx = \frac{\text{Subst}\left(\int \frac{(a+b\log(cx))^2}{dx\left(\frac{-190e+fh}{f}+\frac{190x}{f}\right)^3}\,dx, x, e+fx\right)}{f}$$

$$= \frac{\text{Subst}\left(\int \frac{(a+b\log(cx))^2}{x\left(\frac{-190e+fh}{f}+\frac{190x}{f}\right)^3}\,dx, x, e+fx\right)}{df}$$

$$= -\frac{\text{Subst}\left(\int \frac{(a+b\log(cx))^2}{x\left(\frac{-190e+fh}{f}+\frac{190x}{f}\right)^2}\,dx, x, e+fx\right)}{d(190e-fh)} + \frac{190\,\text{Subst}\left(\int \frac{(a+b\log(cx))^2}{\left(\frac{-190e+fh}{f}+\frac{190x}{f}\right)^3}\,dx, x, e+\ldots\right)}{df(190e-fh)}$$

$$= -\frac{(a+b\log(c(e+fx)))^2}{2d(190e-fh)(h+190x)^2} - \frac{190\,\text{Subst}\left(\int \frac{(a+b\log(cx))^2}{\left(\frac{-190e+fh}{f}+\frac{190x}{f}\right)^2}\,dx, x, e+fx\right)}{d(190e-fh)^2} + \frac{f\,\text{Sub}\ldots}{\ldots}$$

$$= -\frac{(a+b\log(c(e+fx)))^2}{2d(190e-fh)(h+190x)^2} + \frac{190f(e+fx)(a+b\log(c(e+fx)))^2}{d(190e-fh)^3(h+190x)} + \frac{(190f)\,\text{Subs}\ldots}{\ldots}$$

$$= -\frac{190bf(e+fx)(a+b\log(c(e+fx)))}{d(190e-fh)^3(h+190x)} - \frac{2bf^2\log\left(-\frac{f(h+190x)}{190e-fh}\right)(a+b\log(c(e+fx\ldots}{d(190e-fh)^3}$$

$$= \frac{b^2f^2\log(h+190x)}{d(190e-fh)^3} - \frac{190bf(e+fx)(a+b\log(c(e+fx)))}{d(190e-fh)^3(h+190x)} - \frac{3bf^2\log\left(-\frac{f(h+190x)}{190e-fh}\right.\ldots}{d(190\ldots}$$

$$= \frac{b^2f^2\log(h+190x)}{d(190e-fh)^3} - \frac{190bf(e+fx)(a+b\log(c(e+fx)))}{d(190e-fh)^3(h+190x)} - \frac{3bf^2\log\left(-\frac{f(h+190x)}{190e-fh}\right.\ldots}{d(190\ldots}$$

Mathematica [A] time = 0.95, size = 680, normalized size = 1.40

$$\frac{6a^2f^2(h+ix)^2\log(e+fx)+6a^2f(h+ix)(fh-ei)+3a^2(fh-ei)^2-6a^2f^2(h+ix)^2\log(h+ix)+6ab\left(-2f^2(h\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(e + f*x)])^2/((d*e + d*f*x)*(h + i*x)^3),x]
```

```
[Out] (3*a^2*(f*h - e*i)^2 + 6*a^2*f*(f*h - e*i)*(h + i*x) + 6*a^2*f^2*(h + i*x)^
2*Log[e + f*x] - 6*a^2*f^2*(h + i*x)^2*Log[h + i*x] + 6*a*b*((f*h - e*i)^2*
Log[c*(e + f*x)] + f^2*(h + i*x)^2*Log[c*(e + f*x)]^2 - f*(h + i*x)*(f*h -
e*i + f*(h + i*x)*Log[e + f*x] - f*(h + i*x)*Log[h + i*x]) - 2*f*(h + i*x)*
(f*(h + i*x)*Log[e + f*x] + (-(f*h) + e*i)*Log[c*(e + f*x)] - f*(h + i*x)*L
og[h + i*x]) - 2*f^2*(h + i*x)^2*(Log[c*(e + f*x)]*Log[(f*(h + i*x))/(f*h -
 e*i)] + PolyLog[2, (i*(e + f*x))/(-(f*h) + e*i)])) + b^2*(6*f^2*(h + i*x)^
2*Log[e + f*x] - 6*f*(f*h - e*i)*(h + i*x)*Log[c*(e + f*x)] + 3*(f*h - e*i)
^2*Log[c*(e + f*x)]^2 - 3*f^2*(h + i*x)^2*Log[c*(e + f*x)]^2 + 2*f^2*(h + i
*x)^2*Log[c*(e + f*x)]^3 - 6*f^2*(h + i*x)^2*Log[h + i*x] + 6*f^2*(h + i*x)
^2*Log[c*(e + f*x)]*Log[(f*(h + i*x))/(f*h - e*i)] + 6*f^2*(h + i*x)^2*Poly
Log[2, (i*(e + f*x))/(-(f*h) + e*i)] - 6*f*(h + i*x)*(Log[c*(e + f*x)]*(i*(
e + f*x)*Log[c*(e + f*x)] - 2*f*(h + i*x)*Log[(f*(h + i*x))/(f*h - e*i)]) -
 2*f*(h + i*x)*PolyLog[2, (i*(e + f*x))/(-(f*h) + e*i)]) - 6*f^2*(h + i*x)^
2*(Log[c*(e + f*x)]^2*Log[(f*(h + i*x))/(f*h - e*i)] + 2*Log[c*(e + f*x)]*P
olyLog[2, (i*(e + f*x))/(-(f*h) + e*i)] - 2*PolyLog[3, (i*(e + f*x))/(-(f*h
) + e*i)])))/(6*d*(f*h - e*i)^3*(h + i*x)^2)
```

fricas [F] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b^2\log\left(cfx+ce\right)^2+2\,ab\log\left(cfx+ce\right)+a^2}{dfi^3x^4+deh^3+\left(3\,dfhi^2+dei^3\right)x^3+3\left(dfh^2i+dehi^2\right)x^2+\left(dfh^3+3\,deh^2i\right)x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^2/(d*f*x+d*e)/(i*x+h)^3,x, algorithm="fricas
")
```

```
[Out] integral((b^2*log(c*f*x + c*e)^2 + 2*a*b*log(c*f*x + c*e) + a^2)/(d*f*i^3*x
^4 + d*e*h^3 + (3*d*f*h*i^2 + d*e*i^3)*x^3 + 3*(d*f*h^2*i + d*e*h*i^2)*x^2
+ (d*f*h^3 + 3*d*e*h^2*i)*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(b\log\left(\left(fx+e\right)c\right)+a\right)^2}{\left(dfx+de\right)\left(ix+h\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^2/(d*f*x+d*e)/(i*x+h)^3,x, algorithm="giac")
```

```
[Out] integrate((b*log((f*x + e)*c) + a)^2/((d*f*x + d*e)*(i*x + h)^3), x)
```

maple [F] time = 1.14, size = 0, normalized size = 0.00

$$\int\frac{\left(b\ln\left(\left(fx+e\right)c\right)+a\right)^2}{\left(dfx+de\right)\left(ix+h\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln((f*x+e)*c)+a)^2/(d*f*x+d*e)/(i*x+h)^3,x)
```

```
[Out] int((b*ln((f*x+e)*c)+a)^2/(d*f*x+d*e)/(i*x+h)^3,x)
```

maxima [B] time = 1.32, size = 1271, normalized size = 2.62

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^2/(d*f*x+d*e)/(i*x+h)^3,x, algorithm="maxima
")
```

```
[Out] 1/2*(2*f^2*log(f*x + e)/(d*f^3*h^3 - 3*d*e*f^2*h^2*i + 3*d*e^2*f*h*i^2 - d*
e^3*i^3) - 2*f^2*log(i*x + h)/(d*f^3*h^3 - 3*d*e*f^2*h^2*i + 3*d*e^2*f*h*i^
2 - d*e^3*i^3) + (2*f*i*x + 3*f*h - e*i)/(d*f^2*h^4 - 2*d*e*f*h^3*i + d*e^2
*h^2*i^2 + (d*f^2*h^2*i^2 - 2*d*e*f*h*i^3 + d*e^2*i^4)*x^2 + 2*(d*f^2*h^3*i
 - 2*d*e*f*h^2*i^2 + d*e^2*h*i^3)*x))*a^2 - (log(f*x + e)^2*log((f*i*x + e*
i)/(f*h - e*i) + 1) + 2*dilog(-(f*i*x + e*i)/(f*h - e*i))*log(f*x + e) - 2*
polylog(3, -(f*i*x + e*i)/(f*h - e*i)))*b^2*f^2/((f^3*h^3 - 3*e*f^2*h^2*i +
 3*e^2*f*h*i^2 - e^3*i^3)*d) + 1/6*(2*(b^2*f^2*i^2*x^2 + 2*b^2*f^2*h*i*x +
b^2*f^2*h^2)*log(f*x + e)^3 - 6*(f^2*h^2 - e*f*h*i - (3*f^2*h^2 - 4*e*f*h*i
 + e^2*i^2)*log(c))*a*b + 3*((3*f^2*h^2 - 4*e*f*h*i + e^2*i^2)*log(c)^2 - 2
*(f^2*h^2 - e*f*h*i)*log(c))*b^2 + 3*(2*a*b*f^2*h^2 + (2*f^2*h^2*log(c) - 4
*e*f*h*i + e^2*i^2)*b^2 + (2*a*b*f^2*i^2 + (2*f^2*i^2*log(c) - 3*f^2*i^2)*b
^2)*x^2 + 2*(2*a*b*f^2*h*i + (2*f^2*h*i*log(c) - 2*f^2*h*i - e*f*i^2)*b^2)*
x)*log(f*x + e)^2 - 6*((f^2*h*i - e*f*i^2 - 2*(f^2*h*i - e*f*i^2)*log(c))*a
*b - ((f^2*h*i - e*f*i^2)*log(c)^2 - (f^2*h*i - e*f*i^2)*log(c))*b^2)*x + 6
*((2*f^2*h^2*log(c) - 4*e*f*h*i + e^2*i^2)*a*b + (f^2*h^2*log(c)^2 + e*f*h*
i - (4*e*f*h*i - e^2*i^2)*log(c))*b^2 + ((2*f^2*i^2*log(c) - 3*f^2*i^2)*a*b
 + (f^2*i^2*log(c)^2 - 3*f^2*i^2*log(c) + f^2*i^2)*b^2)*x^2 + (2*(2*f^2*h*i
*log(c) - 2*f^2*h*i - e*f*i^2)*a*b + (2*f^2*h*i*log(c)^2 + f^2*h*i + e*f*i^
2 - 2*(2*f^2*h*i + e*f*i^2)*log(c))*b^2)*x)*log(f*x + e))/((f^3*h^3*i^2 - 3
*e*f^2*h^2*i^3 + 3*e^2*f*h*i^4 - e^3*i^5)*d*x^2 + 2*(f^3*h^4*i - 3*e*f^2*h^
3*i^2 + 3*e^2*f*h^2*i^3 - e^3*h*i^4)*d*x + (f^3*h^5 - 3*e*f^2*h^4*i + 3*e^2
*f*h^3*i^2 - e^3*h^2*i^3)*d) - (2*a*b*f^2 + (2*f^2*log(c) - 3*f^2)*b^2)*(lo
g(f*x + e)*log((f*i*x + e*i)/(f*h - e*i) + 1) + dilog(-(f*i*x + e*i)/(f*h -
 e*i)))/((f^3*h^3 - 3*e*f^2*h^2*i + 3*e^2*f*h*i^2 - e^3*i^3)*d) - ((2*f^2*l
og(c) - 3*f^2)*a*b + (f^2*log(c)^2 - 3*f^2*log(c) + f^2)*b^2)*log(i*x + h)/
((f^3*h^3 - 3*e*f^2*h^2*i + 3*e^2*f*h*i^2 - e^3*i^3)*d)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a+b\,\ln\left(c\,\left(e+f\,x\right)\right)\right)^2}{{\left(h+i\,x\right)}^3\,\left(d\,e+d\,f\,x\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(e + f*x)))^2/((h + i*x)^3*(d*e + d*f*x)),x)
```

```
[Out] int((a + b*log(c*(e + f*x)))^2/((h + i*x)^3*(d*e + d*f*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{a^{2}}{eh^{3}+3eh^{2}ix+3ehi^{2}x^{2}+ei^{3}x^{3}+fh^{3}x+3fh^{2}ix^{2}+3fhi^{2}x^{3}+fi^{3}x^{4}}\, dx + \int \frac{b^{2}\log{\left(ce+cfx \right)}^{2}}{eh^{3}+3eh^{2}ix+3ehi^{2}x^{2}+ei^{3}x^{3}+fh^{3}x+3fh^{2}ix^{2}+3fhi^{2}x^{3}+fi^{3}x^{4}}\, dx + \int \frac{}{eh^{3}+3}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(f*x+e)))**2/(d*f*x+d*e)/(i*x+h)**3,x)
```

```
[Out] (Integral(a**2/(e*h**3 + 3*e*h**2*i*x + 3*e*h*i**2*x**2 + e*i**3*x**3 + f*h
**3*x + 3*f*h**2*i*x**2 + 3*f*h*i**2*x**3 + f*i**3*x**4), x) + Integral(b**
2*log(c*e + c*f*x)**2/(e*h**3 + 3*e*h**2*i*x + 3*e*h*i**2*x**2 + e*i**3*x**
3 + f*h**3*x + 3*f*h**2*i*x**2 + 3*f*h*i**2*x**3 + f*i**3*x**4), x) + Integ
ral(2*a*b*log(c*e + c*f*x)/(e*h**3 + 3*e*h**2*i*x + 3*e*h*i**2*x**2 + e*i**
3*x**3 + f*h**3*x + 3*f*h**2*i*x**2 + 3*f*h*i**2*x**3 + f*i**3*x**4), x))/d
```

3.191 $\int \frac{(h+ix)^4}{(de+dfx)(a+b\log(c(e+fx)))}\,dx$

Optimal. Leaf size=230

$$\frac{i^4 e^{-\frac{4a}{b}}\,\text{Ei}\left(\frac{4(a+b\log(c(e+fx)))}{b}\right)}{bc^4df^5}+\frac{4i^3e^{-\frac{3a}{b}}(fh-ei)\text{Ei}\left(\frac{3(a+b\log(c(e+fx)))}{b}\right)}{bc^3df^5}+\frac{6i^2e^{-\frac{2a}{b}}(fh-ei)^2\text{Ei}\left(\frac{2(a+b\log(c(e+fx)))}{b}\right)}{bc^2df^5}+\frac{4ie^{-\frac{a}{b}}(f$$

```
[Out] 4*i*(-e*i+f*h)^3*Ei((a+b*ln(c*(f*x+e)))/b)/b/c/d/exp(a/b)/f^5+6*i^2*(-e*i+f
*h)^2*Ei(2*(a+b*ln(c*(f*x+e)))/b)/b/c^2/d/exp(2*a/b)/f^5+4*i^3*(-e*i+f*h)*E
i(3*(a+b*ln(c*(f*x+e)))/b)/b/c^3/d/exp(3*a/b)/f^5+i^4*Ei(4*(a+b*ln(c*(f*x+e
)))/b)/b/c^4/d/exp(4*a/b)/f^5+(-e*i+f*h)^4*ln(a+b*ln(c*(f*x+e)))/b/d/f^5
```

Rubi [A] time = 0.67, antiderivative size = 230, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 8, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {2411, 12, 2353, 2299, 2178, 2302, 29, 2309}

$$\frac{4i^3e^{-\frac{3a}{b}}(fh-ei)\text{Ei}\left(\frac{3(a+b\log(c(e+fx)))}{b}\right)}{bc^3df^5}+\frac{6i^2e^{-\frac{2a}{b}}(fh-ei)^2\text{Ei}\left(\frac{2(a+b\log(c(e+fx)))}{b}\right)}{bc^2df^5}+\frac{i^4e^{-\frac{4a}{b}}\,\text{Ei}\left(\frac{4(a+b\log(c(e+fx)))}{b}\right)}{bc^4df^5}+\frac{4ie^{-\frac{a}{b}}(f$$

Antiderivative was successfully verified.

```
[In] Int[(h + i*x)^4/((d*e + d*f*x)*(a + b*Log[c*(e + f*x)])),x]
```

```
[Out] (4*i*(f*h - e*i)^3*ExpIntegralEi[(a + b*Log[c*(e + f*x)])/b])/(b*c*d*E^(a/b
)*f^5) + (6*i^2*(f*h - e*i)^2*ExpIntegralEi[(2*(a + b*Log[c*(e + f*x)]))/b]
)/(b*c^2*d*E^((2*a)/b)*f^5) + (4*i^3*(f*h - e*i)*ExpIntegralEi[(3*(a + b*Lo
g[c*(e + f*x)]))/b])/(b*c^3*d*E^((3*a)/b)*f^5) + (i^4*ExpIntegralEi[(4*(a +
 b*Log[c*(e + f*x)]))/b])/(b*c^4*d*E^((4*a)/b)*f^5) + ((f*h - e*i)^4*Log[a
+ b*Log[c*(e + f*x)]])/(b*d*f^5)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 2178

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - (c*f)/d))*ExpIntegralEi[(f*g*(c + d*x)*Log[F])/d])/d, x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2299

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[1/(n*c^(1
/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b,
 c, p}, x] && IntegerQ[1/n]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2309

```
Int[((a_.) + Log[(c_.)*(x_)]*(b_.))^(p_)*(x_)^(m_.), x_Symbol] :> Dist[1/c^
(m + 1), Subst[Int[E^((m + 1)*x)*(a + b*x)^p, x], x, Log[c*x]], x] /; FreeQ
[{a, b, c, p}, x] && IntegerQ[m]
```

Rule 2353

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((f_.)*(x_))^(m_.)*((d_) +
(e_.)*(x_)^(r_.))^(q_.), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[
c*x^n])^p, (f*x)^m*(d + e*x^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b
, c, d, e, f, m, n, p, q, r}, x] && IntegerQ[q] && (GtQ[q, 0] || (IGtQ[p, 0
] && IntegerQ[m] && IntegerQ[r]))
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rubi steps

$$\int \frac{(h+191x)^4}{(de+dfx)(a+b\log(c(e+fx)))}\,dx = \frac{\text{Subst}\left(\int \frac{\left(\frac{-191e+fh}{f}+\frac{191x}{f}\right)^4}{dx(a+b\log(cx))}\,dx,x,e+fx\right)}{f}$$

$$= \frac{\text{Subst}\left(\int \frac{\left(\frac{-191e+fh}{f}+\frac{191x}{f}\right)^4}{x(a+b\log(cx))}\,dx,x,e+fx\right)}{df}$$

$$= \frac{\text{Subst}\left(\int \left(-\frac{764(191e-fh)^3}{f^4(a+b\log(cx))}+\frac{(191e-fh)^4}{f^4x(a+b\log(cx))}+\frac{218886(191e-fh)^2x}{f^4(a+b\log(cx))}-\frac{27871484}{f^4(a+}\right.\right.}{df}$$

$$= \frac{1330863361\,\text{Subst}\left(\int \frac{x^3}{a+b\log(cx)}\,dx,x,e+fx\right)}{df^5} - \frac{(27871484(191e-f}{}$$

$$= \frac{1330863361\,\text{Subst}\left(\int \frac{e^{4x}}{a+bx}\,dx,x,\log(c(e+fx))\right)}{c^4df^5} - \frac{(27871484(191e-}{}$$

$$= -\frac{764e^{-\frac{a}{b}}(191e-fh)^3\text{Ei}\left(\frac{a+b\log(c(e+fx))}{b}\right)}{bcdf^5} + \frac{218886e^{-\frac{2a}{b}}(191e-fh)^2\text{Ei}}{bc^2df^5}$$

Mathematica [A] time = 0.97, size = 397, normalized size = 1.73

$$e^{-\frac{4a}{b}}\left(c^4e^4i^4e^{\frac{4a}{b}}\log(a+b\log(c(e+fx)))-4c^4e^3fhi^3e^{\frac{4a}{b}}\log(a+b\log(c(e+fx)))+6c^4e^2f^2h^2i^2e^{\frac{4a}{b}}\log(a+b\log\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(h + i*x)^4/((d*e + d*f*x)*(a + b*Log[c*(e + f*x)])),x]
```

```
[Out] (4*c^3*E^((3*a)/b)*i*(f*h - e*i)^3*ExpIntegralEi[a/b + Log[c*(e + f*x)]] +
6*c^2*e*E^((2*a)/b)*i^3*(-2*f*h + e*i)*ExpIntegralEi[2*(a/b + Log[c*(e + f*
x)])] + 4*c*E^(a/b)*f*h*i^3*ExpIntegralEi[3*(a/b + Log[c*(e + f*x)])] - 4*c
```

```
*e*E^(a/b)*i^4*ExpIntegralEi[3*(a/b + Log[c*(e + f*x)])] + i^4*ExpIntegralE
i[4*(a/b + Log[c*(e + f*x)])] + 6*c^2*E^((2*a)/b)*f^2*h^2*i^2*ExpIntegralEi
[(2*(a + b*Log[c*(e + f*x)]))/b] - 4*c^4*e*E^((4*a)/b)*f^3*h^3*i*Log[a + b*
Log[c*(e + f*x)]] + 6*c^4*e^2*E^((4*a)/b)*f^2*h^2*i^2*Log[a + b*Log[c*(e +
f*x)]] - 4*c^4*e^3*E^((4*a)/b)*f*h*i^3*Log[a + b*Log[c*(e + f*x)]] + c^4*e^
4*E^((4*a)/b)*i^4*Log[a + b*Log[c*(e + f*x)]] + c^4*E^((4*a)/b)*f^4*h^4*Log
[f*(a + b*Log[c*(e + f*x)])])/(b*c^4*d*E^((4*a)/b)*f^5)
```

fricas [A] time = 0.42, size = 401, normalized size = 1.74

$$\left(i^4 \operatorname{log\_integral}\left(\left(c^4 f^4 x^4 + 4\, c^4 e f^3 x^3 + 6\, c^4 e^2 f^2 x^2 + 4\, c^4 e^3 f x + c^4 e^4\right) e^{\left(\frac{4\,a}{b}\right)}\right) + \left(c^4 f^4 h^4 - 4\, c^4 e f^3 h^3 i + 6\, c^4 e^2 f^2 h^2 i\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^4/(d*f*x+d*e)/(a+b*log(c*(f*x+e))),x, algorithm="fricas")
```

```
[Out] (i^4*log_integral((c^4*f^4*x^4 + 4*c^4*e*f^3*x^3 + 6*c^4*e^2*f^2*x^2 + 4*c^
4*e^3*f*x + c^4*e^4)*e^(4*a/b)) + (c^4*f^4*h^4 - 4*c^4*e*f^3*h^3*i + 6*c^4*
e^2*f^2*h^2*i^2 - 4*c^4*e^3*f*h*i^3 + c^4*e^4*i^4)*e^(4*a/b)*log(b*log(c*f*
x + c*e) + a) + 4*(c*f*h*i^3 - c*e*i^4)*e^(a/b)*log_integral((c^3*f^3*x^3 +
 3*c^3*e*f^2*x^2 + 3*c^3*e^2*f*x + c^3*e^3)*e^(3*a/b)) + 6*(c^2*f^2*h^2*i^2
 - 2*c^2*e*f*h*i^3 + c^2*e^2*i^4)*e^(2*a/b)*log_integral((c^2*f^2*x^2 + 2*c
^2*e*f*x + c^2*e^2)*e^(2*a/b)) + 4*(c^3*f^3*h^3*i - 3*c^3*e*f^2*h^2*i^2 + 3
*c^3*e^2*f*h*i^3 - c^3*e^3*i^4)*e^(3*a/b)*log_integral((c*f*x + c*e)*e^(a/b
)))*e^(-4*a/b)/(b*c^4*d*f^5)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(ix+h)^4}{\left(dfx+de\right)\left(b\log\left(\left(fx+e\right)c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^4/(d*f*x+d*e)/(a+b*log(c*(f*x+e))),x, algorithm="giac")
```

```
[Out] integrate((i*x + h)^4/((d*f*x + d*e)*(b*log((f*x + e)*c) + a)), x)
```

maple [F] time = 0.64, size = 0, normalized size = 0.00

$$\int \frac{(ix+h)^4}{\left(dfx+de\right)\left(b\ln\left(\left(fx+e\right)c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)^4/(d*f*x+d*e)/(b*ln((f*x+e)*c)+a),x)
```

```
[Out] int((i*x+h)^4/(d*f*x+d*e)/(b*ln((f*x+e)*c)+a),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{h^4\log\left(\frac{b\log\left(fx+e\right)+b\log(c)+a}{b}\right)}{bdf}+\int \frac{i^4x^4+4\,hi^3x^3+6\,h^2i^2x^2+4\,h^3ix}{bde\log(c)+ade+\left(bdf\log(c)+adf\right)x+\left(bdfx+bde\right)\log\left(fx+e\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^4/(d*f*x+d*e)/(a+b*log(c*(f*x+e))),x, algorithm="maxima")
```

```
[Out] h^4*log((b*log(f*x + e) + b*log(c) + a)/b)/(b*d*f) + integrate((i^4*x^4 + 4
*h*i^3*x^3 + 6*h^2*i^2*x^2 + 4*h^3*i*x)/(b*d*e*log(c) + a*d*e + (b*d*f*log(
c) + a*d*f)*x + (b*d*f*x + b*d*e)*log(f*x + e)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(h+i\,x)^4}{\left(d\,e+d\,f\,x\right)\,\left(a+b\,\ln\left(c\,\left(e+f\,x\right)\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h + i*x)^4/((d*e + d*f*x)*(a + b*log(c*(e + f*x)))),x)
```

```
[Out] int((h + i*x)^4/((d*e + d*f*x)*(a + b*log(c*(e + f*x)))), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{h^4}{ae+afx+be\log\left(ce+cfx\right)+bfx\log\left(ce+cfx\right)}\,dx+\int \frac{i^4x^4}{ae+afx+be\log\left(ce+cfx\right)+bfx\log\left(ce+cfx\right)}\,dx+\int \frac{4hi^3x^3}{ae+afx+be\log\left(ce+cfx\right)+bfx\log}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)**4/(d*f*x+d*e)/(a+b*ln(c*(f*x+e))),x)
```

```
[Out] (Integral(h**4/(a*e + a*f*x + b*e*log(c*e + c*f*x) + b*f*x*log(c*e + c*f*x)
), x) + Integral(i**4*x**4/(a*e + a*f*x + b*e*log(c*e + c*f*x) + b*f*x*log(
c*e + c*f*x)), x) + Integral(4*h*i**3*x**3/(a*e + a*f*x + b*e*log(c*e + c*f
*x) + b*f*x*log(c*e + c*f*x)), x) + Integral(6*h**2*i**2*x**2/(a*e + a*f*x
+ b*e*log(c*e + c*f*x) + b*f*x*log(c*e + c*f*x)), x) + Integral(4*h**3*i*x/
(a*e + a*f*x + b*e*log(c*e + c*f*x) + b*f*x*log(c*e + c*f*x)), x))/d
```

3.192 $\int \frac{(h+ix)^3}{(de+dfx)(a+b\log(c(e+fx)))}\,dx$

Optimal. Leaf size=177

$$\frac{i^3e^{-\frac{3a}{b}}\text{Ei}\left(\frac{3(a+b\log(c(e+fx)))}{b}\right)}{bc^3df^4}+\frac{3i^2e^{-\frac{2a}{b}}(fh-ei)\text{Ei}\left(\frac{2(a+b\log(c(e+fx)))}{b}\right)}{bc^2df^4}+\frac{3ie^{-\frac{a}{b}}(fh-ei)^2\text{Ei}\left(\frac{a+b\log(c(e+fx))}{b}\right)}{bcdf^4}+\frac{(fh-ei)^3\text{l}}{}$$

```
[Out] 3*i*(-e*i+f*h)^2*Ei((a+b*ln(c*(f*x+e)))/b)/b/c/d/exp(a/b)/f^4+3*i^2*(-e*i+f
*h)*Ei(2*(a+b*ln(c*(f*x+e)))/b)/b/c^2/d/exp(2*a/b)/f^4+i^3*Ei(3*(a+b*ln(c*(
f*x+e)))/b)/b/c^3/d/exp(3*a/b)/f^4+(-e*i+f*h)^3*ln(a+b*ln(c*(f*x+e)))/b/d/f
^4
```

Rubi [A] time = 0.48, antiderivative size = 177, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 8, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {2411, 12, 2353, 2299, 2178, 2302, 29, 2309}

$$\frac{3i^2e^{-\frac{2a}{b}}(fh-ei)\text{Ei}\left(\frac{2(a+b\log(c(e+fx)))}{b}\right)}{bc^2df^4}+\frac{i^3e^{-\frac{3a}{b}}\text{Ei}\left(\frac{3(a+b\log(c(e+fx)))}{b}\right)}{bc^3df^4}+\frac{3ie^{-\frac{a}{b}}(fh-ei)^2\text{Ei}\left(\frac{a+b\log(c(e+fx))}{b}\right)}{bcdf^4}+\frac{(fh-ei)^3\text{l}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(h + i*x)^3/((d*e + d*f*x)*(a + b*Log[c*(e + f*x)])),x]
```

```
[Out] (3*i*(f*h - e*i)^2*ExpIntegralEi[(a + b*Log[c*(e + f*x)])/b])/(b*c*d*E^(a/b
)*f^4) + (3*i^2*(f*h - e*i)*ExpIntegralEi[(2*(a + b*Log[c*(e + f*x)]))/b])/
(b*c^2*d*E^((2*a)/b)*f^4) + (i^3*ExpIntegralEi[(3*(a + b*Log[c*(e + f*x)]))
/b])/(b*c^3*d*E^((3*a)/b)*f^4) + ((f*h - e*i)^3*Log[a + b*Log[c*(e + f*x)]]
)/(b*d*f^4)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 2178

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - (c*f)/d))*ExpIntegralEi[(f*g*(c + d*x)*Log[F])/d])/d, x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2299

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[1/(n*c^(1
/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b,
 c, p}, x] && IntegerQ[1/n]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2309

```
Int[((a_.) + Log[(c_.)*(x_)]*(b_.))^(p_)*(x_)^(m_.), x_Symbol] :> Dist[1/c^
(m + 1), Subst[Int[E^((m + 1)*x)*(a + b*x)^p, x], x, Log[c*x]], x] /; FreeQ
[{a, b, c, p}, x] && IntegerQ[m]
```

Rule 2353

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((f_.)*(x_))^(m_.)*((d_) +
(e_.)*(x_)^(r_.))^(q_.), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[
c*x^n])^p, (f*x)^m*(d + e*x^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b
, c, d, e, f, m, n, p, q, r}, x] && IntegerQ[q] && (GtQ[q, 0] || (IGtQ[p, 0
] && IntegerQ[m] && IntegerQ[r]))
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rubi steps

$$\int \frac{(h+192x)^3}{(de+dfx)(a+b\log(c(e+fx)))}\,dx = \frac{\text{Subst}\left(\int \frac{\left(\frac{-192e+fh}{f}+\frac{192x}{f}\right)^3}{dx(a+b\log(cx))}\,dx, x, e+fx\right)}{f}$$

$$= \frac{\text{Subst}\left(\int \frac{\left(\frac{-192e+fh}{f}+\frac{192x}{f}\right)^3}{x(a+b\log(cx))}\,dx, x, e+fx\right)}{df}$$

$$= \frac{\text{Subst}\left(\int \left(\frac{576(192e-fh)^2}{f^3(a+b\log(cx))} - \frac{(192e-fh)^3}{f^3x(a+b\log(cx))} - \frac{110592(192e-fh)x}{f^3(a+b\log(cx))} + \frac{7077888x}{f^3(a+b\log(c}\right.\right.}{df}$$

$$= \frac{7077888\,\text{Subst}\left(\int \frac{x^2}{a+b\log(cx)}\,dx, x, e+fx\right)}{df^4} - \frac{(110592(192e-fh))\,\text{Su}}{}$$

$$= \frac{7077888\,\text{Subst}\left(\int \frac{e^{3x}}{a+bx}\,dx, x, \log(c(e+fx))\right)}{c^3df^4} - \frac{(110592(192e-fh))}{}$$

$$= \frac{576e^{-\frac{a}{b}}(192e-fh)^2\text{Ei}\left(\frac{a+b\log(c(e+fx))}{b}\right)}{bcdf^4} - \frac{110592e^{-\frac{2a}{b}}(192e-fh)\text{Ei}\left(\right.}{bc^2df^4}$$

Mathematica [A] time = 0.65, size = 279, normalized size = 1.58

$$e^{-\frac{3a}{b}}\left(c^3\left(-e^3\right)i^3e^{\frac{3a}{b}}\log(a+b\log(c(e+fx))) + 3c^3e^2fhi^2e^{\frac{3a}{b}}\log(a+b\log(c(e+fx))) + c^3f^3h^3e^{\frac{3a}{b}}\log(f(a+b\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(h + i*x)^3/((d*e + d*f*x)*(a + b*Log[c*(e + f*x)])),x]
```

```
[Out] (3*c^2*E^((2*a)/b)*i*(f*h - e*i)^2*ExpIntegralEi[a/b + Log[c*(e + f*x)]] -
3*c*e*E^(a/b)*i^3*ExpIntegralEi[2*(a/b + Log[c*(e + f*x)])] + i^3*ExpIntegr
alEi[3*(a/b + Log[c*(e + f*x)])] + 3*c*E^(a/b)*f*h*i^2*ExpIntegralEi[(2*(a
```

```
+ b*Log[c*(e + f*x)]))/b] - 3*c^3*e*E^((3*a)/b)*f^2*h^2*i*Log[a + b*Log[c*(
e + f*x)]] + 3*c^3*e^2*E^((3*a)/b)*f*h*i^2*Log[a + b*Log[c*(e + f*x)]] - c^
3*e^3*E^((3*a)/b)*i^3*Log[a + b*Log[c*(e + f*x)]] + c^3*E^((3*a)/b)*f^3*h^3
*Log[f*(a + b*Log[c*(e + f*x)]])])/(b*c^3*d*E^((3*a)/b)*f^4)
```

fricas [A] time = 0.43, size = 260, normalized size = 1.47

$$\frac{\left(i^3 \operatorname{log\_integral}\left(\left(c^3 f^3 x^3 + 3\,c^3 e f^2 x^2 + 3\,c^3 e^2 f x + c^3 e^3\right) e^{\left(\frac{3a}{b}\right)}\right) + \left(c^3 f^3 h^3 - 3\,c^3 e f^2 h^2 i + 3\,c^3 e^2 f h i^2 - c^3 e^3 i^3\right) e^{\left(\frac{3a}{b}\right)}\cdots}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^3/(d*f*x+d*e)/(a+b*log(c*(f*x+e))),x, algorithm="fricas")
```

```
[Out] (i^3*log_integral((c^3*f^3*x^3 + 3*c^3*e*f^2*x^2 + 3*c^3*e^2*f*x + c^3*e^3)
*e^(3*a/b)) + (c^3*f^3*h^3 - 3*c^3*e*f^2*h^2*i + 3*c^3*e^2*f*h*i^2 - c^3*e^
3*i^3)*e^(3*a/b)*log(b*log(c*f*x + c*e) + a) + 3*(c*f*h*i^2 - c*e*i^3)*e^(a
/b)*log_integral((c^2*f^2*x^2 + 2*c^2*e*f*x + c^2*e^2)*e^(2*a/b)) + 3*(c^2*
f^2*h^2*i - 2*c^2*e*f*h*i^2 + c^2*e^2*i^3)*e^(2*a/b)*log_integral((c*f*x +
c*e)*e^(a/b)))*e^(-3*a/b)/(b*c^3*d*f^4)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(ix+h)^3}{\left(dfx+de\right)\left(b\log\left(\left(fx+e\right)c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^3/(d*f*x+d*e)/(a+b*log(c*(f*x+e))),x, algorithm="giac")
```

```
[Out] integrate((i*x + h)^3/((d*f*x + d*e)*(b*log((f*x + e)*c) + a)), x)
```

maple [F] time = 0.63, size = 0, normalized size = 0.00

$$\int \frac{(ix+h)^3}{\left(dfx+de\right)\left(b\ln\left(\left(fx+e\right)c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)^3/(d*f*x+d*e)/(b*ln((f*x+e)*c)+a),x)
```

```
[Out] int((i*x+h)^3/(d*f*x+d*e)/(b*ln((f*x+e)*c)+a),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{h^3\log\left(\frac{b\log\left(fx+e\right)+b\log(c)+a}{b}\right)}{bdf}+\int \frac{i^3x^3+3\,hi^2x^2+3\,h^2ix}{bde\log(c)+ade+\left(bdf\log(c)+adf\right)x+\left(bdfx+bde\right)\log\left(fx+e\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^3/(d*f*x+d*e)/(a+b*log(c*(f*x+e))),x, algorithm="maxima")
```

```
[Out] h^3*log((b*log(f*x + e) + b*log(c) + a)/b)/(b*d*f) + integrate((i^3*x^3 + 3
*h*i^2*x^2 + 3*h^2*i*x)/(b*d*e*log(c) + a*d*e + (b*d*f*log(c) + a*d*f)*x +
(b*d*f*x + b*d*e)*log(f*x + e)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(h+i\,x)^3}{\left(d\,e+d\,f\,x\right)\,\left(a+b\,\ln\left(c\,\left(e+f\,x\right)\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h + i*x)^3/((d*e + d*f*x)*(a + b*log(c*(e + f*x)))),x)
```

```
[Out] int((h + i*x)^3/((d*e + d*f*x)*(a + b*log(c*(e + f*x)))), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{h^3}{ae+afx+be\log\left(ce+cfx\right)+bfx\log\left(ce+cfx\right)}\,dx + \int \frac{i^3x^3}{ae+afx+be\log\left(ce+cfx\right)+bfx\log\left(ce+cfx\right)}\,dx + \int \frac{3hi^2x^2}{ae+afx+be\log\left(ce+cfx\right)+bfx\log\left(\right.}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)**3/(d*f*x+d*e)/(a+b*ln(c*(f*x+e))),x)
```

```
[Out] (Integral(h**3/(a*e + a*f*x + b*e*log(c*e + c*f*x) + b*f*x*log(c*e + c*f*x)
), x) + Integral(i**3*x**3/(a*e + a*f*x + b*e*log(c*e + c*f*x) + b*f*x*log(
c*e + c*f*x)), x) + Integral(3*h*i**2*x**2/(a*e + a*f*x + b*e*log(c*e + c*f
*x) + b*f*x*log(c*e + c*f*x)), x) + Integral(3*h**2*i*x/(a*e + a*f*x + b*e*
log(c*e + c*f*x) + b*f*x*log(c*e + c*f*x)), x))/d
```

3.193 $\int \frac{(h+ix)^2}{(de+dfx)(a+b\log(c(e+fx)))}\,dx$

Optimal. Leaf size=124

$$\frac{i^2e^{-\frac{2a}{b}}\text{Ei}\left(\frac{2(a+b\log(c(e+fx)))}{b}\right)}{bc^2df^3}+\frac{2ie^{-\frac{a}{b}}(fh-ei)\text{Ei}\left(\frac{a+b\log(c(e+fx))}{b}\right)}{bcdf^3}+\frac{(fh-ei)^2\log(a+b\log(c(e+fx)))}{bdf^3}$$

```
[Out] 2*i*(-e*i+f*h)*Ei((a+b*ln(c*(f*x+e)))/b)/b/c/d/exp(a/b)/f^3+i^2*Ei(2*(a+b*l
n(c*(f*x+e)))/b)/b/c^2/d/exp(2*a/b)/f^3+(-e*i+f*h)^2*ln(a+b*ln(c*(f*x+e)))/
b/d/f^3
```

Rubi [A] time = 0.38, antiderivative size = 124, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 8, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {2411, 12, 2353, 2299, 2178, 2302, 29, 2309}

$$\frac{i^2e^{-\frac{2a}{b}}\text{Ei}\left(\frac{2(a+b\log(c(e+fx)))}{b}\right)}{bc^2df^3}+\frac{2ie^{-\frac{a}{b}}(fh-ei)\text{Ei}\left(\frac{a+b\log(c(e+fx))}{b}\right)}{bcdf^3}+\frac{(fh-ei)^2\log(a+b\log(c(e+fx)))}{bdf^3}$$

Antiderivative was successfully verified.

```
[In] Int[(h + i*x)^2/((d*e + d*f*x)*(a + b*Log[c*(e + f*x)])),x]
```

```
[Out] (2*i*(f*h - e*i)*ExpIntegralEi[(a + b*Log[c*(e + f*x)])/b])/(b*c*d*E^(a/b)*
f^3) + (i^2*ExpIntegralEi[(2*(a + b*Log[c*(e + f*x)]))/b])/(b*c^2*d*E^((2*a
)/b)*f^3) + ((f*h - e*i)^2*Log[a + b*Log[c*(e + f*x)]])/(b*d*f^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 2178

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - (c*f)/d))*ExpIntegralEi[(f*g*(c + d*x)*Log[F])/d])/d, x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2299

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[1/(n*c^(1
/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b,
 c, p}, x] && IntegerQ[1/n]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2309

```
Int[((a_.) + Log[(c_.)*(x_)]*(b_.))^(p_)*(x_)^(m_.), x_Symbol] :> Dist[1/c^
(m + 1), Subst[Int[E^((m + 1)*x)*(a + b*x)^p, x], x, Log[c*x]], x] /; FreeQ
```

```
[{a, b, c, p}, x] && IntegerQ[m]
```

Rule 2353

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((f_.)*(x_))^(m_.)*((d_) +
(e_.)*(x_)^(r_.))^(q_.), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[
c*x^n])^p, (f*x)^m*(d + e*x^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b
, c, d, e, f, m, n, p, q, r}, x] && IntegerQ[q] && (GtQ[q, 0] || (IGtQ[p, 0
] && IntegerQ[m] && IntegerQ[r]))
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rubi steps

$$\int \frac{(h+193x)^2}{(de+dfx)(a+b\log(c(e+fx)))}\,dx = \frac{\text{Subst}\left(\int \frac{\left(\frac{-193e+fh}{f}+\frac{193x}{f}\right)^2}{dx(a+b\log(cx))}\,dx, x, e+fx\right)}{f}$$

$$= \frac{\text{Subst}\left(\int \frac{\left(\frac{-193e+fh}{f}+\frac{193x}{f}\right)^2}{x(a+b\log(cx))}\,dx, x, e+fx\right)}{df}$$

$$= \frac{\text{Subst}\left(\int \left(-\frac{386(193e-fh)}{f^2(a+b\log(cx))}+\frac{(193e-fh)^2}{f^2x(a+b\log(cx))}+\frac{37249x}{f^2(a+b\log(cx))}\right)dx, x, e+f\right.}{df}$$

$$= \frac{37249\,\text{Subst}\left(\int \frac{x}{a+b\log(cx)}\,dx, x, e+fx\right)}{df^3} - \frac{(386(193e-fh))\,\text{Subst}\left(\int\right.}{df}$$

$$= \frac{37249\,\text{Subst}\left(\int \frac{e^{2x}}{a+bx}\,dx, x, \log(c(e+fx))\right)}{c^2df^3} - \frac{(386(193e-fh))\,\text{Subs}}{}$$

$$= -\frac{386e^{-\frac{a}{b}}(193e-fh)\text{Ei}\left(\frac{a+b\log(c(e+fx))}{b}\right)}{bcdf^3} + \frac{37249e^{-\frac{2a}{b}}\text{Ei}\left(\frac{2(a+b\log(c(e+f}{b}\right.}{bc^2df^3}$$

Mathematica [A] time = 0.34, size = 137, normalized size = 1.10

$$\frac{e^{-\frac{2a}{b}}\left(c^2e^{\frac{2a}{b}}\left(f^2h^2\log(f(a+b\log(c(e+fx))))+ei(ei-2fh)\log(a+b\log(c(e+fx)))\right)+2cie^{a/b}(fh-ei)\text{Ei}\left(\frac{a}{b}\right.}{bc^2df^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(h + i*x)^2/((d*e + d*f*x)*(a + b*Log[c*(e + f*x)])),x]
```

```
[Out] (2*c*E^(a/b)*i*(f*h - e*i)*ExpIntegralEi[a/b + Log[c*(e + f*x)]] + i^2*ExpI
ntegralEi[(2*(a + b*Log[c*(e + f*x)]))/b] + c^2*E^((2*a)/b)*(e*i*(-2*f*h +
e*i)*Log[a + b*Log[c*(e + f*x)]] + f^2*h^2*Log[f*(a + b*Log[c*(e + f*x)])])
)/(b*c^2*d*E^((2*a)/b)*f^3)
```

fricas [A] time = 0.41, size = 149, normalized size = 1.20

$$\frac{\left(\left(c^2f^2h^2-2\,c^2efhi+c^2e^2i^2\right)e^{\left(\frac{2\,a}{b}\right)}\log\left(b\log\left(cfx+ce\right)+a\right)+i^2\,\mathrm{log\_integral}\left(\left(c^2f^2x^2+2\,c^2efx+c^2e^2\right)e^{\left(\frac{2\,a}{b}\right)}\right)+\cdots\right.}{bc^2df^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2/(d*f*x+d*e)/(a+b*log(c*(f*x+e))),x, algorithm="fricas")
```

```
[Out] ((c^2*f^2*h^2 - 2*c^2*e*f*h*i + c^2*e^2*i^2)*e^(2*a/b)*log(b*log(c*f*x + c*
e) + a) + i^2*log_integral((c^2*f^2*x^2 + 2*c^2*e*f*x + c^2*e^2)*e^(2*a/b))
 + 2*(c*f*h*i - c*e*i^2)*e^(a/b)*log_integral((c*f*x + c*e)*e^(a/b)))*e^(-2
*a/b)/(b*c^2*d*f^3)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(ix+h)^2}{\left(dfx+de\right)\left(b\log\left(\left(fx+e\right)c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2/(d*f*x+d*e)/(a+b*log(c*(f*x+e))),x, algorithm="giac")
```

```
[Out] integrate((i*x + h)^2/((d*f*x + d*e)*(b*log((f*x + e)*c) + a)), x)
```

maple [F] time = 0.63, size = 0, normalized size = 0.00

$$\int \frac{(ix+h)^2}{\left(dfx+de\right)\left(b\ln\left(\left(fx+e\right)c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)^2/(d*f*x+d*e)/(b*ln((f*x+e)*c)+a),x)
```

```
[Out] int((i*x+h)^2/(d*f*x+d*e)/(b*ln((f*x+e)*c)+a),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{h^2\log\left(\frac{b\log\left(fx+e\right)+b\log(c)+a}{b}\right)}{bdf}+\int \frac{i^2x^2+2\,hix}{bde\log(c)+ade+\left(bdf\log(c)+adf\right)x+\left(bdfx+bde\right)\log\left(fx+e\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2/(d*f*x+d*e)/(a+b*log(c*(f*x+e))),x, algorithm="maxima")
```

```
[Out] h^2*log((b*log(f*x + e) + b*log(c) + a)/b)/(b*d*f) + integrate((i^2*x^2 + 2
*h*i*x)/(b*d*e*log(c) + a*d*e + (b*d*f*log(c) + a*d*f)*x + (b*d*f*x + b*d*e
)*log(f*x + e)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(h+i\,x)^2}{\left(d\,e+d\,f\,x\right)\,\left(a+b\,\ln\left(c\,\left(e+f\,x\right)\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h + i*x)^2/((d*e + d*f*x)*(a + b*log(c*(e + f*x)))),x)
```

```
[Out] int((h + i*x)^2/((d*e + d*f*x)*(a + b*log(c*(e + f*x)))), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{h^2}{ae+afx+be\log\left(ce+cfx\right)+bfx\log\left(ce+cfx\right)}\,dx + \int \frac{i^2x^2}{ae+afx+be\log\left(ce+cfx\right)+bfx\log\left(ce+cfx\right)}\,dx + \int \frac{2hix}{ae+afx+be\log\left(ce+cfx\right)+bfx\log\left(\right.}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)**2/(d*f*x+d*e)/(a+b*ln(c*(f*x+e))),x)
```

```
[Out] (Integral(h**2/(a*e + a*f*x + b*e*log(c*e + c*f*x) + b*f*x*log(c*e + c*f*x)
), x) + Integral(i**2*x**2/(a*e + a*f*x + b*e*log(c*e + c*f*x) + b*f*x*log(
c*e + c*f*x)), x) + Integral(2*h*i*x/(a*e + a*f*x + b*e*log(c*e + c*f*x) +
b*f*x*log(c*e + c*f*x)), x))/d
```

3.194 $\int \frac{h+ix}{(de+dfx)(a+b\log(c(e+fx)))}\,dx$

__Optimal__. Leaf size=71

$$\frac{ie^{-\frac{a}{b}}\text{Ei}\left(\frac{a+b\log(c(e+fx))}{b}\right)}{bcdf^2}+\frac{(fh-ei)\log(a+b\log(c(e+fx)))}{bdf^2}$$

```
[Out] i*Ei((a+b*ln(c*(f*x+e)))/b)/b/c/d/exp(a/b)/f^2+(-e*i+f*h)*ln(a+b*ln(c*(f*x+
e)))/b/d/f^2
```

__Rubi [A]__ time = 0.22, antiderivative size = 71, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.233, Rules used = {2411, 12, 2353, 2299, 2178, 2302, 29}

$$\frac{ie^{-\frac{a}{b}}\text{Ei}\left(\frac{a+b\log(c(e+fx))}{b}\right)}{bcdf^2}+\frac{(fh-ei)\log(a+b\log(c(e+fx)))}{bdf^2}$$

Antiderivative was successfully verified.

```
[In] Int[(h + i*x)/((d*e + d*f*x)*(a + b*Log[c*(e + f*x)])),x]
```

```
[Out] (i*ExpIntegralEi[(a + b*Log[c*(e + f*x)])/b])/(b*c*d*E^(a/b)*f^2) + ((f*h -
 e*i)*Log[a + b*Log[c*(e + f*x)]])/(b*d*f^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 2178

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - (c*f)/d))*ExpIntegralEi[(f*g*(c + d*x)*Log[F])/d])/d, x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2299

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[1/(n*c^(1
/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b,
 c, p}, x] && IntegerQ[1/n]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2353

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((f_.)*(x_))^(m_.)*((d_) +
(e_.)*(x_)^(r_.))^(q_.), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[
c*x^n])^p, (f*x)^m*(d + e*x^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b
, c, d, e, f, m, n, p, q, r}, x] && IntegerQ[q] && (GtQ[q, 0] || (IGtQ[p, 0
] && IntegerQ[m] && IntegerQ[r]))
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rubi steps

$$\int \frac{h+194x}{(de+dfx)(a+b\log(c(e+fx)))}\,dx = \frac{\text{Subst}\left(\int \frac{\frac{-194e+fh}{f}+\frac{194x}{f}}{dx(a+b\log(cx))}\,dx, x, e+fx\right)}{f}$$

$$= \frac{\text{Subst}\left(\int \frac{\frac{-194e+fh}{f}+\frac{194x}{f}}{x(a+b\log(cx))}\,dx, x, e+fx\right)}{df}$$

$$= \frac{\text{Subst}\left(\int \left(\frac{194}{f(a+b\log(cx))}+\frac{-194e+fh}{fx(a+b\log(cx))}\right)dx, x, e+fx\right)}{df}$$

$$= \frac{194\,\text{Subst}\left(\int \frac{1}{a+b\log(cx)}\,dx, x, e+fx\right)}{df^2} - \frac{(194e-fh)\,\text{Subst}\left(\int \frac{1}{x(a+b\log(cx))}\,dx, x, e+fx\right)}{df^2}$$

$$= \frac{194\,\text{Subst}\left(\int \frac{e^x}{a+bx}\,dx, x, \log(c(e+fx))\right)}{cdf^2} - \frac{(194e-fh)\,\text{Subst}\left(\int \frac{1}{x}\,dx, x, a+b\log(c(e+fx))\right)}{bdf^2}$$

$$= \frac{194e^{-\frac{a}{b}}\text{Ei}\left(\frac{a+b\log(c(e+fx))}{b}\right)}{bcdf^2} - \frac{(194e-fh)\log(a+b\log(c(e+fx)))}{bdf^2}$$

Mathematica [A] time = 0.23, size = 76, normalized size = 1.07

$$\frac{ie^{-\frac{a}{b}}\text{Ei}\left(\frac{a}{b}+\log(c(e+fx))\right)+cfh\log(f(a+b\log(c(e+fx))))-cei\log(a+b\log(c(e+fx)))}{bcdf^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(h + i*x)/((d*e + d*f*x)*(a + b*Log[c*(e + f*x)])),x]
```

```
[Out] ((i*ExpIntegralEi[a/b + Log[c*(e + f*x)]])/E^(a/b) - c*e*i*Log[a + b*Log[c*
(e + f*x)]] + c*f*h*Log[f*(a + b*Log[c*(e + f*x)])])/(b*c*d*f^2)
```

fricas [A] time = 0.43, size = 70, normalized size = 0.99

$$\frac{\left(\left(cfh-cei\right)e^{\frac{a}{b}}\log\left(b\log\left(cfx+ce\right)+a\right)+i\,\text{log\_integral}\left(\left(cfx+ce\right)e^{\frac{a}{b}}\right)\right)e^{\left(-\frac{a}{b}\right)}}{bcdf^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)/(d*f*x+d*e)/(a+b*log(c*(f*x+e))),x, algorithm="fricas")
```

```
[Out] ((c*f*h - c*e*i)*e^(a/b)*log(b*log(c*f*x + c*e) + a) + i*log_integral((c*f*
x + c*e)*e^(a/b)))*e^(-a/b)/(b*c*d*f^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{ix+h}{\left(dfx+de\right)\left(b\log\left(\left(fx+e\right)c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)/(d*f*x+d*e)/(a+b*log(c*(f*x+e))),x, algorithm="giac")
```

```
[Out] integrate((i*x + h)/((d*f*x + d*e)*(b*log((f*x + e)*c) + a)), x)
```

maple [F] time = 0.49, size = 0, normalized size = 0.00

$$\int \frac{ix+h}{(dfx+de)\left(b\ln\left((fx+e)c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)/(d*f*x+d*e)/(b*ln((f*x+e)*c)+a),x)
```

```
[Out] int((i*x+h)/(d*f*x+d*e)/(b*ln((f*x+e)*c)+a),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$i\int \frac{x}{bde\log(c)+ade+\left(bdf\log(c)+adf\right)x+\left(bdfx+bde\right)\log\left(fx+e\right)}\,dx+\frac{h\log\left(\frac{b\log(fx+e)+b\log(c)+a}{b}\right)}{bdf}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)/(d*f*x+d*e)/(a+b*log(c*(f*x+e))),x, algorithm="maxima")
```

```
[Out] i*integrate(x/(b*d*e*log(c) + a*d*e + (b*d*f*log(c) + a*d*f)*x + (b*d*f*x +
 b*d*e)*log(f*x + e)), x) + h*log((b*log(f*x + e) + b*log(c) + a)/b)/(b*d*f
)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{h+i\,x}{\left(d\,e+d\,f\,x\right)\,\left(a+b\,\ln\left(c\,\left(e+f\,x\right)\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h + i*x)/((d*e + d*f*x)*(a + b*log(c*(e + f*x)))),x)
```

```
[Out] int((h + i*x)/((d*e + d*f*x)*(a + b*log(c*(e + f*x)))), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{h}{ae+afx+be\log\left(ce+cfx\right)+bfx\log\left(ce+cfx\right)}\,dx+\int \frac{ix}{ae+afx+be\log\left(ce+cfx\right)+bfx\log\left(ce+cfx\right)}\,dx}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)/(d*f*x+d*e)/(a+b*ln(c*(f*x+e))),x)
```

```
[Out] (Integral(h/(a*e + a*f*x + b*e*log(c*e + c*f*x) + b*f*x*log(c*e + c*f*x)),
x) + Integral(i*x/(a*e + a*f*x + b*e*log(c*e + c*f*x) + b*f*x*log(c*e + c*f
*x)), x))/d
```

3.195 $\int \frac{1}{(de+dfx)(a+b\log(c(e+fx)))}\,dx$

Optimal. Leaf size=23

$$\frac{\log(a+b\log(c(e+fx)))}{bdf}$$

```
[Out] ln(a+b*ln(c*(f*x+e)))/b/d/f
```

Rubi [A] time = 0.07, antiderivative size = 23, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.160, Rules used = {2390, 12, 2302, 29}

$$\frac{\log(a+b\log(c(e+fx)))}{bdf}$$

Antiderivative was successfully verified.

```
[In] Int[1/((d*e + d*f*x)*(a + b*Log[c*(e + f*x)])),x]
```

```
[Out] Log[a + b*Log[c*(e + f*x)]]/(b*d*f)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{1}{(de+dfx)(a+b\log(c(e+fx)))}\,dx &= \frac{\text{Subst}\left(\int \frac{1}{dx(a+b\log(cx))}\,dx, x, e+fx\right)}{f}\\
&= \frac{\text{Subst}\left(\int \frac{1}{x(a+b\log(cx))}\,dx, x, e+fx\right)}{df}\\
&= \frac{\text{Subst}\left(\int \frac{1}{x}\,dx, x, a+b\log(c(e+fx))\right)}{bdf}\\
&= \frac{\log(a+b\log(c(e+fx)))}{bdf}
\end{aligned}$$

Mathematica [A] time = 0.02, size = 23, normalized size = 1.00

$$\frac{\log(a+b\log(c(e+fx)))}{bdf}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/((d*e + d*f*x)*(a + b*Log[c*(e + f*x)])),x]
[Out] Log[a + b*Log[c*(e + f*x)]]/(b*d*f)
```

fricas [A] time = 0.44, size = 24, normalized size = 1.04

$$\frac{\log\left(b\log\left(cfx+ce\right)+a\right)}{bdf}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*f*x+d*e)/(a+b*log(c*(f*x+e))),x, algorithm="fricas")
[Out] log(b*log(c*f*x + c*e) + a)/(b*d*f)
```

giac [A] time = 0.18, size = 25, normalized size = 1.09

$$\frac{\log\left(b\log\left(cfx+ce\right)+a\right)}{bdf}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*f*x+d*e)/(a+b*log(c*(f*x+e))),x, algorithm="giac")
[Out] log(b*log(c*f*x + c*e) + a)/(b*d*f)
```

maple [A] time = 0.05, size = 25, normalized size = 1.09

$$\frac{\ln\left(b\ln\left(cfx+ce\right)+a\right)}{bdf}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(d*f*x+d*e)/(b*ln((f*x+e)*c)+a),x)
[Out] 1/f/d*ln(a+b*ln(c*f*x+c*e))/b
```

maxima [A] time = 0.47, size = 29, normalized size = 1.26

$$\frac{\log\left(\frac{b\log\left(fx+e\right)+b\log\left(c\right)+a}{b}\right)}{bdf}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*f*x+d*e)/(a+b*log(c*(f*x+e))),x, algorithm="maxima")
[Out] log((b*log(f*x + e) + b*log(c) + a)/b)/(b*d*f)
```

mupad [B] time = 0.85, size = 23, normalized size = 1.00

$$\frac{\ln\left(a+b\,\ln\left(c\,\left(e+f\,x\right)\right)\right)}{b\,d\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((d*e + d*f*x)*(a + b*log(c*(e + f*x)))),x)
```

```
[Out] log(a + b*log(c*(e + f*x)))/(b*d*f)
```

sympy [A] time = 0.22, size = 17, normalized size = 0.74

$$\frac{\log\left(\frac{a}{b} + \log\left(c\left(e + fx\right)\right)\right)}{bdf}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*f*x+d*e)/(a+b*ln(c*(f*x+e))),x)
```

```
[Out] log(a/b + log(c*(e + f*x)))/(b*d*f)
```

3.196 $\int \frac{1}{(de+dfx)(h+ix)(a+b\log(c(e+fx)))}\,dx$

Optimal. Leaf size=72

$$\frac{\log(a+b\log(c(e+fx)))}{bd(fh-ei)}-\frac{i\text{Int}\left(\frac{1}{(h+ix)(a+b\log(c(e+fx)))},x\right)}{d(fh-ei)}$$

```
[Out] ln(a+b*ln(c*(f*x+e)))/b/d/(-e*i+f*h)-i*Unintegrable(1/(i*x+h)/(a+b*ln(c*(f*
x+e))),x)/d/(-e*i+f*h)
```

Rubi [A] time = 0.24, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(de+dfx)(h+ix)(a+b\log(c(e+fx)))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((d*e + d*f*x)*(h + i*x)*(a + b*Log[c*(e + f*x)])),x]
```

```
[Out] Log[a + b*Log[c*(e + f*x)]]/(b*d*(f*h - e*i)) - (i*Defer[Int][1/((h + i*x)*
(a + b*Log[c*(e + f*x)])), x])/(d*(f*h - e*i))
```

Rubi steps

$$\begin{aligned}
\int \frac{1}{(h+196x)(de+dfx)(a+b\log(c(e+fx)))}\,dx &= \int \left(\frac{196}{d(196e-fh)(h+196x)(a+b\log(c(e+fx)))}-\frac{}{d(196e-}\right. \\
&= \frac{196\int \frac{1}{(h+196x)(a+b\log(c(e+fx)))}\,dx}{d(196e-fh)}-\frac{f\int \frac{1}{(e+fx)(a+b\log(c(e+fx)))}\,dx}{d(196e-fh)} \\
&= -\frac{\text{Subst}\left(\int \frac{1}{x(a+b\log(cx))}\,dx,x,e+fx\right)}{d(196e-fh)}+\frac{196\int \frac{1}{(h+196x)(a+b\log(c}}{d(196e-fh}\\
&= \frac{196\int \frac{1}{(h+196x)(a+b\log(c(e+fx)))}\,dx}{d(196e-fh)}-\frac{\text{Subst}\left(\int \frac{1}{x}\,dx,x,a+b\log(\right.}{bd(196e-fh)} \\
&= -\frac{\log(a+b\log(c(e+fx)))}{bd(196e-fh)}+\frac{196\int \frac{1}{(h+196x)(a+b\log(c(e+fx)))}\,dx}{d(196e-fh)}
\end{aligned}$$

Mathematica [A] time = 0.43, size = 0, normalized size = 0.00

$$\int \frac{1}{(de+dfx)(h+ix)(a+b\log(c(e+fx)))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((d*e + d*f*x)*(h + i*x)*(a + b*Log[c*(e + f*x)])),x]
```

```
[Out] Integrate[1/((d*e + d*f*x)*(h + i*x)*(a + b*Log[c*(e + f*x)])), x]
```

fricas [A] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{1}{adfix^2+adeh+\left(adfh+adei\right)x+\left(bdfix^2+bdeh+\left(bdfh+bdei\right)x\right)\log\left(cfx+ce\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*f*x+d*e)/(i*x+h)/(a+b*log(c*(f*x+e))),x, algorithm="fricas")
```

```
[Out] integral(1/(a*d*f*i*x^2 + a*d*e*h + (a*d*f*h + a*d*e*i)*x + (b*d*f*i*x^2 +
b*d*e*h + (b*d*f*h + b*d*e*i)*x)*log(c*f*x + c*e)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(dfx+de\right)(ix+h)\left(b\log\left(\left(fx+e\right)c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*f*x+d*e)/(i*x+h)/(a+b*log(c*(f*x+e))),x, algorithm="giac")
```

```
[Out] integrate(1/((d*f*x + d*e)*(i*x + h)*(b*log((f*x + e)*c) + a)), x)
```

maple [A] time = 0.68, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(dfx+de\right)(ix+h)\left(b\ln\left(\left(fx+e\right)c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(d*f*x+d*e)/(i*x+h)/(b*ln((f*x+e)*c)+a),x)
```

```
[Out] int(1/(d*f*x+d*e)/(i*x+h)/(b*ln((f*x+e)*c)+a),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(dfx+de\right)(ix+h)\left(b\log\left(\left(fx+e\right)c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*f*x+d*e)/(i*x+h)/(a+b*log(c*(f*x+e))),x, algorithm="maxima")
```

```
[Out] integrate(1/((d*f*x + d*e)*(i*x + h)*(b*log((f*x + e)*c) + a)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{(h+i\,x)\,\left(d\,e+d\,f\,x\right)\,\left(a+b\,\ln\left(c\,\left(e+f\,x\right)\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((h + i*x)*(d*e + d*f*x)*(a + b*log(c*(e + f*x)))),x)
```

```
[Out] int(1/((h + i*x)*(d*e + d*f*x)*(a + b*log(c*(e + f*x)))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{1}{aeh+aeix+afhx+afix^2+beh\log\left(ce+cfx\right)+beix\log\left(ce+cfx\right)+bfhx\log\left(ce+cfx\right)+bfix^2\log\left(ce+cfx\right)}\,dx}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*f*x+d*e)/(i*x+h)/(a+b*ln(c*(f*x+e))),x)
```

```
[Out] Integral(1/(a*e*h + a*e*i*x + a*f*h*x + a*f*i*x**2 + b*e*h*log(c*e + c*f*x)
 + b*e*i*x*log(c*e + c*f*x) + b*f*h*x*log(c*e + c*f*x) + b*f*i*x**2*log(c*e
 + c*f*x)), x)/d
```

3.197 $\int \frac{1}{(de+dfx)(h+ix)^2(a+b\log(c(e+fx)))}\,dx$

Optimal. Leaf size=115

$$-\frac{i\text{Int}\left(\frac{1}{(h+ix)^2(a+b\log(c(e+fx)))},x\right)}{d(fh-ei)}-\frac{fi\text{Int}\left(\frac{1}{(h+ix)(a+b\log(c(e+fx)))},x\right)}{d(fh-ei)^2}+\frac{f\log(a+b\log(c(e+fx)))}{bd(fh-ei)^2}$$

```
[Out] f*ln(a+b*ln(c*(f*x+e)))/b/d/(-e*i+f*h)^2-i*Unintegrable(1/(i*x+h)^2/(a+b*ln
(c*(f*x+e))),x)/d/(-e*i+f*h)-f*i*Unintegrable(1/(i*x+h)/(a+b*ln(c*(f*x+e)))
,x)/d/(-e*i+f*h)^2
```

Rubi [A] time = 0.29, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(de+dfx)(h+ix)^2(a+b\log(c(e+fx)))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((d*e + d*f*x)*(h + i*x)^2*(a + b*Log[c*(e + f*x)])),x]
```

```
[Out] (f*Log[a + b*Log[c*(e + f*x)]])/(b*d*(f*h - e*i)^2) - (i*Defer[Int][1/((h +
 i*x)^2*(a + b*Log[c*(e + f*x)])), x])/(d*(f*h - e*i)) - (f*i*Defer[Int][1/
((h + i*x)*(a + b*Log[c*(e + f*x)])), x])/(d*(f*h - e*i)^2)
```

Rubi steps

$$\begin{aligned}\int \frac{1}{(h+197x)^2(de+dfx)(a+b\log(c(e+fx)))}\,dx &= \int \left(\frac{197}{d(197e-fh)(h+197x)^2(a+b\log(c(e+fx)))}-\frac{}{d(197e}\right.\\ &= -\frac{(197f)\int \frac{1}{(h+197x)(a+b\log(c(e+fx)))}\,dx}{d(197e-fh)^2}+\frac{f^2\int \frac{1}{(e+fx)(a+b\log(c(e+f}}{d(197e-fh)^2}\\ &= \frac{f\,\text{Subst}\left(\int \frac{1}{x(a+b\log(cx))}\,dx,x,e+fx\right)}{d(197e-fh)^2}-\frac{(197f)\int \frac{1}{(h+197x)(a+b}}{d(197e-f}\\ &= -\frac{(197f)\int \frac{1}{(h+197x)(a+b\log(c(e+fx)))}\,dx}{d(197e-fh)^2}+\frac{f\,\text{Subst}\left(\int \frac{1}{x}\,dx,x,a\right.}{bd(197e}\\ &= \frac{f\log(a+b\log(c(e+fx)))}{bd(197e-fh)^2}-\frac{(197f)\int \frac{1}{(h+197x)(a+b\log(c(e+fx))}}{d(197e-fh)^2}\end{aligned}$$

Mathematica [A] time = 4.50, size = 0, normalized size = 0.00

$$\int \frac{1}{(de+dfx)(h+ix)^2(a+b\log(c(e+fx)))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((d*e + d*f*x)*(h + i*x)^2*(a + b*Log[c*(e + f*x)])),x]
```

```
[Out] Integrate[1/((d*e + d*f*x)*(h + i*x)^2*(a + b*Log[c*(e + f*x)])), x]
```

fricas [A] time = 0.42, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{1}{adfi^2x^3+adeh^2+\left(2\,adfhi+adei^2\right)x^2+\left(adfh^2+2\,adehi\right)x+\left(bdfi^2x^3+bdeh^2+\left(2\,bdfhi+bdei^2\right)x^2\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*f*x+d*e)/(i*x+h)^2/(a+b*log(c*(f*x+e))),x, algorithm="fricas
")
```

```
[Out] integral(1/(a*d*f*i^2*x^3 + a*d*e*h^2 + (2*a*d*f*h*i + a*d*e*i^2)*x^2 + (a*
d*f*h^2 + 2*a*d*e*h*i)*x + (b*d*f*i^2*x^3 + b*d*e*h^2 + (2*b*d*f*h*i + b*d*
e*i^2)*x^2 + (b*d*f*h^2 + 2*b*d*e*h*i)*x)*log(c*f*x + c*e)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(dfx+de)(ix+h)^2\left(b\log\left((fx+e)c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*f*x+d*e)/(i*x+h)^2/(a+b*log(c*(f*x+e))),x, algorithm="giac")
```

```
[Out] integrate(1/((d*f*x + d*e)*(i*x + h)^2*(b*log((f*x + e)*c) + a)), x)
```

maple [A] time = 0.67, size = 0, normalized size = 0.00

$$\int \frac{1}{(dfx+de)(ix+h)^2\left(b\ln\left((fx+e)c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(d*f*x+d*e)/(i*x+h)^2/(b*ln((f*x+e)*c)+a),x)
```

```
[Out] int(1/(d*f*x+d*e)/(i*x+h)^2/(b*ln((f*x+e)*c)+a),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(dfx+de)(ix+h)^2\left(b\log\left((fx+e)c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*f*x+d*e)/(i*x+h)^2/(a+b*log(c*(f*x+e))),x, algorithm="maxima
")
```

```
[Out] integrate(1/((d*f*x + d*e)*(i*x + h)^2*(b*log((f*x + e)*c) + a)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{(h+ix)^2\,(de+dfx)\,\left(a+b\ln\left(c\,(e+fx)\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((h + i*x)^2*(d*e + d*f*x)*(a + b*log(c*(e + f*x)))),x)
```

```
[Out] int(1/((h + i*x)^2*(d*e + d*f*x)*(a + b*log(c*(e + f*x)))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{1}{aeh^2+2aehix+aei^2x^2+afh^2x+2afhix^2+afi^2x^3+beh^2\log\left(ce+cfx\right)+2behix\log\left(ce+cfx\right)+bei^2x^2\log\left(ce+cfx\right)+bfh^2x\log\left(ce+cfx\right)+2bfhix^2\log\left(\right.}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*f*x+d*e)/(i*x+h)**2/(a+b*ln(c*(f*x+e))),x)
```

```
[Out] Integral(1/(a*e*h**2 + 2*a*e*h*i*x + a*e*i**2*x**2 + a*f*h**2*x + 2*a*f*h*i
*x**2 + a*f*i**2*x**3 + b*e*h**2*log(c*e + c*f*x) + 2*b*e*h*i*x*log(c*e + c
*f*x) + b*e*i**2*x**2*log(c*e + c*f*x) + b*f*h**2*x*log(c*e + c*f*x) + 2*b*
f*h*i*x**2*log(c*e + c*f*x) + b*f*i**2*x**3*log(c*e + c*f*x)), x)/d
```

3.198 $\int \frac{(f+gx)^{5/2}(a+b\log(c(d+ex)^n))}{d+ex}\,dx$

Optimal. Leaf size=485

$$-\frac{2(ef-dg)^{5/2}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{e^{7/2}}+\frac{2\sqrt{f+gx}\,(ef-dg)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{e^3}+\frac{2(f\cdots}{}$$

```
[Out] -32/45*b*(-d*g+e*f)*n*(g*x+f)^(3/2)/e^2-4/25*b*n*(g*x+f)^(5/2)/e+92/15*b*(-
d*g+e*f)^(5/2)*n*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))/e^(7/2)+2*
b*(-d*g+e*f)^(5/2)*n*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))^2/e^(7
/2)+2/3*(-d*g+e*f)*(g*x+f)^(3/2)*(a+b*ln(c*(e*x+d)^n))/e^2+2/5*(g*x+f)^(5/2
)*(a+b*ln(c*(e*x+d)^n))/e-2*(-d*g+e*f)^(5/2)*arctanh(e^(1/2)*(g*x+f)^(1/2)/
(-d*g+e*f)^(1/2))*(a+b*ln(c*(e*x+d)^n))/e^(7/2)-4*b*(-d*g+e*f)^(5/2)*n*arct
anh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))*ln(2/(1-e^(1/2)*(g*x+f)^(1/2)/(
-d*g+e*f)^(1/2)))/e^(7/2)-2*b*(-d*g+e*f)^(5/2)*n*polylog(2,1-2/(1-e^(1/2)*(
g*x+f)^(1/2)/(-d*g+e*f)^(1/2)))/e^(7/2)-92/15*b*(-d*g+e*f)^2*n*(g*x+f)^(1/2
)/e^3+2*(-d*g+e*f)^2*(a+b*ln(c*(e*x+d)^n))*(g*x+f)^(1/2)/e^3
```

Rubi [A] time = 2.05, antiderivative size = 485, normalized size of antiderivative = 1.00, number of steps used = 27, number of rules used = 14, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.452, Rules used = {2411, 2346, 63, 208, 2348, 12, 1587, 6741, 5984, 5918, 2402, 2315, 2319, 50}

$$-\frac{2bn(ef-dg)^{5/2}\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)}{e^{7/2}}+\frac{2\sqrt{f+gx}\,(ef-dg)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{e^3}+\frac{2(f+gx)^{3/2}(ef\cdots}{}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)^(5/2)*(a + b*Log[c*(d + e*x)^n]))/(d + e*x),x]
```

```
[Out] (-92*b*(e*f - d*g)^2*n*Sqrt[f + g*x])/(15*e^3) - (32*b*(e*f - d*g)*n*(f + g
*x)^(3/2))/(45*e^2) - (4*b*n*(f + g*x)^(5/2))/(25*e) + (92*b*(e*f - d*g)^(5
/2)*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]])/(15*e^(7/2)) + (2*b
*(e*f - d*g)^(5/2)*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]^2)/e^
(7/2) + (2*(e*f - d*g)^2*Sqrt[f + g*x]*(a + b*Log[c*(d + e*x)^n]))/e^3 + (2
*(e*f - d*g)*(f + g*x)^(3/2)*(a + b*Log[c*(d + e*x)^n]))/(3*e^2) + (2*(f +
g*x)^(5/2)*(a + b*Log[c*(d + e*x)^n]))/(5*e) - (2*(e*f - d*g)^(5/2)*ArcTanh
[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]*(a + b*Log[c*(d + e*x)^n]))/e^(7/
2) - (4*b*(e*f - d*g)^(5/2)*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*
g]]*Log[2/(1 - (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])])/e^(7/2) - (2*b*(e
*f - d*g)^(5/2)*n*PolyLog[2, 1 - 2/(1 - (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f -
d*g])])/e^(7/2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
```

```
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 1587

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[(Coeff[Pp, x, p]*Log[RemoveContent[Qq, x]])/(q*Coeff[Qq, x, q]), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]*D[Qq, x])/(q*Coeff[Qq, x,
 q])]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2319

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/(e*(q + 1)), x]
- Dist[(b*n*p)/(e*(q + 1)), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 2346

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.))
/(x_), x_Symbol] :> Dist[d, Int[((d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p)/x,
 x], x] + Dist[e, Int[(d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p, x], x] /; Fre
eQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0] && GtQ[q, 0] && IntegerQ[2*q]
```

Rule 2348

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 5918

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> -Simp[((a + b*ArcTanh[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] + Dist[(b*c*
p)/e, Int[((a + b*ArcTanh[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 - c^2*x^2)
, x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2, 0
]
```

Rule 5984

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rubi steps

$$\int \frac{(f+gx)^{5/2}\left(a+b\log\left(c(d+ex)^n\right)\right)}{d+ex}\,dx = \frac{\text{Subst}\left(\int \frac{\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^{5/2}\left(a+b\log(cx^n)\right)}{x}dx, x, d+ex\right)}{e}$$

$$= \frac{g\,\text{Subst}\left(\int \left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^{3/2}\left(a+b\log\left(cx^n\right)\right)dx, x, d+ex\right)}{e^2} + \frac{(ef-dg}{}$$

$$= \frac{2(f+gx)^{5/2}\left(a+b\log\left(c(d+ex)^n\right)\right)}{5e} + \frac{(g(ef-dg))\,\text{Subst}\left(\int\sqrt{\frac{ef-dg}{e}}\right.}{}$$

$$= -\frac{4bn(f+gx)^{5/2}}{25e} + \frac{2(ef-dg)(f+gx)^{3/2}\left(a+b\log\left(c(d+ex)^n\right)\right)}{3e^2} + \frac{2}{}$$

$$= -\frac{32b(ef-dg)n(f+gx)^{3/2}}{45e^2} - \frac{4bn(f+gx)^{5/2}}{25e} + \frac{2(ef-dg)^2\sqrt{f+gx}\,(}{e}$$

$$= -\frac{92b(ef-dg)^2n\sqrt{f+gx}}{15e^3} - \frac{32b(ef-dg)n(f+gx)^{3/2}}{45e^2} - \frac{4bn(f+gx)}{25e}$$

$$= -\frac{92b(ef-dg)^2n\sqrt{f+gx}}{15e^3} - \frac{32b(ef-dg)n(f+gx)^{3/2}}{45e^2} - \frac{4bn(f+gx)}{25e}$$

$$= -\frac{92b(ef-dg)^2n\sqrt{f+gx}}{15e^3} - \frac{32b(ef-dg)n(f+gx)^{3/2}}{45e^2} - \frac{4bn(f+gx)}{25e}$$

$$= -\frac{92b(ef-dg)^2n\sqrt{f+gx}}{15e^3} - \frac{32b(ef-dg)n(f+gx)^{3/2}}{45e^2} - \frac{4bn(f+gx)}{25e}$$

$$= -\frac{92b(ef-dg)^2n\sqrt{f+gx}}{15e^3} - \frac{32b(ef-dg)n(f+gx)^{3/2}}{45e^2} - \frac{4bn(f+gx)}{25e}$$

$$= -\frac{92b(ef-dg)^2n\sqrt{f+gx}}{15e^3} - \frac{32b(ef-dg)n(f+gx)^{3/2}}{45e^2} - \frac{4bn(f+gx)}{25e}$$

$$= -\frac{92b(ef-dg)^2n\sqrt{f+gx}}{15e^3} - \frac{32b(ef-dg)n(f+gx)^{3/2}}{45e^2} - \frac{4bn(f+gx)}{25e}$$

Mathematica [A] time = 1.32, size = 818, normalized size = 1.69

$$450\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\sqrt{ef-dg}-\sqrt{e}\sqrt{f+gx}\right)(ef-dg)^{5/2}-450\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\sqrt{ef}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)^(5/2)*(a + b*Log[c*(d + e*x)^n]))/(d + e*x),x]
```

```
[Out] (900*a*Sqrt[e]*(e*f - d*g)^2*Sqrt[f + g*x] - 1800*b*(e*f - d*g)^2*n*(Sqrt[e
]*Sqrt[f + g*x] - Sqrt[e*f - d*g]*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f
- d*g]]) - 200*b*(e*f - d*g)*n*(Sqrt[e]*Sqrt[f + g*x]*(4*e*f - 3*d*g + e*g*
x) - 3*(e*f - d*g)^(3/2)*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]])
- 24*b*n*(3*e^(5/2)*(f + g*x)^(5/2) + 5*(e*f - d*g)*(Sqrt[e]*Sqrt[f + g*x]*
(4*e*f - 3*d*g + e*g*x) - 3*(e*f - d*g)^(3/2)*ArcTanh[(Sqrt[e]*Sqrt[f + g*x
])/Sqrt[e*f - d*g]])) + 900*b*Sqrt[e]*(e*f - d*g)^2*Sqrt[f + g*x]*Log[c*(d
+ e*x)^n] + 300*e^(3/2)*(e*f - d*g)*(f + g*x)^(3/2)*(a + b*Log[c*(d + e*x)^
n]) + 180*e^(5/2)*(f + g*x)^(5/2)*(a + b*Log[c*(d + e*x)^n]) + 450*(e*f - d
*g)^(5/2)*(a + b*Log[c*(d + e*x)^n])*Log[Sqrt[e*f - d*g] - Sqrt[e]*Sqrt[f +
 g*x]] - 450*(e*f - d*g)^(5/2)*(a + b*Log[c*(d + e*x)^n])*Log[Sqrt[e*f - d*
g] + Sqrt[e]*Sqrt[f + g*x]] - 225*b*(e*f - d*g)^(5/2)*n*(Log[Sqrt[e*f - d*g
] - Sqrt[e]*Sqrt[f + g*x]]*(Log[Sqrt[e*f - d*g] - Sqrt[e]*Sqrt[f + g*x]] +
2*Log[(1 + (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])/2]) + 2*PolyLog[2, 1/2
- (Sqrt[e]*Sqrt[f + g*x])/(2*Sqrt[e*f - d*g])]) + 225*b*(e*f - d*g)^(5/2)*n
*(Log[Sqrt[e*f - d*g] + Sqrt[e]*Sqrt[f + g*x]]*(Log[Sqrt[e*f - d*g] + Sqrt[
e]*Sqrt[f + g*x]] + 2*Log[1/2 - (Sqrt[e]*Sqrt[f + g*x])/(2*Sqrt[e*f - d*g])
]) + 2*PolyLog[2, (1 + (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])/2]))/(450*e
^(7/2))
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(bg^2x^2+2\,bfgx+bf^2\right)\sqrt{gx+f}\,\log\left((ex+d)^nc\right)+\left(ag^2x^2+2\,afgx+af^2\right)\sqrt{gx+f}}{ex+d},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(5/2)*(a+b*log(c*(e*x+d)^n))/(e*x+d),x, algorithm="fricas
")
```

```
[Out] integral(((b*g^2*x^2 + 2*b*f*g*x + b*f^2)*sqrt(g*x + f)*log((e*x + d)^n*c)
+ (a*g^2*x^2 + 2*a*f*g*x + a*f^2)*sqrt(g*x + f))/(e*x + d), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{(gx+f)^{\frac{5}{2}}\left(b\log\left((ex+d)^nc\right)+a\right)}{ex+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(5/2)*(a+b*log(c*(e*x+d)^n))/(e*x+d),x, algorithm="giac")
```

```
[Out] integrate((g*x + f)^(5/2)*(b*log((e*x + d)^n*c) + a)/(e*x + d), x)
```

maple [F] time = 0.68, size = 0, normalized size = 0.00

$$\int\frac{(gx+f)^{\frac{5}{2}}\left(b\ln\left(c\,(ex+d)^n\right)+a\right)}{ex+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^(5/2)*(b*ln(c*(e*x+d)^n)+a)/(e*x+d),x)
```

```
[Out] int((g*x+f)^(5/2)*(b*ln(c*(e*x+d)^n)+a)/(e*x+d),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(5/2)*(a+b*log(c*(e*x+d)^n))/(e*x+d),x, algorithm="maxima
")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(d*g-e*f>0)', see `assume?` for more
 details)Is d*g-e*f positive or negative?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(f+g\,x)^{5/2}\,\left(a+b\,\ln\left(c\,{(d+e\,x)}^n\right)\right)}{d+e\,x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)^(5/2)*(a + b*log(c*(d + e*x)^n)))/(d + e*x),x)
```

```
[Out] int(((f + g*x)^(5/2)*(a + b*log(c*(d + e*x)^n)))/(d + e*x), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**(5/2)*(a+b*ln(c*(e*x+d)**n))/(e*x+d),x)
```

```
[Out] Timed out
```

3.199 $\int \frac{(f+gx)^{3/2}\left(a+b\log\left(c(d+ex)^n\right)\right)}{d+ex}\,dx$

Optimal. Leaf size=417

$$-\frac{2(ef-dg)^{3/2}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{e^{5/2}}+\frac{2\sqrt{f+gx}\,(ef-dg)\left(a+b\log\left(c(d+ex)^n\right)\right)}{e^2}+\frac{2(f+$$

```
[Out] -4/9*b*n*(g*x+f)^(3/2)/e+16/3*b*(-d*g+e*f)^(3/2)*n*arctanh(e^(1/2)*(g*x+f)^
(1/2)/(-d*g+e*f)^(1/2))/e^(5/2)+2*b*(-d*g+e*f)^(3/2)*n*arctanh(e^(1/2)*(g*x
+f)^(1/2)/(-d*g+e*f)^(1/2))^2/e^(5/2)+2/3*(g*x+f)^(3/2)*(a+b*ln(c*(e*x+d)^n
))/e-2*(-d*g+e*f)^(3/2)*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))*(a+
b*ln(c*(e*x+d)^n))/e^(5/2)-4*b*(-d*g+e*f)^(3/2)*n*arctanh(e^(1/2)*(g*x+f)^(
1/2)/(-d*g+e*f)^(1/2))*ln(2/(1-e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2)))/e^(
5/2)-2*b*(-d*g+e*f)^(3/2)*n*polylog(2,1-2/(1-e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*
f)^(1/2)))/e^(5/2)-16/3*b*(-d*g+e*f)*n*(g*x+f)^(1/2)/e^2+2*(-d*g+e*f)*(a+b*
ln(c*(e*x+d)^n))*(g*x+f)^(1/2)/e^2
```

Rubi [A] time = 1.38, antiderivative size = 417, normalized size of antiderivative = 1.00, number of steps used = 20, number of rules used = 14, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.452, Rules used = {2411, 2346, 63, 208, 2348, 12, 1587, 6741, 5984, 5918, 2402, 2315, 2319, 50}

$$-\frac{2bn(ef-dg)^{3/2}\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)}{e^{5/2}}+\frac{2\sqrt{f+gx}\,(ef-dg)\left(a+b\log\left(c(d+ex)^n\right)\right)}{e^2}-\frac{2(ef-dg)^{3/2}\tanh$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)^(3/2)*(a + b*Log[c*(d + e*x)^n]))/(d + e*x),x]
```

```
[Out] (-16*b*(e*f - d*g)*n*Sqrt[f + g*x])/(3*e^2) - (4*b*n*(f + g*x)^(3/2))/(9*e)
 + (16*b*(e*f - d*g)^(3/2)*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g
]])/(3*e^(5/2)) + (2*b*(e*f - d*g)^(3/2)*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/
Sqrt[e*f - d*g]]^2)/e^(5/2) + (2*(e*f - d*g)*Sqrt[f + g*x]*(a + b*Log[c*(d
+ e*x)^n]))/e^2 + (2*(f + g*x)^(3/2)*(a + b*Log[c*(d + e*x)^n]))/(3*e) - (2
*(e*f - d*g)^(3/2)*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]*(a + b*
Log[c*(d + e*x)^n]))/e^(5/2) - (4*b*(e*f - d*g)^(3/2)*n*ArcTanh[(Sqrt[e]*Sq
rt[f + g*x])/Sqrt[e*f - d*g]]*Log[2/(1 - (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f -
 d*g])])/e^(5/2) - (2*b*(e*f - d*g)^(3/2)*n*PolyLog[2, 1 - 2/(1 - (Sqrt[e]*
Sqrt[f + g*x])/Sqrt[e*f - d*g])])/e^(5/2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 1587

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[(Coeff[Pp, x, p]*Log[RemoveContent[Qq, x]])/(q*Coeff[Qq, x, q]), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]*D[Qq, x])/(q*Coeff[Qq, x,
 q])]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2319

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/(e*(q + 1)), x]
- Dist[(b*n*p)/(e*(q + 1)), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 2346

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.))
/(x_), x_Symbol] :> Dist[d, Int[((d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p)/x,
 x], x] + Dist[e, Int[(d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p, x], x] /; Fre
eQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0] && GtQ[q, 0] && IntegerQ[2*q]
```

Rule 2348

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
```

```
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 5918

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> -Simp[((a + b*ArcTanh[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] + Dist[(b*c*
p)/e, Int[((a + b*ArcTanh[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 - c^2*x^2)
, x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2, 0
]
```

Rule 5984

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rubi steps

$$\int \frac{(f+gx)^{3/2}\left(a+b\log\left(c(d+ex)^n\right)\right)}{d+ex}\,dx = \frac{\text{Subst}\left(\int \frac{\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^{3/2}\left(a+b\log(cx^n)\right)}{x}\,dx, x, d+ex\right)}{e}$$

$$= \frac{g\,\text{Subst}\left(\int \sqrt{\frac{ef-dg}{e}+\frac{gx}{e}}\,\left(a+b\log\left(cx^n\right)\right)dx, x, d+ex\right)}{e^2} + \frac{(ef-dg)\,\text{S}}{}$$

$$= \frac{2(f+gx)^{3/2}\left(a+b\log\left(c(d+ex)^n\right)\right)}{3e} + \frac{(g(ef-dg))\,\text{Subst}\left(\int \frac{a+b\log(c}{\sqrt{\frac{ef-dg}{e}+}}\right.}{e^3}$$

$$= -\frac{4bn(f+gx)^{3/2}}{9e} + \frac{2(ef-dg)\sqrt{f+gx}\,\left(a+b\log\left(c(d+ex)^n\right)\right)}{e^2} + \frac{2(f}{}$$

$$= -\frac{16b(ef-dg)n\sqrt{f+gx}}{3e^2} - \frac{4bn(f+gx)^{3/2}}{9e} + \frac{2(ef-dg)\sqrt{f+gx}\,(a}{e^2}$$

$$= -\frac{16b(ef-dg)n\sqrt{f+gx}}{3e^2} - \frac{4bn(f+gx)^{3/2}}{9e} + \frac{2(ef-dg)\sqrt{f+gx}\,(a}{e^2}$$

$$= -\frac{16b(ef-dg)n\sqrt{f+gx}}{3e^2} - \frac{4bn(f+gx)^{3/2}}{9e} + \frac{16b(ef-dg)^{3/2}n\tanh^{-}}{3e^{5/2}}$$

$$= -\frac{16b(ef-dg)n\sqrt{f+gx}}{3e^2} - \frac{4bn(f+gx)^{3/2}}{9e} + \frac{16b(ef-dg)^{3/2}n\tanh^{-}}{3e^{5/2}}$$

$$= -\frac{16b(ef-dg)n\sqrt{f+gx}}{3e^2} - \frac{4bn(f+gx)^{3/2}}{9e} + \frac{16b(ef-dg)^{3/2}n\tanh^{-}}{3e^{5/2}}$$

$$= -\frac{16b(ef-dg)n\sqrt{f+gx}}{3e^2} - \frac{4bn(f+gx)^{3/2}}{9e} + \frac{16b(ef-dg)^{3/2}n\tanh^{-}}{3e^{5/2}}$$

$$= -\frac{16b(ef-dg)n\sqrt{f+gx}}{3e^2} - \frac{4bn(f+gx)^{3/2}}{9e} + \frac{16b(ef-dg)^{3/2}n\tanh^{-}}{3e^{5/2}}$$

Mathematica [A] time = 1.14, size = 607, normalized size = 1.46

$$12e^{3/2}(f+gx)^{3/2}\left(a+b\log\left(c(d+ex)^n\right)\right)+18(ef-dg)^{3/2}\log\left(\sqrt{ef-dg}-\sqrt{e}\sqrt{f+gx}\right)\left(a+b\log\left(c(d+ex)^n\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)^(3/2)*(a + b*Log[c*(d + e*x)^n]))/(d + e*x),x]
```

```
[Out] (36*a*Sqrt[e]*(e*f - d*g)*Sqrt[f + g*x] - 8*b*e^(3/2)*n*(f + g*x)^(3/2) - 9
6*b*(e*f - d*g)*n*(Sqrt[e]*Sqrt[f + g*x] - Sqrt[e*f - d*g]*ArcTanh[(Sqrt[e]
*Sqrt[f + g*x])/Sqrt[e*f - d*g]]) + 36*b*Sqrt[e]*(e*f - d*g)*Sqrt[f + g*x]*
Log[c*(d + e*x)^n] + 12*e^(3/2)*(f + g*x)^(3/2)*(a + b*Log[c*(d + e*x)^n])
+ 18*(e*f - d*g)^(3/2)*(a + b*Log[c*(d + e*x)^n])*Log[Sqrt[e*f - d*g] - Sqr
t[e]*Sqrt[f + g*x]] - 18*(e*f - d*g)^(3/2)*(a + b*Log[c*(d + e*x)^n])*Log[S
qrt[e*f - d*g] + Sqrt[e]*Sqrt[f + g*x]] - 9*b*(e*f - d*g)^(3/2)*n*(Log[Sqrt
[e*f - d*g] - Sqrt[e]*Sqrt[f + g*x]]*(Log[Sqrt[e*f - d*g] - Sqrt[e]*Sqrt[f
+ g*x]] + 2*Log[(1 + (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])/2]) + 2*PolyL
og[2, 1/2 - (Sqrt[e]*Sqrt[f + g*x])/(2*Sqrt[e*f - d*g])]) + 9*b*(e*f - d*g)
^(3/2)*n*(Log[Sqrt[e*f - d*g] + Sqrt[e]*Sqrt[f + g*x]]*(Log[Sqrt[e*f - d*g]
 + Sqrt[e]*Sqrt[f + g*x]] + 2*Log[1/2 - (Sqrt[e]*Sqrt[f + g*x])/(2*Sqrt[e*f
 - d*g])]) + 2*PolyLog[2, (1 + (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])/2])
)/(18*e^(5/2))
```

fricas [F] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(bgx+bf\right)\sqrt{gx+f}\,\log\left((ex+d)^n c\right)+\left(agx+af\right)\sqrt{gx+f}}{ex+d},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(3/2)*(a+b*log(c*(e*x+d)^n))/(e*x+d),x, algorithm="fricas
")
```

```
[Out] integral(((b*g*x + b*f)*sqrt(g*x + f)*log((e*x + d)^n*c) + (a*g*x + a*f)*sq
rt(g*x + f))/(e*x + d), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(gx+f\right)^{\frac{3}{2}}\left(b\log\left((ex+d)^n c\right)+a\right)}{ex+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(3/2)*(a+b*log(c*(e*x+d)^n))/(e*x+d),x, algorithm="giac")
```

```
[Out] integrate((g*x + f)^(3/2)*(b*log((e*x + d)^n*c) + a)/(e*x + d), x)
```

maple [F] time = 0.63, size = 0, normalized size = 0.00

$$\int\frac{\left(gx+f\right)^{\frac{3}{2}}\left(b\ln\left(c\left(ex+d\right)^{n}\right)+a\right)}{ex+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^(3/2)*(b*ln(c*(e*x+d)^n)+a)/(e*x+d),x)
```

```
[Out] int((g*x+f)^(3/2)*(b*ln(c*(e*x+d)^n)+a)/(e*x+d),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(3/2)*(a+b*log(c*(e*x+d)^n))/(e*x+d),x, algorithm="maxima
")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(d*g-e*f>0)', see `assume?` for more
 details)Is d*g-e*f positive or negative?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f+g\,x\right)^{3/2}\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}{d+e\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)^(3/2)*(a + b*log(c*(d + e*x)^n)))/(d + e*x),x)
```

```
[Out] int(((f + g*x)^(3/2)*(a + b*log(c*(d + e*x)^n)))/(d + e*x), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**(3/2)*(a+b*ln(c*(e*x+d)**n))/(e*x+d),x)
```

```
[Out] Timed out
```

3.200 $\int \frac{\sqrt{f+gx}\left(a+b\log(c(d+ex)^n)\right)}{d+ex}\,dx$

<u>**Optimal**</u>. Leaf size=349

$$-\frac{2\sqrt{ef-dg}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{e^{3/2}}+\frac{2\sqrt{f+gx}\left(a+b\log\left(c(d+ex)^n\right)\right)}{e}-\frac{2bn\sqrt{ef-dg}\,\mathrm{Li}_2}{e^3}$$

```
[Out] 4*b*n*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))*(-d*g+e*f)^(1/2)/e^(3
/2)+2*b*n*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))^2*(-d*g+e*f)^(1/2
)/e^(3/2)-2*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))*(a+b*ln(c*(e*x+
d)^n))*(-d*g+e*f)^(1/2)/e^(3/2)-4*b*n*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e
*f)^(1/2))*ln(2/(1-e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2)))*(-d*g+e*f)^(1/2
)/e^(3/2)-2*b*n*polylog(2,1-2/(1-e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2)))*(
-d*g+e*f)^(1/2)/e^(3/2)-4*b*n*(g*x+f)^(1/2)/e+2*(a+b*ln(c*(e*x+d)^n))*(g*x+
f)^(1/2)/e
```

<u>**Rubi**</u> [A] time = 0.99, antiderivative size = 349, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 14, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.452, Rules used = {2411, 2346, 63, 208, 2348, 12, 1587, 6741, 5984, 5918, 2402, 2315, 2319, 50}

$$-\frac{2bn\sqrt{ef-dg}\,\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)}{e^{3/2}}-\frac{2\sqrt{ef-dg}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{e^{3/2}}+2\sqrt{f+g}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[f + g*x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x),x]
```

```
[Out] (-4*b*n*Sqrt[f + g*x])/e + (4*b*Sqrt[e*f - d*g]*n*ArcTanh[(Sqrt[e]*Sqrt[f +
 g*x])/Sqrt[e*f - d*g]])/e^(3/2) + (2*b*Sqrt[e*f - d*g]*n*ArcTanh[(Sqrt[e]*
Sqrt[f + g*x])/Sqrt[e*f - d*g]]^2)/e^(3/2) + (2*Sqrt[f + g*x]*(a + b*Log[c*
(d + e*x)^n]))/e - (2*Sqrt[e*f - d*g]*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[
e*f - d*g]]*(a + b*Log[c*(d + e*x)^n]))/e^(3/2) - (4*b*Sqrt[e*f - d*g]*n*Ar
cTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]*Log[2/(1 - (Sqrt[e]*Sqrt[f +
 g*x])/Sqrt[e*f - d*g])])/e^(3/2) - (2*b*Sqrt[e*f - d*g]*n*PolyLog[2, 1 - 2
/(1 - (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])])/e^(3/2)
```

<u>Rule 12</u>

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

<u>Rule 50</u>

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

<u>Rule 63</u>

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
```

```
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 1587

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[(Coeff[Pp, x, p]*Log[RemoveContent[Qq, x]])/(q*Coeff[Qq, x, q]), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]*D[Qq, x])/(q*Coeff[Qq, x,
 q])]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2319

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/(e*(q + 1)), x]
- Dist[(b*n*p)/(e*(q + 1)), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 2346

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.))
/(x_), x_Symbol] :> Dist[d, Int[((d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p)/x,
 x], x] + Dist[e, Int[(d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p, x], x] /; Fre
eQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0] && GtQ[q, 0] && IntegerQ[2*q]
```

Rule 2348

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 5918

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> -Simp[((a + b*ArcTanh[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] + Dist[(b*c*
p)/e, Int[((a + b*ArcTanh[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 - c^2*x^2)
, x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2, 0
]
```

Rule 5984

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rubi steps

$$\int \frac{\sqrt{f+gx}\left(a+b\log\left(c(d+ex)^n\right)\right)}{d+ex}\,dx = \frac{\text{Subst}\left(\int \frac{\sqrt{\frac{ef-dg}{e}+\frac{gx}{e}}\left(a+b\log(cx^n)\right)}{x}\,dx, x, d+ex\right)}{e}$$

$$= \frac{g\,\text{Subst}\left(\int \frac{a+b\log(cx^n)}{\sqrt{\frac{ef-dg}{e}+\frac{gx}{e}}}\,dx, x, d+ex\right)}{e^2} + \frac{(ef-dg)\,\text{Subst}\left(\int \frac{a+b\log(cx^n)}{x\sqrt{\frac{ef-dg}{e}+\frac{gx}{e}}}\,dx\right.}{e^2}$$

$$= \frac{2\sqrt{f+gx}\left(a+b\log\left(c(d+ex)^n\right)\right)}{e} - \frac{2\sqrt{ef-dg}\,\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)\left(a\right.}{e^{3/2}}$$

$$= -\frac{4bn\sqrt{f+gx}}{e} + \frac{2\sqrt{f+gx}\left(a+b\log\left(c(d+ex)^n\right)\right)}{e} - \frac{2\sqrt{ef-dg}\,\tanh}{}$$

$$= -\frac{4bn\sqrt{f+gx}}{e} + \frac{2\sqrt{f+gx}\left(a+b\log\left(c(d+ex)^n\right)\right)}{e} - \frac{2\sqrt{ef-dg}\,\tanh}{}$$

$$= -\frac{4bn\sqrt{f+gx}}{e} + \frac{4b\sqrt{ef-dg}\,n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{e^{3/2}} + \frac{2\sqrt{f+gx}\left(a+b\right.}{e}$$

$$= -\frac{4bn\sqrt{f+gx}}{e} + \frac{4b\sqrt{ef-dg}\,n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{e^{3/2}} + \frac{2b\sqrt{ef-dg}\,n\tan}{e^{3}}$$

$$= -\frac{4bn\sqrt{f+gx}}{e} + \frac{4b\sqrt{ef-dg}\,n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{e^{3/2}} + \frac{2b\sqrt{ef-dg}\,n\tan}{e^{3}}$$

$$= -\frac{4bn\sqrt{f+gx}}{e} + \frac{4b\sqrt{ef-dg}\,n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{e^{3/2}} + \frac{2b\sqrt{ef-dg}\,n\tan}{e^{3}}$$

$$= -\frac{4bn\sqrt{f+gx}}{e} + \frac{4b\sqrt{ef-dg}\,n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{e^{3/2}} + \frac{2b\sqrt{ef-dg}\,n\tan}{e^{3}}$$

Mathematica [A] time = 0.57, size = 534, normalized size = 1.53

$$2\sqrt{ef-dg}\,\log\left(\sqrt{ef-dg}-\sqrt{e}\sqrt{f+gx}\right)\left(a+b\log\left(c(d+ex)^n\right)\right) - 2\sqrt{ef-dg}\,\log\left(\sqrt{ef-dg}+\sqrt{e}\sqrt{f+gx}\right)\left(a\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[f + g*x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x),x]
```

```
[Out] (4*a*Sqrt[e]*Sqrt[f + g*x] - 8*b*n*(Sqrt[e]*Sqrt[f + g*x] - Sqrt[e*f - d*g]
*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]) + 4*b*Sqrt[e]*Sqrt[f + g
*x]*Log[c*(d + e*x)^n] + 2*Sqrt[e*f - d*g]*(a + b*Log[c*(d + e*x)^n])*Log[S
qrt[e*f - d*g] - Sqrt[e]*Sqrt[f + g*x]] - 2*Sqrt[e*f - d*g]*(a + b*Log[c*(d
 + e*x)^n])*Log[Sqrt[e*f - d*g] + Sqrt[e]*Sqrt[f + g*x]] - b*Sqrt[e*f - d*g
]*n*(Log[Sqrt[e*f - d*g] - Sqrt[e]*Sqrt[f + g*x]]*(Log[Sqrt[e*f - d*g] - Sq
rt[e]*Sqrt[f + g*x]] + 2*Log[(1 + (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])/
2]) + 2*PolyLog[2, 1/2 - (Sqrt[e]*Sqrt[f + g*x])/(2*Sqrt[e*f - d*g])]) + b*
Sqrt[e*f - d*g]*n*(Log[Sqrt[e*f - d*g] + Sqrt[e]*Sqrt[f + g*x]]*(Log[Sqrt[e
*f - d*g] + Sqrt[e]*Sqrt[f + g*x]] + 2*Log[1/2 - (Sqrt[e]*Sqrt[f + g*x])/(2
*Sqrt[e*f - d*g])]) + 2*PolyLog[2, (1 + (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f -
d*g])/2]))/(2*e^(3/2))
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{gx+f}\,b\log\left((ex+d)^{n}c\right)+\sqrt{gx+f}\,a}{ex+d},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(1/2)*(a+b*log(c*(e*x+d)^n))/(e*x+d),x, algorithm="fricas
")
```

```
[Out] integral((sqrt(g*x + f)*b*log((e*x + d)^n*c) + sqrt(g*x + f)*a)/(e*x + d),
x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{gx+f}\left(b\log\left((ex+d)^{n}c\right)+a\right)}{ex+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(1/2)*(a+b*log(c*(e*x+d)^n))/(e*x+d),x, algorithm="giac")
```

```
[Out] integrate(sqrt(g*x + f)*(b*log((e*x + d)^n*c) + a)/(e*x + d), x)
```

maple [F] time = 0.69, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{gx+f}\,\left(b\ln\left(c\,(ex+d)^{n}\right)+a\right)}{ex+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^(1/2)*(b*ln(c*(e*x+d)^n)+a)/(e*x+d),x)
```

```
[Out] int((g*x+f)^(1/2)*(b*ln(c*(e*x+d)^n)+a)/(e*x+d),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(1/2)*(a+b*log(c*(e*x+d)^n))/(e*x+d),x, algorithm="maxima
")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
```

```
elp (example of legal syntax is 'assume(d*g-e*f>0)', see `assume?` for more
 details)Is d*g-e*f positive or negative?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\sqrt{f+gx}\,\left(a+b\,\ln\left(c\,(d+e\,x)^n\right)\right)}{d+e\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)^(1/2)*(a + b*log(c*(d + e*x)^n)))/(d + e*x),x)
[Out] int(((f + g*x)^(1/2)*(a + b*log(c*(d + e*x)^n)))/(d + e*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\log\left(c\,(d+ex)^n\right)\right)\sqrt{f+gx}}{d+ex}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**(1/2)*(a+b*ln(c*(e*x+d)**n))/(e*x+d),x)
[Out] Integral((a + b*log(c*(d + e*x)**n))*sqrt(f + g*x)/(d + e*x), x)
```

3.201 $\int \frac{a+b\log(c(d+ex)^n)}{(d+ex)\sqrt{f+gx}}\,dx$

Optimal. Leaf size=256

$$-\frac{2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{\sqrt{e}\sqrt{ef-dg}}-\frac{2bn\text{Li}_2\left(1-\frac{2}{1-\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)}{\sqrt{e}\sqrt{ef-dg}}+\frac{2bn\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{\sqrt{e}\sqrt{ef-dg}}-\frac{4bn\log\left(\frac{2}{1-\ldots}\right)\ldots}{\ldots}$$

```
[Out] 2*b*n*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))^2/e^(1/2)/(-d*g+e*f)^
(1/2)-2*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))*(a+b*ln(c*(e*x+d)^n
))/e^(1/2)/(-d*g+e*f)^(1/2)-4*b*n*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^
(1/2))*ln(2/(1-e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2)))/e^(1/2)/(-d*g+e*f)^
(1/2)-2*b*n*polylog(2,1-2/(1-e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2)))/e^(1/
2)/(-d*g+e*f)^(1/2)
```

Rubi [A] time = 0.69, antiderivative size = 256, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 11, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.355, Rules used = {2411, 63, 208, 2348, 12, 1587, 6741, 5984, 5918, 2402, 2315}

$$-\frac{2bn\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)}{\sqrt{e}\sqrt{ef-dg}}-\frac{2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{\sqrt{e}\sqrt{ef-dg}}+\frac{2bn\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{\sqrt{e}\sqrt{ef-dg}}-\frac{4b\ldots}{\ldots}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/((d + e*x)*Sqrt[f + g*x]),x]
```

```
[Out] (2*b*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]^2)/(Sqrt[e]*Sqrt[e*
f - d*g]) - (2*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]*(a + b*Log[
c*(d + e*x)^n]))/(Sqrt[e]*Sqrt[e*f - d*g]) - (4*b*n*ArcTanh[(Sqrt[e]*Sqrt[f
 + g*x])/Sqrt[e*f - d*g]]*Log[2/(1 - (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g
])])/(Sqrt[e]*Sqrt[e*f - d*g]) - (2*b*n*PolyLog[2, 1 - 2/(1 - (Sqrt[e]*Sqrt
[f + g*x])/Sqrt[e*f - d*g])])/(Sqrt[e]*Sqrt[e*f - d*g])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 1587

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[(Coeff[Pp, x, p]*Log[RemoveContent[Qq, x]])/(q*Coeff[Qq, x, q]), x] /; E
```

```
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]*D[Qq, x])/(q*Coeff[Qq, x,
 q])]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2348

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 5918

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> -Simp[((a + b*ArcTanh[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] + Dist[(b*c*
p)/e, Int[((a + b*ArcTanh[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 - c^2*x^2)
, x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2, 0
]
```

Rule 5984

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rubi steps

$$\int \frac{a+b\log(c(d+ex)^n)}{(d+ex)\sqrt{f+gx}}\,dx = \frac{\text{Subst}\left(\int \frac{a+b\log(cx^n)}{x\sqrt{\frac{ef-dg}{e}+\frac{gx}{e}}}\,dx, x, d+ex\right)}{e}$$

$$= -\frac{2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)\left(a+b\log(c(d+ex)^n)\right)}{\sqrt{e}\sqrt{ef-dg}} - \frac{(bn)\,\text{Subst}\left(\int -\frac{2\sqrt{e}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f}}{\sqrt{e}}\right.}{\sqrt{ef-dg}\,x}\right.}{e}$$

$$= -\frac{2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)\left(a+b\log(c(d+ex)^n)\right)}{\sqrt{e}\sqrt{ef-dg}} + \frac{(2bn)\,\text{Subst}\left(\int \frac{\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f-\frac{dg}{e}+}}{\sqrt{ef-dg}}\right.}{x}\right.}{\sqrt{e}\sqrt{ef-dg}}$$

$$= -\frac{2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)\left(a+b\log(c(d+ex)^n)\right)}{\sqrt{e}\sqrt{ef-dg}} + \frac{\left(4b\sqrt{e}\,n\right)\text{Subst}\left(\int \frac{x\tanh^{-1}\left(\frac{\sqrt{e}}{\sqrt{ef-}}\right.}{dg+e\left(-f+x^2\right.}\right.}{\sqrt{ef-dg}}$$

$$= -\frac{2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)\left(a+b\log(c(d+ex)^n)\right)}{\sqrt{e}\sqrt{ef-dg}} + \frac{\left(4b\sqrt{e}\,n\right)\text{Subst}\left(\int \frac{x\tanh^{-1}\left(\frac{\sqrt{e}}{\sqrt{ef-}}\right.}{-ef+dg+ex^2}\right.}{\sqrt{ef-dg}}$$

$$= \frac{2bn\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{\sqrt{e}\sqrt{ef-dg}} - \frac{2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)\left(a+b\log(c(d+ex)^n)\right)}{\sqrt{e}\sqrt{ef-dg}} - \frac{(4bn)}{}$$

$$= \frac{2bn\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{\sqrt{e}\sqrt{ef-dg}} - \frac{2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)\left(a+b\log(c(d+ex)^n)\right)}{\sqrt{e}\sqrt{ef-dg}} - \frac{4bn\,\text{t}}{}$$

$$= \frac{2bn\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{\sqrt{e}\sqrt{ef-dg}} - \frac{2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)\left(a+b\log(c(d+ex)^n)\right)}{\sqrt{e}\sqrt{ef-dg}} - \frac{4bn\,\text{t}}{}$$

$$= \frac{2bn\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{\sqrt{e}\sqrt{ef-dg}} - \frac{2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)\left(a+b\log(c(d+ex)^n)\right)}{\sqrt{e}\sqrt{ef-dg}} - \frac{4bn\,\text{t}}{}$$

Mathematica [A] time = 0.24, size = 457, normalized size = 1.79

$$\frac{2a\log\left(\sqrt{ef-dg}-\sqrt{e}\sqrt{f+gx}\right)-2a\log\left(\sqrt{ef-dg}+\sqrt{e}\sqrt{f+gx}\right)+2b\log(c(d+ex)^n)\log\left(\sqrt{ef-dg}-\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/((d + e*x)*Sqrt[f + g*x]),x]
```

```
[Out] (2*a*Log[Sqrt[e*f - d*g] - Sqrt[e]*Sqrt[f + g*x]] + 2*b*Log[c*(d + e*x)^n]*
Log[Sqrt[e*f - d*g] - Sqrt[e]*Sqrt[f + g*x]] - b*n*Log[Sqrt[e*f - d*g] - Sq
rt[e]*Sqrt[f + g*x]]^2 - 2*a*Log[Sqrt[e*f - d*g] + Sqrt[e]*Sqrt[f + g*x]] -
 2*b*Log[c*(d + e*x)^n]*Log[Sqrt[e*f - d*g] + Sqrt[e]*Sqrt[f + g*x]] + b*n*
Log[Sqrt[e*f - d*g] + Sqrt[e]*Sqrt[f + g*x]]^2 + 2*b*n*Log[Sqrt[e*f - d*g]
+ Sqrt[e]*Sqrt[f + g*x]]*Log[1/2 - (Sqrt[e]*Sqrt[f + g*x])/(2*Sqrt[e*f - d*
g])] - 2*b*n*Log[Sqrt[e*f - d*g] - Sqrt[e]*Sqrt[f + g*x]]*Log[(1 + (Sqrt[e]
*Sqrt[f + g*x])/Sqrt[e*f - d*g])/2] - 2*b*n*PolyLog[2, 1/2 - (Sqrt[e]*Sqrt[
f + g*x])/(2*Sqrt[e*f - d*g])] + 2*b*n*PolyLog[2, (1 + (Sqrt[e]*Sqrt[f + g*
x])/Sqrt[e*f - d*g])/2])/(2*Sqrt[e]*Sqrt[e*f - d*g])
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{gx+f}\,b\log\left((ex+d)^n c\right)+\sqrt{gx+f}\,a}{egx^2+df+\left(ef+dg\right)x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(e*x+d)/(g*x+f)^(1/2),x, algorithm="fricas
")
```

```
[Out] integral((sqrt(g*x + f)*b*log((e*x + d)^n*c) + sqrt(g*x + f)*a)/(e*g*x^2 +
d*f + (e*f + d*g)*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b\log\left((ex+d)^n c\right)+a}{(ex+d)\sqrt{gx+f}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(e*x+d)/(g*x+f)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)/((e*x + d)*sqrt(g*x + f)), x)
```

maple [F] time = 0.64, size = 0, normalized size = 0.00

$$\int \frac{b\ln\left(c\,(ex+d)^n\right)+a}{(ex+d)\,\sqrt{gx+f}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)/(e*x+d)/(g*x+f)^(1/2),x)
```

```
[Out] int((b*ln(c*(e*x+d)^n)+a)/(e*x+d)/(g*x+f)^(1/2),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(e*x+d)/(g*x+f)^(1/2),x, algorithm="maxima
")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(d*g-e*f>0)', see `assume?` for more
 details)Is d*g-e*f positive or negative?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}{\sqrt{f+g\,x}\,\left(d+e\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/((f + g*x)^(1/2)*(d + e*x)),x)
[Out] int((a + b*log(c*(d + e*x)^n))/((f + g*x)^(1/2)*(d + e*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(e*x+d)/(g*x+f)**(1/2),x)
[Out] Timed out
```

3.202 $\int \frac{a+b\log(c(d+ex)^n)}{(d+ex)(f+gx)^{3/2}}\,dx$

Optimal. Leaf size=340

$$\frac{2\left(a+b\log\left(c(d+ex)^n\right)\right)}{\sqrt{f+gx}\,(ef-dg)}-\frac{2\sqrt{e}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{(ef-dg)^{3/2}}-\frac{2b\sqrt{e}\,n\text{Li}_2\left(1-\frac{2}{1-\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)}{(ef-dg)^{3/2}}+\frac{2b\sqrt{e}\,n\,\text{t}}{}$$

```
[Out] 4*b*n*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))*e^(1/2)/(-d*g+e*f)^(3
/2)+2*b*n*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))^2*e^(1/2)/(-d*g+e
*f)^(3/2)-2*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))*(a+b*ln(c*(e*x+
d)^n))*e^(1/2)/(-d*g+e*f)^(3/2)-4*b*n*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e
*f)^(1/2))*ln(2/(1-e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2)))*e^(1/2)/(-d*g+e
*f)^(3/2)-2*b*n*polylog(2,1-2/(1-e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2)))*e
^(1/2)/(-d*g+e*f)^(3/2)+2*(a+b*ln(c*(e*x+d)^n))/(-d*g+e*f)/(g*x+f)^(1/2)
```

Rubi [A] time = 1.03, antiderivative size = 340, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 13, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.419, Rules used = {2411, 2347, 63, 208, 2348, 12, 1587, 6741, 5984, 5918, 2402, 2315, 2319}

$$-\frac{2b\sqrt{e}\,n\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)}{(ef-dg)^{3/2}}+\frac{2\left(a+b\log\left(c(d+ex)^n\right)\right)}{\sqrt{f+gx}\,(ef-dg)}-\frac{2\sqrt{e}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{(ef-dg)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/((d + e*x)*(f + g*x)^(3/2)),x]
```

```
[Out] (4*b*Sqrt[e]*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]])/(e*f - d*g
)^(3/2) + (2*b*Sqrt[e]*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]^2
)/(e*f - d*g)^(3/2) + (2*(a + b*Log[c*(d + e*x)^n]))/((e*f - d*g)*Sqrt[f +
g*x]) - (2*Sqrt[e]*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]*(a + b*
Log[c*(d + e*x)^n]))/(e*f - d*g)^(3/2) - (4*b*Sqrt[e]*n*ArcTanh[(Sqrt[e]*Sq
rt[f + g*x])/Sqrt[e*f - d*g]]*Log[2/(1 - (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f -
 d*g])])/(e*f - d*g)^(3/2) - (2*b*Sqrt[e]*n*PolyLog[2, 1 - 2/(1 - (Sqrt[e]*
Sqrt[f + g*x])/Sqrt[e*f - d*g])])/(e*f - d*g)^(3/2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 1587

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[(Coeff[Pp, x, p]*Log[RemoveContent[Qq, x]])/(q*Coeff[Qq, x, q]), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]*D[Qq, x])/(q*Coeff[Qq, x,
 q])]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2319

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/(e*(q + 1)), x]
- Dist[(b*n*p)/(e*(q + 1)), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 2347

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/x
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2348

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 5918

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> -Simp[((a + b*ArcTanh[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] + Dist[(b*c*
p)/e, Int[((a + b*ArcTanh[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 - c^2*x^2)
, x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2, 0
]
```

Rule 5984

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
```

```
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rubi steps

$$\int \frac{a+b\log(c(d+ex)^n)}{(d+ex)(f+gx)^{3/2}}\,dx = \frac{\text{Subst}\left(\int \frac{a+b\log(cx^n)}{x\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^{3/2}}\,dx, x, d+ex\right)}{e}$$

$$= \frac{\text{Subst}\left(\int \frac{a+b\log(cx^n)}{x\sqrt{\frac{ef-dg}{e}+\frac{gx}{e}}}\,dx, x, d+ex\right)}{ef-dg} - \frac{g\,\text{Subst}\left(\int \frac{a+b\log(cx^n)}{\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^{3/2}}\,dx, x, d+ex\right)}{e(ef-dg)}$$

$$= \frac{2\left(a+b\log(c(d+ex)^n)\right)}{(ef-dg)\sqrt{f+gx}} - \frac{2\sqrt{e}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)\left(a+b\log(c(d+ex)^n)\right)}{(ef-dg)^{3/2}} - \cdots$$

$$= \frac{2\left(a+b\log(c(d+ex)^n)\right)}{(ef-dg)\sqrt{f+gx}} - \frac{2\sqrt{e}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)\left(a+b\log(c(d+ex)^n)\right)}{(ef-dg)^{3/2}} + \cdots$$

$$= \frac{4b\sqrt{e}\,n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{(ef-dg)^{3/2}} + \frac{2\left(a+b\log(c(d+ex)^n)\right)}{(ef-dg)\sqrt{f+gx}} - \frac{2\sqrt{e}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)\cdots}{(ef\cdots}$$

$$= \frac{4b\sqrt{e}\,n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{(ef-dg)^{3/2}} + \frac{2\left(a+b\log(c(d+ex)^n)\right)}{(ef-dg)\sqrt{f+gx}} - \frac{2\sqrt{e}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)\cdots}{(ef\cdots}$$

$$= \frac{4b\sqrt{e}\,n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{(ef-dg)^{3/2}} + \frac{2b\sqrt{e}\,n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{(ef-dg)^{3/2}} + \frac{2\left(a+b\log(c(d+\cdots\right.}{(ef-dg)\sqrt{f+g\cdots}}$$

$$= \frac{4b\sqrt{e}\,n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{(ef-dg)^{3/2}} + \frac{2b\sqrt{e}\,n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{(ef-dg)^{3/2}} + \frac{2\left(a+b\log(c(d+\cdots\right.}{(ef-dg)\sqrt{f+g\cdots}}$$

$$= \frac{4b\sqrt{e}\,n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{(ef-dg)^{3/2}} + \frac{2b\sqrt{e}\,n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{(ef-dg)^{3/2}} + \frac{2\left(a+b\log(c(d+\cdots\right.}{(ef-dg)\sqrt{f+g\cdots}}$$

$$= \frac{4b\sqrt{e}\,n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{(ef-dg)^{3/2}} + \frac{2b\sqrt{e}\,n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{(ef-dg)^{3/2}} + \frac{2\left(a+b\log(c(d+\cdots\right.}{(ef-dg)\sqrt{f+g\cdots}}$$

Mathematica [A] time = 0.53, size = 526, normalized size = 1.55

$$\frac{4\sqrt{ef-dg}\left(a+b\log\left(c(d+ex)^n\right)\right)+2\sqrt{e}\sqrt{f+gx}\log\left(\sqrt{ef-dg}-\sqrt{e}\sqrt{f+gx}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)-2\sqrt{e}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/((d + e*x)*(f + g*x)^(3/2)),x]
```

```
[Out] (8*b*Sqrt[e]*n*Sqrt[f + g*x]*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g
]] + 4*Sqrt[e*f - d*g]*(a + b*Log[c*(d + e*x)^n]) + 2*Sqrt[e]*Sqrt[f + g*x]
*(a + b*Log[c*(d + e*x)^n])*Log[Sqrt[e*f - d*g] - Sqrt[e]*Sqrt[f + g*x]] -
2*Sqrt[e]*Sqrt[f + g*x]*(a + b*Log[c*(d + e*x)^n])*Log[Sqrt[e*f - d*g] + Sq
rt[e]*Sqrt[f + g*x]] - b*Sqrt[e]*n*Sqrt[f + g*x]*(Log[Sqrt[e*f - d*g] - Sqr
t[e]*Sqrt[f + g*x]]*(Log[Sqrt[e*f - d*g] - Sqrt[e]*Sqrt[f + g*x]] + 2*Log[(
1 + (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])/2]) + 2*PolyLog[2, 1/2 - (Sqrt
[e]*Sqrt[f + g*x])/(2*Sqrt[e*f - d*g])]) + b*Sqrt[e]*n*Sqrt[f + g*x]*(Log[S
qrt[e*f - d*g] + Sqrt[e]*Sqrt[f + g*x]]*(Log[Sqrt[e*f - d*g] + Sqrt[e]*Sqrt
[f + g*x]] + 2*Log[1/2 - (Sqrt[e]*Sqrt[f + g*x])/(2*Sqrt[e*f - d*g])]) + 2*
PolyLog[2, (1 + (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])/2]))/(2*(e*f - d*g
)^(3/2)*Sqrt[f + g*x])
```

fricas [F] time = 0.47, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{gx+f}\,b\log\left((ex+d)^n c\right)+\sqrt{gx+f}\,a}{eg^2x^3+df^2+\left(2\,efg+dg^2\right)x^2+\left(ef^2+2\,dfg\right)x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(e*x+d)/(g*x+f)^(3/2),x, algorithm="fricas
")
```

```
[Out] integral((sqrt(g*x + f)*b*log((e*x + d)^n*c) + sqrt(g*x + f)*a)/(e*g^2*x^3
+ d*f^2 + (2*e*f*g + d*g^2)*x^2 + (e*f^2 + 2*d*f*g)*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{b\log\left((ex+d)^n c\right)+a}{(ex+d)\left(gx+f\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(e*x+d)/(g*x+f)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)/((e*x + d)*(g*x + f)^(3/2)), x)
```

maple [F] time = 0.66, size = 0, normalized size = 0.00

$$\int\frac{b\ln\left(c\left(ex+d\right)^n\right)+a}{\left(ex+d\right)\left(gx+f\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)/(e*x+d)/(g*x+f)^(3/2),x)
```

```
[Out] int((b*ln(c*(e*x+d)^n)+a)/(e*x+d)/(g*x+f)^(3/2),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(e*x+d)/(g*x+f)^(3/2),x, algorithm="maxima
")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(d*g-e*f>0)', see `assume?` for more
 details)Is d*g-e*f positive or negative?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}{{\left(f+g\,x\right)}^{3/2}\,\left(d+e\,x\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/((f + g*x)^(3/2)*(d + e*x)),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))/((f + g*x)^(3/2)*(d + e*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(e*x+d)/(g*x+f)**(3/2),x)
```

```
[Out] Timed out
```

3.203 $\int \frac{a+b\log(c(d+ex)^n)}{(d+ex)(f+gx)^{5/2}}\,dx$

Optimal. Leaf size=406

$$-\frac{2e^{3/2}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{(ef-dg)^{5/2}}+\frac{2e\left(a+b\log\left(c(d+ex)^n\right)\right)}{\sqrt{f+gx}\,(ef-dg)^2}+\frac{2\left(a+b\log\left(c(d+ex)^n\right)\right)}{3(f+gx)^{3/2}(ef-dg)}-\frac{2be^{3/2}n}{}$$

```
[Out] 16/3*b*e^(3/2)*n*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))/(-d*g+e*f)
^(5/2)+2*b*e^(3/2)*n*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))^2/(-d*
g+e*f)^(5/2)+2/3*(a+b*ln(c*(e*x+d)^n))/(-d*g+e*f)/(g*x+f)^(3/2)-2*e^(3/2)*a
rctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))*(a+b*ln(c*(e*x+d)^n))/(-d*g+
e*f)^(5/2)-4*b*e^(3/2)*n*arctanh(e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2))*ln
(2/(1-e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2)))/(-d*g+e*f)^(5/2)-2*b*e^(3/2)
*n*polylog(2,1-2/(1-e^(1/2)*(g*x+f)^(1/2)/(-d*g+e*f)^(1/2)))/(-d*g+e*f)^(5/
2)-4/3*b*e*n/(-d*g+e*f)^2/(g*x+f)^(1/2)+2*e*(a+b*ln(c*(e*x+d)^n))/(-d*g+e*f
)^2/(g*x+f)^(1/2)
```

Rubi [A] time = 1.39, antiderivative size = 406, normalized size of antiderivative = 1.00, number of steps used = 18, number of rules used = 14, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.452, Rules used = {2411, 2347, 63, 208, 2348, 12, 1587, 6741, 5984, 5918, 2402, 2315, 2319, 51}

$$-\frac{2be^{3/2}n\,\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)}{(ef-dg)^{5/2}}-\frac{2e^{3/2}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{(ef-dg)^{5/2}}+\frac{2e\left(a+b\log\left(c(d+ex)^n\right)\right)}{\sqrt{f+gx}\,(ef-dg)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/((d + e*x)*(f + g*x)^(5/2)),x]
```

```
[Out] (-4*b*e*n)/(3*(e*f - d*g)^2*Sqrt[f + g*x]) + (16*b*e^(3/2)*n*ArcTanh[(Sqrt[
e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]])/(3*(e*f - d*g)^(5/2)) + (2*b*e^(3/2)*n*
ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]^2)/(e*f - d*g)^(5/2) + (2*
(a + b*Log[c*(d + e*x)^n]))/(3*(e*f - d*g)*(f + g*x)^(3/2)) + (2*e*(a + b*L
og[c*(d + e*x)^n]))/((e*f - d*g)^2*Sqrt[f + g*x]) - (2*e^(3/2)*ArcTanh[(Sqr
t[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]*(a + b*Log[c*(d + e*x)^n]))/(e*f - d*g
)^(5/2) - (4*b*e^(3/2)*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]*L
og[2/(1 - (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])])/(e*f - d*g)^(5/2) - (2
*b*e^(3/2)*n*PolyLog[2, 1 - 2/(1 - (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])
])/(e*f - d*g)^(5/2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 1587

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[(Coeff[Pp, x, p]*Log[RemoveContent[Qq, x]])/(q*Coeff[Qq, x, q]), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]*D[Qq, x])/(q*Coeff[Qq, x,
 q])]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2319

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/(e*(q + 1)), x]
- Dist[(b*n*p)/(e*(q + 1)), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 2347

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/x
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2348

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
```

```
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 5918

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> -Simp[((a + b*ArcTanh[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] + Dist[(b*c*
p)/e, Int[((a + b*ArcTanh[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 - c^2*x^2)
, x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2, 0
]
```

Rule 5984

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rubi steps

$$\int \frac{a+b\log\left(c(d+ex)^n\right)}{(d+ex)(f+gx)^{5/2}}\,dx = \frac{\text{Subst}\left(\int \frac{a+b\log(cx^n)}{x\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^{5/2}}\,dx, x, d+ex\right)}{e}$$

$$= \frac{\text{Subst}\left(\int \frac{a+b\log(cx^n)}{x\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^{3/2}}\,dx, x, d+ex\right)}{ef-dg} - \frac{g\,\text{Subst}\left(\int \frac{a+b\log(cx^n)}{\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^{5/2}}\,dx, x, d+ex\right)}{e(ef-dg)}$$

$$= \frac{2\left(a+b\log\left(c(d+ex)^n\right)\right)}{3(ef-dg)(f+gx)^{3/2}} + \frac{e\,\text{Subst}\left(\int \frac{a+b\log(cx^n)}{x\sqrt{\frac{ef-dg}{e}+\frac{gx}{e}}}\,dx, x, d+ex\right)}{(ef-dg)^2} - \frac{g\,\text{Subst}\left(\int \cdots\right.}{\cdots}$$

$$= -\frac{4ben}{3(ef-dg)^2\sqrt{f+gx}} + \frac{2\left(a+b\log\left(c(d+ex)^n\right)\right)}{3(ef-dg)(f+gx)^{3/2}} + \frac{2e\left(a+b\log\left(c(d+ex)^n\right)\right)}{(ef-dg)^2\sqrt{f+gx}}$$

$$= -\frac{4ben}{3(ef-dg)^2\sqrt{f+gx}} + \frac{2\left(a+b\log\left(c(d+ex)^n\right)\right)}{3(ef-dg)(f+gx)^{3/2}} + \frac{2e\left(a+b\log\left(c(d+ex)^n\right)\right)}{(ef-dg)^2\sqrt{f+gx}}$$

$$= -\frac{4ben}{3(ef-dg)^2\sqrt{f+gx}} + \frac{16be^{3/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{3(ef-dg)^{5/2}} + \frac{2\left(a+b\log\left(c(d+ex)^{n}\right.\right.}{3(ef-dg)(f+gx)^{3/2}}$$

$$= -\frac{4ben}{3(ef-dg)^2\sqrt{f+gx}} + \frac{16be^{3/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{3(ef-dg)^{5/2}} + \frac{2\left(a+b\log\left(c(d+ex)^{n}\right.\right.}{3(ef-dg)(f+gx)^{3/2}}$$

$$= -\frac{4ben}{3(ef-dg)^2\sqrt{f+gx}} + \frac{16be^{3/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{3(ef-dg)^{5/2}} + \frac{2be^{3/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+g}}{\sqrt{ef-dg}}\right.}{(ef-dg)^{5/2}}$$

$$= -\frac{4ben}{3(ef-dg)^2\sqrt{f+gx}} + \frac{16be^{3/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{3(ef-dg)^{5/2}} + \frac{2be^{3/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+g}}{\sqrt{ef-dg}}\right.}{(ef-dg)^{5/2}}$$

$$= -\frac{4ben}{3(ef-dg)^2\sqrt{f+gx}} + \frac{16be^{3/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{3(ef-dg)^{5/2}} + \frac{2be^{3/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+g}}{\sqrt{ef-dg}}\right.}{(ef-dg)^{5/2}}$$

$$= -\frac{4ben}{3(ef-dg)^2\sqrt{f+gx}} + \frac{16be^{3/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{3(ef-dg)^{5/2}} + \frac{2be^{3/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+g}}{\sqrt{ef-dg}}\right.}{(ef-dg)^{5/2}}$$

Mathematica [C] time = 0.81, size = 608, normalized size = 1.50

$$\frac{6e^{3/2}(f+gx)^{3/2}\log\left(\sqrt{ef-dg}-\sqrt{e}\sqrt{f+gx}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)-6e^{3/2}(f+gx)^{3/2}\log\left(\sqrt{ef-dg}+\sqrt{e}\sqrt{f\right.}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/((d + e*x)*(f + g*x)^(5/2)),x]
```

```
[Out] (24*b*e^(3/2)*n*(f + g*x)^(3/2)*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f -
d*g]] - 8*b*e*Sqrt[e*f - d*g]*n*(f + g*x)*Hypergeometric2F1[-1/2, 1, 1/2, (
e*(f + g*x))/(e*f - d*g)] + 4*(e*f - d*g)^(3/2)*(a + b*Log[c*(d + e*x)^n])
+ 12*e*Sqrt[e*f - d*g]*(f + g*x)*(a + b*Log[c*(d + e*x)^n]) + 6*e^(3/2)*(f
+ g*x)^(3/2)*(a + b*Log[c*(d + e*x)^n])*Log[Sqrt[e*f - d*g] - Sqrt[e]*Sqrt[
f + g*x]] - 6*e^(3/2)*(f + g*x)^(3/2)*(a + b*Log[c*(d + e*x)^n])*Log[Sqrt[e
*f - d*g] + Sqrt[e]*Sqrt[f + g*x]] - 3*b*e^(3/2)*n*(f + g*x)^(3/2)*(Log[Sqr
t[e*f - d*g] - Sqrt[e]*Sqrt[f + g*x]]*(Log[Sqrt[e*f - d*g] - Sqrt[e]*Sqrt[f
 + g*x]] + 2*Log[(1 + (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])/2]) + 2*Poly
Log[2, 1/2 - (Sqrt[e]*Sqrt[f + g*x])/(2*Sqrt[e*f - d*g])]) + 3*b*e^(3/2)*n*
(f + g*x)^(3/2)*(Log[Sqrt[e*f - d*g] + Sqrt[e]*Sqrt[f + g*x]]*(Log[Sqrt[e*f
 - d*g] + Sqrt[e]*Sqrt[f + g*x]] + 2*Log[1/2 - (Sqrt[e]*Sqrt[f + g*x])/(2*S
qrt[e*f - d*g])]) + 2*PolyLog[2, (1 + (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*
g])/2]))/(6*(e*f - d*g)^(5/2)*(f + g*x)^(3/2))
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\sqrt{gx+f}\,b\log\left((ex+d)^n c\right)+\sqrt{gx+f}\,a}{eg^3x^4+df^3+\left(3\,efg^2+dg^3\right)x^3+3\left(ef^2g+dfg^2\right)x^2+\left(ef^3+3\,df^2g\right)x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(e*x+d)/(g*x+f)^(5/2),x, algorithm="fricas
")
```

```
[Out] integral((sqrt(g*x + f)*b*log((e*x + d)^n*c) + sqrt(g*x + f)*a)/(e*g^3*x^4
+ d*f^3 + (3*e*f*g^2 + d*g^3)*x^3 + 3*(e*f^2*g + d*f*g^2)*x^2 + (e*f^3 + 3*
d*f^2*g)*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b\log\left((ex+d)^n c\right)+a}{(ex+d)\left(gx+f\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(e*x+d)/(g*x+f)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)/((e*x + d)*(g*x + f)^(5/2)), x)
```

maple [F] time = 0.63, size = 0, normalized size = 0.00

$$\int \frac{b\ln\left(c\,(ex+d)^n\right)+a}{(ex+d)\left(gx+f\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)/(e*x+d)/(g*x+f)^(5/2),x)
```

```
[Out] int((b*ln(c*(e*x+d)^n)+a)/(e*x+d)/(g*x+f)^(5/2),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(e*x+d)/(g*x+f)^(5/2),x, algorithm="maxima
")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(d*g-e*f>0)', see `assume?` for more
 details)Is d*g-e*f positive or negative?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,\ln\left(c\,{(d+e\,x)}^n\right)}{{\left(f+g\,x\right)}^{5/2}\,\left(d+e\,x\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/((f + g*x)^(5/2)*(d + e*x)),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))/((f + g*x)^(5/2)*(d + e*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(e*x+d)/(g*x+f)**(5/2),x)
```

```
[Out] Timed out
```

3.204 $\int \frac{(d+ex)^{3/2}\log(a+bx)}{a+bx}\,dx$

Optimal. Leaf size=381

$$-\frac{2(bd-ae)^{3/2}\mathrm{Li}_2\left(1-\frac{2}{1-\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}}\right)}{b^{5/2}}+\frac{2(bd-ae)^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)^2}{b^{5/2}}+\frac{16(bd-ae)^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{3b^{5/2}}-\frac{2(bd-a}{}$$

```
[Out] -4/9*(e*x+d)^(3/2)/b+16/3*(-a*e+b*d)^(3/2)*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-
a*e+b*d)^(1/2))/b^(5/2)+2*(-a*e+b*d)^(3/2)*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-
a*e+b*d)^(1/2))^2/b^(5/2)+2/3*(e*x+d)^(3/2)*ln(b*x+a)/b-2*(-a*e+b*d)^(3/2)*
arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))*ln(b*x+a)/b^(5/2)-4*(-a*e+b
*d)^(3/2)*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))*ln(2/(1-b^(1/2)*(
e*x+d)^(1/2)/(-a*e+b*d)^(1/2)))/b^(5/2)-2*(-a*e+b*d)^(3/2)*polylog(2,1-2/(1
-b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2)))/b^(5/2)-16/3*(-a*e+b*d)*(e*x+d)^(
1/2)/b^2+2*(-a*e+b*d)*ln(b*x+a)*(e*x+d)^(1/2)/b^2
```

Rubi [A] time = 1.53, antiderivative size = 381, normalized size of antiderivative = 1.00, number of steps used = 20, number of rules used = 14, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.609$, Rules used = {2411, 2346, 63, 208, 2348, 12, 1587, 6741, 5984, 5918, 2402, 2315, 2319, 50}

$$-\frac{2(bd-ae)^{3/2}\mathrm{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}}\right)}{b^{5/2}}-\frac{16\sqrt{d+ex}\,(bd-ae)}{3b^2}+\frac{2\sqrt{d+ex}\,(bd-ae)\log(a+bx)}{b^2}+\frac{2(bd-ae)^{3/2}\,\mathrm{ta}}{}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)^(3/2)*Log[a + b*x])/(a + b*x),x]
```

```
[Out] (-16*(b*d - a*e)*Sqrt[d + e*x])/(3*b^2) - (4*(d + e*x)^(3/2))/(9*b) + (16*(
b*d - a*e)^(3/2)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(3*b^(5/
2)) + (2*(b*d - a*e)^(3/2)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]]
^2)/b^(5/2) + (2*(b*d - a*e)*Sqrt[d + e*x]*Log[a + b*x])/b^2 + (2*(d + e*x)
^(3/2)*Log[a + b*x])/(3*b) - (2*(b*d - a*e)^(3/2)*ArcTanh[(Sqrt[b]*Sqrt[d +
 e*x])/Sqrt[b*d - a*e]]*Log[a + b*x])/b^(5/2) - (4*(b*d - a*e)^(3/2)*ArcTan
h[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]]*Log[2/(1 - (Sqrt[b]*Sqrt[d + e*x
])/Sqrt[b*d - a*e])])/b^(5/2) - (2*(b*d - a*e)^(3/2)*PolyLog[2, 1 - 2/(1 -
(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e])])/b^(5/2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
```

```
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 1587

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[(Coeff[Pp, x, p]*Log[RemoveContent[Qq, x]])/(q*Coeff[Qq, x, q]), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]*D[Qq, x])/(q*Coeff[Qq, x,
 q])]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2319

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/(e*(q + 1)), x]
- Dist[(b*n*p)/(e*(q + 1)), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 2346

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.))
/(x_), x_Symbol] :> Dist[d, Int[((d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p)/x,
 x], x] + Dist[e, Int[(d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p, x], x] /; Fre
eQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0] && GtQ[q, 0] && IntegerQ[2*q]
```

Rule 2348

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 5918

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> -Simp[((a + b*ArcTanh[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] + Dist[(b*c*
p)/e, Int[((a + b*ArcTanh[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 - c^2*x^2)
, x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2, 0
]
```

Rule 5984

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rubi steps

$$\int \frac{(d+ex)^{3/2}\log(a+bx)}{a+bx}\,dx = \frac{\text{Subst}\left(\int \frac{\left(\frac{bd-ae}{b}+\frac{ex}{b}\right)^{3/2}\log(x)}{x}\,dx, x, a+bx\right)}{b}$$

$$= \frac{e\,\text{Subst}\left(\int \sqrt{\frac{bd-ae}{b}+\frac{ex}{b}}\,\log(x)\,dx, x, a+bx\right)}{b^2} + \frac{(bd-ae)\,\text{Subst}\left(\int \frac{\sqrt{\frac{bd-ae}{b}+\frac{ex}{b}}\,\log}{x}\right.}{b^2}$$

$$= \frac{2(d+ex)^{3/2}\log(a+bx)}{3b} - \frac{2\,\text{Subst}\left(\int \frac{\left(\frac{bd-ae}{b}+\frac{ex}{b}\right)^{3/2}}{x}\,dx, x, a+bx\right)}{3b} + \frac{(e(bd-ae))}{}$$

$$= -\frac{4(d+ex)^{3/2}}{9b} + \frac{2(bd-ae)\sqrt{d+ex}\,\log(a+bx)}{b^2} + \frac{2(d+ex)^{3/2}\log(a+bx)}{3b} - \frac{2}{}$$

$$= -\frac{16(bd-ae)\sqrt{d+ex}}{3b^2} - \frac{4(d+ex)^{3/2}}{9b} + \frac{2(bd-ae)\sqrt{d+ex}\,\log(a+bx)}{b^2} + \frac{2(d+}{}$$

$$= -\frac{16(bd-ae)\sqrt{d+ex}}{3b^2} - \frac{4(d+ex)^{3/2}}{9b} + \frac{2(bd-ae)\sqrt{d+ex}\,\log(a+bx)}{b^2} + \frac{2(d+}{}$$

$$= -\frac{16(bd-ae)\sqrt{d+ex}}{3b^2} - \frac{4(d+ex)^{3/2}}{9b} + \frac{16(bd-ae)^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{3b^{5/2}} + \frac{2(b}{}$$

$$= -\frac{16(bd-ae)\sqrt{d+ex}}{3b^2} - \frac{4(d+ex)^{3/2}}{9b} + \frac{16(bd-ae)^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{3b^{5/2}} + \frac{2(b}{}$$

$$= -\frac{16(bd-ae)\sqrt{d+ex}}{3b^2} - \frac{4(d+ex)^{3/2}}{9b} + \frac{16(bd-ae)^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{3b^{5/2}} + \frac{2(b}{}$$

$$= -\frac{16(bd-ae)\sqrt{d+ex}}{3b^2} - \frac{4(d+ex)^{3/2}}{9b} + \frac{16(bd-ae)^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{3b^{5/2}} + \frac{2(b}{}$$

$$= -\frac{16(bd-ae)\sqrt{d+ex}}{3b^2} - \frac{4(d+ex)^{3/2}}{9b} + \frac{16(bd-ae)^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{3b^{5/2}} + \frac{2(b}{}$$

Mathematica [A] time = 1.10, size = 663, normalized size = 1.74

$$12b^{3/2}(d+ex)^{3/2}\log(a+bx) + 36b^{3/2}d\sqrt{d+ex}\,\log(a+bx) - 18(bd-ae)^{3/2}\text{Li}_2\left(\frac{1}{2} - \frac{\sqrt{b}\sqrt{d+ex}}{2\sqrt{bd-ae}}\right) + 18(bd-ae)^{3/2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)^(3/2)*Log[a + b*x])/(a + b*x),x]
```

```
[Out] (-96*b^(3/2)*d*Sqrt[d + e*x] + 96*a*Sqrt[b]*e*Sqrt[d + e*x] - 8*b^(3/2)*(d
+ e*x)^(3/2) + 96*b*d*Sqrt[b*d - a*e]*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[
b*d - a*e]] - 96*a*e*Sqrt[b*d - a*e]*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b
*d - a*e]] + 36*b^(3/2)*d*Sqrt[d + e*x]*Log[a + b*x] - 36*a*Sqrt[b]*e*Sqrt[
d + e*x]*Log[a + b*x] + 12*b^(3/2)*(d + e*x)^(3/2)*Log[a + b*x] + 18*(b*d -
 a*e)^(3/2)*Log[a + b*x]*Log[Sqrt[b*d - a*e] - Sqrt[b]*Sqrt[d + e*x]] - 9*(
b*d - a*e)^(3/2)*Log[Sqrt[b*d - a*e] - Sqrt[b]*Sqrt[d + e*x]]^2 - 18*(b*d -
 a*e)^(3/2)*Log[a + b*x]*Log[Sqrt[b*d - a*e] + Sqrt[b]*Sqrt[d + e*x]] + 9*(
b*d - a*e)^(3/2)*Log[Sqrt[b*d - a*e] + Sqrt[b]*Sqrt[d + e*x]]^2 + 18*(b*d -
 a*e)^(3/2)*Log[Sqrt[b*d - a*e] + Sqrt[b]*Sqrt[d + e*x]]*Log[1/2 - (Sqrt[b]
*Sqrt[d + e*x])/(2*Sqrt[b*d - a*e])] - 18*(b*d - a*e)^(3/2)*Log[Sqrt[b*d -
a*e] - Sqrt[b]*Sqrt[d + e*x]]*Log[(1 + (Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a
*e])/2] - 18*(b*d - a*e)^(3/2)*PolyLog[2, 1/2 - (Sqrt[b]*Sqrt[d + e*x])/(2*
Sqrt[b*d - a*e])] + 18*(b*d - a*e)^(3/2)*PolyLog[2, (1 + (Sqrt[b]*Sqrt[d +
e*x])/Sqrt[b*d - a*e])/2])/(18*b^(5/2))
```

fricas [F] time = 0.54, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{(ex+d)^{\frac{3}{2}}\log(bx+a)}{bx+a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(3/2)*log(b*x+a)/(b*x+a),x, algorithm="fricas")
```

```
[Out] integral((e*x + d)^(3/2)*log(b*x + a)/(b*x + a), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(ex+d)^{\frac{3}{2}}\log(bx+a)}{bx+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(3/2)*log(b*x+a)/(b*x+a),x, algorithm="giac")
```

```
[Out] integrate((e*x + d)^(3/2)*log(b*x + a)/(b*x + a), x)
```

maple [F(-2)] time = 180.00, size = 0, normalized size = 0.00

$$\int \frac{(ex+d)^{\frac{3}{2}}\ln(bx+a)}{bx+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^(3/2)*ln(b*x+a)/(b*x+a),x)
```

```
[Out] int((e*x+d)^(3/2)*ln(b*x+a)/(b*x+a),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(3/2)*log(b*x+a)/(b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
```

```
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln(a+bx)\,(d+ex)^{3/2}}{a+bx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((log(a + b*x)*(d + e*x)^(3/2))/(a + b*x),x)
```

```
[Out] int((log(a + b*x)*(d + e*x)^(3/2))/(a + b*x), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**(3/2)*ln(b*x+a)/(b*x+a),x)
```

```
[Out] Timed out
```

3.205 $\int \frac{\sqrt{d+ex}\log(a+bx)}{a+bx}\,dx$

Optimal. Leaf size=323

$$-\frac{2\sqrt{bd-ae}\,\text{Li}_2\left(1-\frac{2}{1-\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}}\right)}{b^{3/2}}+\frac{2\sqrt{bd-ae}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)^2}{b^{3/2}}+\frac{4\sqrt{bd-ae}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{3/2}}-\frac{2\sqrt{bd-ae}\log}{}$$

```
[Out] 4*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))*(-a*e+b*d)^(1/2)/b^(3/2)+
2*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))^2*(-a*e+b*d)^(1/2)/b^(3/2
)-2*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))*ln(b*x+a)*(-a*e+b*d)^(1
/2)/b^(3/2)-4*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))*ln(2/(1-b^(1/
2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2)))*(-a*e+b*d)^(1/2)/b^(3/2)-2*polylog(2,1-
2/(1-b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2)))*(-a*e+b*d)^(1/2)/b^(3/2)-4*(e
*x+d)^(1/2)/b+2*ln(b*x+a)*(e*x+d)^(1/2)/b
```

Rubi [A] time = 0.91, antiderivative size = 323, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 14, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.609, Rules used = {2411, 2346, 63, 208, 2348, 12, 1587, 6741, 5984, 5918, 2402, 2315, 2319, 50}

$$-\frac{2\sqrt{bd-ae}\,\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}}\right)}{b^{3/2}}+\frac{2\sqrt{bd-ae}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)^2}{b^{3/2}}+\frac{4\sqrt{bd-ae}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{3/2}}-\frac{2\sqrt{bd}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[d + e*x]*Log[a + b*x])/(a + b*x),x]
```

```
[Out] (-4*Sqrt[d + e*x])/b + (4*Sqrt[b*d - a*e]*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/S
qrt[b*d - a*e]])/b^(3/2) + (2*Sqrt[b*d - a*e]*ArcTanh[(Sqrt[b]*Sqrt[d + e*x
])/Sqrt[b*d - a*e]]^2)/b^(3/2) + (2*Sqrt[d + e*x]*Log[a + b*x])/b - (2*Sqrt
[b*d - a*e]*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]]*Log[a + b*x])/
b^(3/2) - (4*Sqrt[b*d - a*e]*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e
]]*Log[2/(1 - (Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e])])/b^(3/2) - (2*Sqrt[
b*d - a*e]*PolyLog[2, 1 - 2/(1 - (Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e])])
/b^(3/2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
```

```
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 1587

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[(Coeff[Pp, x, p]*Log[RemoveContent[Qq, x]])/(q*Coeff[Qq, x, q]), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]*D[Qq, x])/(q*Coeff[Qq, x,
 q])]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2319

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/(e*(q + 1)), x]
- Dist[(b*n*p)/(e*(q + 1)), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 2346

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.))
/(x_), x_Symbol] :> Dist[d, Int[((d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p)/x,
 x], x] + Dist[e, Int[(d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p, x], x] /; Fre
eQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0] && GtQ[q, 0] && IntegerQ[2*q]
```

Rule 2348

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 5918

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> -Simp[((a + b*ArcTanh[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] + Dist[(b*c*
p)/e, Int[((a + b*ArcTanh[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 - c^2*x^2)
, x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2, 0
]
```

Rule 5984

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rubi steps

$$\int \frac{\sqrt{d+ex}\log(a+bx)}{a+bx}dx = \frac{\text{Subst}\left(\int \frac{\sqrt{\frac{bd-ae}{b}+\frac{ex}{b}}\log(x)}{x}dx, x, a+bx\right)}{b}$$

$$= \frac{e\,\text{Subst}\left(\int \frac{\log(x)}{\sqrt{\frac{bd-ae}{b}+\frac{ex}{b}}}dx, x, a+bx\right)}{b^2} + \frac{(bd-ae)\,\text{Subst}\left(\int \frac{\log(x)}{x\sqrt{\frac{bd-ae}{b}+\frac{ex}{b}}}dx, x, a+bx\right.}{b^2}$$

$$= \frac{2\sqrt{d+ex}\log(a+bx)}{b} - \frac{2\sqrt{bd-ae}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\log(a+bx)}{b^{3/2}} - \frac{2\,\text{Subst}\left(\int\right.}{}$$

$$= -\frac{4\sqrt{d+ex}}{b} + \frac{2\sqrt{d+ex}\log(a+bx)}{b} - \frac{2\sqrt{bd-ae}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\log(a+bx}{b^{3/2}}$$

$$= -\frac{4\sqrt{d+ex}}{b} + \frac{2\sqrt{d+ex}\log(a+bx)}{b} - \frac{2\sqrt{bd-ae}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\log(a+bx}{b^{3/2}}$$

$$= -\frac{4\sqrt{d+ex}}{b} + \frac{4\sqrt{bd-ae}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{3/2}} + \frac{2\sqrt{d+ex}\log(a+bx)}{b} - \frac{2\sqrt{bd-}}{}$$

$$= -\frac{4\sqrt{d+ex}}{b} + \frac{4\sqrt{bd-ae}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{3/2}} + \frac{2\sqrt{bd-ae}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)^2}{b^{3/2}} +$$

$$= -\frac{4\sqrt{d+ex}}{b} + \frac{4\sqrt{bd-ae}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{3/2}} + \frac{2\sqrt{bd-ae}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)^2}{b^{3/2}} +$$

$$= -\frac{4\sqrt{d+ex}}{b} + \frac{4\sqrt{bd-ae}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{3/2}} + \frac{2\sqrt{bd-ae}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)^2}{b^{3/2}} +$$

$$= -\frac{4\sqrt{d+ex}}{b} + \frac{4\sqrt{bd-ae}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{3/2}} + \frac{2\sqrt{bd-ae}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)^2}{b^{3/2}} +$$

Mathematica [A] time = 0.41, size = 534, normalized size = 1.65

$$\frac{-2\sqrt{bd-ae}\,\text{Li}_2\left(\frac{1}{2}-\frac{\sqrt{b}\sqrt{d+ex}}{2\sqrt{bd-ae}}\right)+2\sqrt{bd-ae}\,\text{Li}_2\left(\frac{1}{2}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}+1\right)\right)-\sqrt{bd-ae}\log^2\left(\sqrt{bd-ae}-\sqrt{b}\sqrt{d+ex}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[d + e*x]*Log[a + b*x])/(a + b*x),x]
```

```
[Out] (-8*Sqrt[b]*Sqrt[d + e*x] + 8*Sqrt[b*d - a*e]*ArcTanh[(Sqrt[b]*Sqrt[d + e*x
])/Sqrt[b*d - a*e]] + 4*Sqrt[b]*Sqrt[d + e*x]*Log[a + b*x] + 2*Sqrt[b*d - a
*e]*Log[a + b*x]*Log[Sqrt[b*d - a*e] - Sqrt[b]*Sqrt[d + e*x]] - Sqrt[b*d -
a*e]*Log[Sqrt[b*d - a*e] - Sqrt[b]*Sqrt[d + e*x]]^2 - 2*Sqrt[b*d - a*e]*Log
[a + b*x]*Log[Sqrt[b*d - a*e] + Sqrt[b]*Sqrt[d + e*x]] + Sqrt[b*d - a*e]*Lo
g[Sqrt[b*d - a*e] + Sqrt[b]*Sqrt[d + e*x]]^2 + 2*Sqrt[b*d - a*e]*Log[Sqrt[b
*d - a*e] + Sqrt[b]*Sqrt[d + e*x]]*Log[1/2 - (Sqrt[b]*Sqrt[d + e*x])/(2*Sqr
t[b*d - a*e])] - 2*Sqrt[b*d - a*e]*Log[Sqrt[b*d - a*e] - Sqrt[b]*Sqrt[d + e
*x]]*Log[(1 + (Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e])/2] - 2*Sqrt[b*d - a*
e]*PolyLog[2, 1/2 - (Sqrt[b]*Sqrt[d + e*x])/(2*Sqrt[b*d - a*e])] + 2*Sqrt[b
*d - a*e]*PolyLog[2, (1 + (Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e])/2])/(2*b
^(3/2))
```

fricas [F] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{ex+d}\,\log\left(bx+a\right)}{bx+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(1/2)*log(b*x+a)/(b*x+a),x, algorithm="fricas")
```

```
[Out] integral(sqrt(e*x + d)*log(b*x + a)/(b*x + a), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{ex+d}\,\log\left(bx+a\right)}{bx+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(1/2)*log(b*x+a)/(b*x+a),x, algorithm="giac")
```

```
[Out] integrate(sqrt(e*x + d)*log(b*x + a)/(b*x + a), x)
```

maple [F] time = 0.55, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{ex+d}\,\ln\left(bx+a\right)}{bx+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^(1/2)*ln(b*x+a)/(b*x+a),x)
```

```
[Out] int((e*x+d)^(1/2)*ln(b*x+a)/(b*x+a),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(1/2)*log(b*x+a)/(b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln\left(a+b\,x\right)\,\sqrt{d+e\,x}}{a+b\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((log(a + b*x)*(d + e*x)^(1/2))/(a + b*x),x)
```

```
[Out] int((log(a + b*x)*(d + e*x)^(1/2))/(a + b*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{d+ex}\,\log(a+bx)}{a+bx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**(1/2)*ln(b*x+a)/(b*x+a),x)
```

```
[Out] Integral(sqrt(d + e*x)*log(a + b*x)/(a + b*x), x)
```

3.206 $\int \frac{\log(a+bx)}{(a+bx)\sqrt{d+ex}}\,dx$

Optimal. Leaf size=242

$$-\frac{2\mathrm{Li}_2\left(1-\frac{2}{1-\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}}\right)}{\sqrt{b}\sqrt{bd-ae}}+\frac{2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)^2}{\sqrt{b}\sqrt{bd-ae}}-\frac{2\log(a+bx)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{\sqrt{b}\sqrt{bd-ae}}-\frac{4\log\left(\frac{2}{1-\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}}\right)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\cdot}}{\sqrt{bd}}\right.}{\sqrt{b}\sqrt{bd-ae}}$$

```
[Out] 2*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))^2/b^(1/2)/(-a*e+b*d)^(1/2
)-2*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))*ln(b*x+a)/b^(1/2)/(-a*e
+b*d)^(1/2)-4*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))*ln(2/(1-b^(1/
2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2)))/b^(1/2)/(-a*e+b*d)^(1/2)-2*polylog(2,1-
2/(1-b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2)))/b^(1/2)/(-a*e+b*d)^(1/2)
```

Rubi [A] time = 0.65, antiderivative size = 242, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 11, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.478, Rules used = {2411, 63, 208, 2348, 12, 1587, 6741, 5984, 5918, 2402, 2315}

$$-\frac{2\mathrm{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}}\right)}{\sqrt{b}\sqrt{bd-ae}}+\frac{2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)^2}{\sqrt{b}\sqrt{bd-ae}}-\frac{2\log(a+bx)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{\sqrt{b}\sqrt{bd-ae}}-\frac{4\log\left(\frac{2}{1-\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}}\right)\tanh}{\sqrt{b}\sqrt{bd-a}}$$

Antiderivative was successfully verified.

```
[In] Int[Log[a + b*x]/((a + b*x)*Sqrt[d + e*x]),x]
```

```
[Out] (2*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]]^2)/(Sqrt[b]*Sqrt[b*d -
a*e]) - (2*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]]*Log[a + b*x])/(
Sqrt[b]*Sqrt[b*d - a*e]) - (4*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*
e]]*Log[2/(1 - (Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e])])/(Sqrt[b]*Sqrt[b*d
 - a*e]) - (2*PolyLog[2, 1 - 2/(1 - (Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]
)])/(Sqrt[b]*Sqrt[b*d - a*e])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 1587

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[(Coeff[Pp, x, p]*Log[RemoveContent[Qq, x]])/(q*Coeff[Qq, x, q]), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]*D[Qq, x])/(q*Coeff[Qq, x,
```

```
q])]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2348

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 5918

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> -Simp[((a + b*ArcTanh[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] + Dist[(b*c*
p)/e, Int[((a + b*ArcTanh[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 - c^2*x^2)
, x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2, 0
]
```

Rule 5984

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rubi steps

$$\int \frac{\log(a+bx)}{(a+bx)\sqrt{d+ex}}\,dx = \frac{\text{Subst}\left(\int \frac{\log(x)}{x\sqrt{\frac{bd-ae}{b}+\frac{ex}{b}}}\,dx, x, a+bx\right)}{b}$$

$$= -\frac{2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\log(a+bx)}{\sqrt{b}\sqrt{bd-ae}} - \frac{\text{Subst}\left(\int -\frac{2\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d-\frac{ae}{b}+\frac{ex}{b}}}{\sqrt{bd-ae}}\right)}{\sqrt{bd-ae}\,x}\,dx, x, a+bx\right)}{b}$$

$$= -\frac{2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\log(a+bx)}{\sqrt{b}\sqrt{bd-ae}} + \frac{2\,\text{Subst}\left(\int \frac{\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d-\frac{ae}{b}+\frac{ex}{b}}}{\sqrt{bd-ae}}\right)}{x}\,dx, x, a+bx\right)}{\sqrt{b}\sqrt{bd-ae}}$$

$$= -\frac{2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\log(a+bx)}{\sqrt{b}\sqrt{bd-ae}} + \frac{\left(4\sqrt{b}\right)\text{Subst}\left(\int \frac{x\tanh^{-1}\left(\frac{\sqrt{b}x}{\sqrt{bd-ae}}\right)}{ae+b\left(-d+x^2\right)}\,dx, x, \sqrt{d+ex}\right)}{\sqrt{bd-ae}}$$

$$= -\frac{2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\log(a+bx)}{\sqrt{b}\sqrt{bd-ae}} + \frac{\left(4\sqrt{b}\right)\text{Subst}\left(\int \frac{x\tanh^{-1}\left(\frac{\sqrt{b}x}{\sqrt{bd-ae}}\right)}{-bd+ae+bx^2}\,dx, x, \sqrt{d+ex}\right)}{\sqrt{bd-ae}}$$

$$= \frac{2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)^2}{\sqrt{b}\sqrt{bd-ae}} - \frac{2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\log(a+bx)}{\sqrt{b}\sqrt{bd-ae}} - \frac{4\,\text{Subst}\left(\int \frac{\tanh^{-1}\left(\frac{\sqrt{b}x}{\sqrt{bd-ae}}\right)}{1-\frac{\sqrt{b}x}{\sqrt{bd-ae}}}\,dx\right.}{bd-ae}$$

$$= \frac{2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)^2}{\sqrt{b}\sqrt{bd-ae}} - \frac{2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\log(a+bx)}{\sqrt{b}\sqrt{bd-ae}} - \frac{4\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\log\left(\frac{}{1-}\right.}{\sqrt{b}\sqrt{bd-ae}}$$

$$= \frac{2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)^2}{\sqrt{b}\sqrt{bd-ae}} - \frac{2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\log(a+bx)}{\sqrt{b}\sqrt{bd-ae}} - \frac{4\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\log\left(\frac{}{1-}\right.}{\sqrt{b}\sqrt{bd-ae}}$$

$$= \frac{2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)^2}{\sqrt{b}\sqrt{bd-ae}} - \frac{2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\log(a+bx)}{\sqrt{b}\sqrt{bd-ae}} - \frac{4\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\log\left(\frac{}{1-}\right.}{\sqrt{b}\sqrt{bd-ae}}$$

Mathematica [A] time = 2.89, size = 239, normalized size = 0.99

$$\frac{\frac{\sqrt{\frac{b(d+ex)}{bd-ae}}\left(-4\text{Li}_2\left(\frac{1}{2}-\frac{1}{2}\sqrt{\frac{b(d+ex)}{bd-ae}}\right)+\log^2\left(\frac{e(a+bx)}{ae-bd}\right)+2\log^2\left(\frac{1}{2}\left(\sqrt{\frac{b(d+ex)}{bd-ae}}+1\right)\right)-4\log\left(\frac{1}{2}\left(\sqrt{\frac{b(d+ex)}{bd-ae}}+1\right)\right)\log\left(\frac{e(a+bx)}{ae-bd}\right)\right)}{2\sqrt{d+ex}} - \frac{2\left(\log(a+bx)-\log\left(\frac{e(a+bx)}{ae-bd}\right)\right)\tanh}{\sqrt{d-\frac{ae}{b}}}}{b}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[a + b*x]/((a + b*x)*Sqrt[d + e*x]),x]
```

```
[Out] ((-2*ArcTanh[Sqrt[d + e*x]/Sqrt[d - (a*e)/b]]*(Log[a + b*x] - Log[(e*(a + b
*x))/(-(b*d) + a*e)]))/Sqrt[d - (a*e)/b] + (Sqrt[(b*(d + e*x))/(b*d - a*e)]
*(Log[(e*(a + b*x))/(-(b*d) + a*e)]^2 - 4*Log[(e*(a + b*x))/(-(b*d) + a*e)]
*Log[(1 + Sqrt[(b*(d + e*x))/(b*d - a*e)])/2] + 2*Log[(1 + Sqrt[(b*(d + e*x
))/(b*d - a*e)])/2]^2 - 4*PolyLog[2, 1/2 - Sqrt[(b*(d + e*x))/(b*d - a*e)]/
2]))/(2*Sqrt[d + e*x]))/b
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{ex+d}\log\left(bx+a\right)}{bex^2+ad+(bd+ae)x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)/(b*x+a)/(e*x+d)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(e*x + d)*log(b*x + a)/(b*e*x^2 + a*d + (b*d + a*e)*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log\left(bx+a\right)}{(bx+a)\sqrt{ex+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)/(b*x+a)/(e*x+d)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(log(b*x + a)/((b*x + a)*sqrt(e*x + d)), x)
```

maple [F] time = 0.51, size = 0, normalized size = 0.00

$$\int \frac{\ln\left(bx+a\right)}{(bx+a)\sqrt{ex+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(b*x+a)/(b*x+a)/(e*x+d)^(1/2),x)
```

```
[Out] int(ln(b*x+a)/(b*x+a)/(e*x+d)^(1/2),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)/(b*x+a)/(e*x+d)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln\left(a+b\,x\right)}{(a+b\,x)\,\sqrt{d+e\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(a + b*x)/((a + b*x)*(d + e*x)^(1/2)),x)
```

```
[Out] int(log(a + b*x)/((a + b*x)*(d + e*x)^(1/2)), x)
```

sympy [F(-1)]   time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(b*x+a)/(b*x+a)/(e*x+d)**(1/2),x)
```

```
[Out] Timed out
```

3.207 $\int \frac{\log(a+bx)}{(a+bx)(d+ex)^{3/2}}\,dx$

Optimal. Leaf size=316

$$-\frac{2\sqrt{b}\,\text{Li}_2\left(1-\frac{2}{1-\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}}\right)}{(bd-ae)^{3/2}}+\frac{2\log(a+bx)}{\sqrt{d+ex}\,(bd-ae)}+\frac{2\sqrt{b}\,\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)^2}{(bd-ae)^{3/2}}+\frac{4\sqrt{b}\,\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{(bd-ae)^{3/2}}-\frac{2\sqrt{b}\,\log(a}{}$$

```
[Out] 4*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))*b^(1/2)/(-a*e+b*d)^(3/2)+
2*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))^2*b^(1/2)/(-a*e+b*d)^(3/2
)-2*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))*ln(b*x+a)*b^(1/2)/(-a*e
+b*d)^(3/2)-4*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))*ln(2/(1-b^(1/
2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2)))*b^(1/2)/(-a*e+b*d)^(3/2)-2*polylog(2,1-
2/(1-b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2)))*b^(1/2)/(-a*e+b*d)^(3/2)+2*ln
(b*x+a)/(-a*e+b*d)/(e*x+d)^(1/2)
```

Rubi [A] time = 0.94, antiderivative size = 316, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 13, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.565, Rules used = {2411, 2347, 63, 208, 2348, 12, 1587, 6741, 5984, 5918, 2402, 2315, 2319}

$$-\frac{2\sqrt{b}\,\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}}\right)}{(bd-ae)^{3/2}}+\frac{2\log(a+bx)}{\sqrt{d+ex}\,(bd-ae)}+\frac{2\sqrt{b}\,\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)^2}{(bd-ae)^{3/2}}+\frac{4\sqrt{b}\,\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{(bd-ae)^{3/2}}-\frac{2}{}$$

Antiderivative was successfully verified.

```
[In] Int[Log[a + b*x]/((a + b*x)*(d + e*x)^(3/2)),x]
```

```
[Out] (4*Sqrt[b]*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(b*d - a*e)^(3
/2) + (2*Sqrt[b]*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]]^2)/(b*d -
 a*e)^(3/2) + (2*Log[a + b*x])/((b*d - a*e)*Sqrt[d + e*x]) - (2*Sqrt[b]*Arc
Tanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]]*Log[a + b*x])/(b*d - a*e)^(3/
2) - (4*Sqrt[b]*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]]*Log[2/(1 -
 (Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e])])/(b*d - a*e)^(3/2) - (2*Sqrt[b]*
PolyLog[2, 1 - 2/(1 - (Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e])])/(b*d - a*e
)^(3/2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 1587

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[(Coeff[Pp, x, p]*Log[RemoveContent[Qq, x]])/(q*Coeff[Qq, x, q]), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]*D[Qq, x])/(q*Coeff[Qq, x,
 q])]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2319

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/(e*(q + 1)), x]
- Dist[(b*n*p)/(e*(q + 1)), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 2347

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/x
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2348

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 5918

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> -Simp[((a + b*ArcTanh[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] + Dist[(b*c*
p)/e, Int[((a + b*ArcTanh[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 - c^2*x^2)
, x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2, 0
]
```

Rule 5984

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
```

```
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rubi steps

$$\int \frac{\log(a+bx)}{(a+bx)(d+ex)^{3/2}}\,dx = \frac{\text{Subst}\left(\int \frac{\log(x)}{x\left(\frac{bd-ae}{b}+\frac{ex}{b}\right)^{3/2}}\,dx, x, a+bx\right)}{b}$$

$$= \frac{\text{Subst}\left(\int \frac{\log(x)}{x\sqrt{\frac{bd-ae}{b}+\frac{ex}{b}}}\,dx, x, a+bx\right)}{bd-ae} - \frac{e\,\text{Subst}\left(\int \frac{\log(x)}{\left(\frac{bd-ae}{b}+\frac{ex}{b}\right)^{3/2}}\,dx, x, a+bx\right)}{b(bd-ae)}$$

$$= \frac{2\log(a+bx)}{(bd-ae)\sqrt{d+ex}} - \frac{2\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\log(a+bx)}{(bd-ae)^{3/2}} - \frac{\text{Subst}\left(\int -\frac{2\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\ldots}}{\sqrt{\ldots}}\right)}{\sqrt{bd-ae}\,x\ldots}\ldots\right)}{bd-a\ldots}$$

$$= \frac{2\log(a+bx)}{(bd-ae)\sqrt{d+ex}} - \frac{2\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\log(a+bx)}{(bd-ae)^{3/2}} + \frac{\left(2\sqrt{b}\right)\text{Subst}\left(\int \frac{\tanh^{-1}\left(\frac{\sqrt{b}\ldots}{\ldots}\right)}{\ldots}\ldots\right)}{(bd-a\ldots}$$

$$= \frac{4\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{(bd-ae)^{3/2}} + \frac{2\log(a+bx)}{(bd-ae)\sqrt{d+ex}} - \frac{2\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\log(a+bx)}{(bd-ae)^{3/2}} + \ldots$$

$$= \frac{4\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{(bd-ae)^{3/2}} + \frac{2\log(a+bx)}{(bd-ae)\sqrt{d+ex}} - \frac{2\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\log(a+bx)}{(bd-ae)^{3/2}} + \ldots$$

$$= \frac{4\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{(bd-ae)^{3/2}} + \frac{2\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)^2}{(bd-ae)^{3/2}} + \frac{2\log(a+bx)}{(bd-ae)\sqrt{d+ex}} - \frac{2\sqrt{b}\tanh\ldots}{\ldots}$$

$$= \frac{4\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{(bd-ae)^{3/2}} + \frac{2\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)^2}{(bd-ae)^{3/2}} + \frac{2\log(a+bx)}{(bd-ae)\sqrt{d+ex}} - \frac{2\sqrt{b}\tanh\ldots}{\ldots}$$

$$= \frac{4\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{(bd-ae)^{3/2}} + \frac{2\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)^2}{(bd-ae)^{3/2}} + \frac{2\log(a+bx)}{(bd-ae)\sqrt{d+ex}} - \frac{2\sqrt{b}\tanh\ldots}{\ldots}$$

$$= \frac{4\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{(bd-ae)^{3/2}} + \frac{2\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)^2}{(bd-ae)^{3/2}} + \frac{2\log(a+bx)}{(bd-ae)\sqrt{d+ex}} - \frac{2\sqrt{b}\tanh\ldots}{\ldots}$$

Mathematica [**A**] time = 0.47, size = 550, normalized size = 1.74

$$-2\sqrt{b}\sqrt{d+ex}\,\text{Li}_2\left(\frac{1}{2}-\frac{\sqrt{b}\sqrt{d+ex}}{2\sqrt{bd-ae}}\right)+2\sqrt{b}\sqrt{d+ex}\,\text{Li}_2\left(\frac{1}{2}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}+1\right)\right)-\sqrt{b}\sqrt{d+ex}\log^2\left(\sqrt{bd-ae}-\sqrt{b}\sqrt{d\ldots}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[a + b*x]/((a + b*x)*(d + e*x)^(3/2)),x]
```

```
[Out] (8*Sqrt[b]*Sqrt[d + e*x]*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]] +
 4*Sqrt[b*d - a*e]*Log[a + b*x] + 2*Sqrt[b]*Sqrt[d + e*x]*Log[a + b*x]*Log[
Sqrt[b*d - a*e] - Sqrt[b]*Sqrt[d + e*x]] - Sqrt[b]*Sqrt[d + e*x]*Log[Sqrt[b
*d - a*e] - Sqrt[b]*Sqrt[d + e*x]]^2 - 2*Sqrt[b]*Sqrt[d + e*x]*Log[a + b*x]
*Log[Sqrt[b*d - a*e] + Sqrt[b]*Sqrt[d + e*x]] + Sqrt[b]*Sqrt[d + e*x]*Log[S
qrt[b*d - a*e] + Sqrt[b]*Sqrt[d + e*x]]^2 + 2*Sqrt[b]*Sqrt[d + e*x]*Log[Sqr
t[b*d - a*e] + Sqrt[b]*Sqrt[d + e*x]]*Log[1/2 - (Sqrt[b]*Sqrt[d + e*x])/(2*
Sqrt[b*d - a*e])] - 2*Sqrt[b]*Sqrt[d + e*x]*Log[Sqrt[b*d - a*e] - Sqrt[b]*S
qrt[d + e*x]]*Log[(1 + (Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e])/2] - 2*Sqrt
[b]*Sqrt[d + e*x]*PolyLog[2, 1/2 - (Sqrt[b]*Sqrt[d + e*x])/(2*Sqrt[b*d - a*
e])] + 2*Sqrt[b]*Sqrt[d + e*x]*PolyLog[2, (1 + (Sqrt[b]*Sqrt[d + e*x])/Sqrt
[b*d - a*e])/2])/(2*(b*d - a*e)^(3/2)*Sqrt[d + e*x])
```

fricas [F] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{ex+d}\,\log(bx+a)}{be^2x^3+ad^2+\left(2\,bde+ae^2\right)x^2+\left(bd^2+2\,ade\right)x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)/(b*x+a)/(e*x+d)^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(e*x + d)*log(b*x + a)/(b*e^2*x^3 + a*d^2 + (2*b*d*e + a*e^2)*
x^2 + (b*d^2 + 2*a*d*e)*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log(bx+a)}{(bx+a)(ex+d)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)/(b*x+a)/(e*x+d)^(3/2),x, algorithm="giac")
```

```
[Out] integrate(log(b*x + a)/((b*x + a)*(e*x + d)^(3/2)), x)
```

maple [F] time = 0.50, size = 0, normalized size = 0.00

$$\int \frac{\ln(bx+a)}{(bx+a)\,(ex+d)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(b*x+a)/(b*x+a)/(e*x+d)^(3/2),x)
```

```
[Out] int(ln(b*x+a)/(b*x+a)/(e*x+d)^(3/2),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)/(b*x+a)/(e*x+d)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln (a+b x)}{(a+b x) (d+e x)^{3/2}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(a + b*x)/((a + b*x)*(d + e*x)^(3/2)),x)
```

```
[Out] int(log(a + b*x)/((a + b*x)*(d + e*x)^(3/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(b*x+a)/(b*x+a)/(e*x+d)**(3/2),x)
```

```
[Out] Timed out
```

3.208 $\int \frac{\log(a+bx)}{(a+bx)(d+ex)^{5/2}}\,dx$

Optimal. Leaf size=372

$$-\frac{2b^{3/2}\mathrm{Li}_2\left(1-\frac{2}{1-\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}}\right)}{(bd-ae)^{5/2}}+\frac{2b^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)^2}{(bd-ae)^{5/2}}+\frac{16b^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{3(bd-ae)^{5/2}}-\frac{2b^{3/2}\log(a+bx)\tanh^{-1}\left(\frac{\sqrt{b}}{\sqrt{}}\right.}{(bd-ae)^{5/2}}$$

```
[Out] 16/3*b^(3/2)*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))/(-a*e+b*d)^(5/
2)+2*b^(3/2)*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))^2/(-a*e+b*d)^(
5/2)+2/3*ln(b*x+a)/(-a*e+b*d)/(e*x+d)^(3/2)-2*b^(3/2)*arctanh(b^(1/2)*(e*x+
d)^(1/2)/(-a*e+b*d)^(1/2))*ln(b*x+a)/(-a*e+b*d)^(5/2)-4*b^(3/2)*arctanh(b^(
1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))*ln(2/(1-b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*
d)^(1/2)))/(-a*e+b*d)^(5/2)-2*b^(3/2)*polylog(2,1-2/(1-b^(1/2)*(e*x+d)^(1/2
)/(-a*e+b*d)^(1/2)))/(-a*e+b*d)^(5/2)-4/3*b/(-a*e+b*d)^2/(e*x+d)^(1/2)+2*b*
ln(b*x+a)/(-a*e+b*d)^2/(e*x+d)^(1/2)
```

Rubi [A] time = 1.26, antiderivative size = 372, normalized size of antiderivative = 1.00, number of steps used = 18, number of rules used = 14, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.609, Rules used = {2411, 2347, 63, 208, 2348, 12, 1587, 6741, 5984, 5918, 2402, 2315, 2319, 51}

$$-\frac{2b^{3/2}\mathrm{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}}\right)}{(bd-ae)^{5/2}}+\frac{2b^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)^2}{(bd-ae)^{5/2}}+\frac{16b^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{3(bd-ae)^{5/2}}-\frac{2b^{3/2}\log(a+bx)\tan}{(bd-ae}$$

Antiderivative was successfully verified.

```
[In] Int[Log[a + b*x]/((a + b*x)*(d + e*x)^(5/2)),x]
```

```
[Out] (-4*b)/(3*(b*d - a*e)^2*Sqrt[d + e*x]) + (16*b^(3/2)*ArcTanh[(Sqrt[b]*Sqrt[
d + e*x])/Sqrt[b*d - a*e]])/(3*(b*d - a*e)^(5/2)) + (2*b^(3/2)*ArcTanh[(Sqr
t[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]]^2)/(b*d - a*e)^(5/2) + (2*Log[a + b*x]
)/(3*(b*d - a*e)*(d + e*x)^(3/2)) + (2*b*Log[a + b*x])/((b*d - a*e)^2*Sqrt[
d + e*x]) - (2*b^(3/2)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]]*Log
[a + b*x])/(b*d - a*e)^(5/2) - (4*b^(3/2)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/S
qrt[b*d - a*e]]*Log[2/(1 - (Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e])])/(b*d
- a*e)^(5/2) - (2*b^(3/2)*PolyLog[2, 1 - 2/(1 - (Sqrt[b]*Sqrt[d + e*x])/Sqr
t[b*d - a*e])])/(b*d - a*e)^(5/2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
```

```
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 1587

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[(Coeff[Pp, x, p]*Log[RemoveContent[Qq, x]])/(q*Coeff[Qq, x, q]), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]*D[Qq, x])/(q*Coeff[Qq, x,
 q])]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2319

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/(e*(q + 1)), x]
- Dist[(b*n*p)/(e*(q + 1)), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 2347

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/x
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2348

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 5918

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> -Simp[((a + b*ArcTanh[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] + Dist[(b*c*
p)/e, Int[((a + b*ArcTanh[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 - c^2*x^2)
, x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2, 0
]
```

Rule 5984

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rubi steps

$$\int \frac{\log(a+bx)}{(a+bx)(d+ex)^{5/2}}\,dx = \frac{\text{Subst}\left(\int \frac{\log(x)}{x\left(\frac{bd-ae}{b}+\frac{ex}{b}\right)^{5/2}}\,dx, x, a+bx\right)}{b}$$

$$= \frac{\text{Subst}\left(\int \frac{\log(x)}{x\left(\frac{bd-ae}{b}+\frac{ex}{b}\right)^{3/2}}\,dx, x, a+bx\right)}{bd-ae} - \frac{e\,\text{Subst}\left(\int \frac{\log(x)}{\left(\frac{bd-ae}{b}+\frac{ex}{b}\right)^{5/2}}\,dx, x, a+bx\right)}{b(bd-ae)}$$

$$= \frac{2\log(a+bx)}{3(bd-ae)(d+ex)^{3/2}} + \frac{b\,\text{Subst}\left(\int \frac{\log(x)}{x\sqrt{\frac{bd-ae}{b}+\frac{ex}{b}}}\,dx, x, a+bx\right)}{(bd-ae)^2} - \frac{e\,\text{Subst}\left(\int \frac{\log(x)}{\left(\frac{bd-ae}{b}+\frac{ex}{b}\right)^{3/2}}\right.}{(bd-ae)^2}$$

$$= -\frac{4b}{3(bd-ae)^2\sqrt{d+ex}} + \frac{2\log(a+bx)}{3(bd-ae)(d+ex)^{3/2}} + \frac{2b\log(a+bx)}{(bd-ae)^2\sqrt{d+ex}} - \frac{2b^{3/2}\tanh^{-1}\left(\frac{\sqrt{}}{}\right.}{(bd}$$

$$= -\frac{4b}{3(bd-ae)^2\sqrt{d+ex}} + \frac{2\log(a+bx)}{3(bd-ae)(d+ex)^{3/2}} + \frac{2b\log(a+bx)}{(bd-ae)^2\sqrt{d+ex}} - \frac{2b^{3/2}\tanh^{-1}\left(\frac{\sqrt{}}{}\right.}{(bd}$$

$$= -\frac{4b}{3(bd-ae)^2\sqrt{d+ex}} + \frac{16b^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{3(bd-ae)^{5/2}} + \frac{2\log(a+bx)}{3(bd-ae)(d+ex)^{3/2}} + \frac{2b\log(}{(bd-ae)}$$

$$= -\frac{4b}{3(bd-ae)^2\sqrt{d+ex}} + \frac{16b^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{3(bd-ae)^{5/2}} + \frac{2\log(a+bx)}{3(bd-ae)(d+ex)^{3/2}} + \frac{2b\log(}{(bd-ae)}$$

$$= -\frac{4b}{3(bd-ae)^2\sqrt{d+ex}} + \frac{16b^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{3(bd-ae)^{5/2}} + \frac{2b^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)^2}{(bd-ae)^{5/2}} + \frac{2}{3(bd}$$

$$= -\frac{4b}{3(bd-ae)^2\sqrt{d+ex}} + \frac{16b^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{3(bd-ae)^{5/2}} + \frac{2b^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)^2}{(bd-ae)^{5/2}} + \frac{2}{3(bd}$$

$$= -\frac{4b}{3(bd-ae)^2\sqrt{d+ex}} + \frac{16b^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{3(bd-ae)^{5/2}} + \frac{2b^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)^2}{(bd-ae)^{5/2}} + \frac{2}{3(bd}$$

$$= -\frac{4b}{3(bd-ae)^2\sqrt{d+ex}} + \frac{16b^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{3(bd-ae)^{5/2}} + \frac{2b^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)^2}{(bd-ae)^{5/2}} + \frac{2}{3(bd}$$

Mathematica [C] time = 0.97, size = 568, normalized size = 1.53

$$\frac{-3b^{3/2}(d+ex)^{3/2}\left(2\text{Li}_2\left(\frac{1}{2}-\frac{\sqrt{b}\sqrt{d+ex}}{2\sqrt{bd-ae}}\right)+\log\left(\sqrt{bd-ae}-\sqrt{b}\sqrt{d+ex}\right)\left(\log\left(\sqrt{bd-ae}-\sqrt{b}\sqrt{d+ex}\right)+2\log\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[a + b*x]/((a + b*x)*(d + e*x)^(5/2)),x]
```

```
[Out] (24*b^(3/2)*(d + e*x)^(3/2)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]
] - 8*b*Sqrt[b*d - a*e]*(d + e*x)*Hypergeometric2F1[-1/2, 1, 1/2, (b*(d + e
*x))/(b*d - a*e)] + 4*(b*d - a*e)^(3/2)*Log[a + b*x] + 12*b*Sqrt[b*d - a*e]
*(d + e*x)*Log[a + b*x] + 6*b^(3/2)*(d + e*x)^(3/2)*Log[a + b*x]*Log[Sqrt[b
*d - a*e] - Sqrt[b]*Sqrt[d + e*x]] - 6*b^(3/2)*(d + e*x)^(3/2)*Log[a + b*x]
*Log[Sqrt[b*d - a*e] + Sqrt[b]*Sqrt[d + e*x]] - 3*b^(3/2)*(d + e*x)^(3/2)*(
Log[Sqrt[b*d - a*e] - Sqrt[b]*Sqrt[d + e*x]]*(Log[Sqrt[b*d - a*e] - Sqrt[b]
*Sqrt[d + e*x]] + 2*Log[(1 + (Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e])/2]) +
 2*PolyLog[2, 1/2 - (Sqrt[b]*Sqrt[d + e*x])/(2*Sqrt[b*d - a*e])]) + 3*b^(3/
2)*(d + e*x)^(3/2)*(Log[Sqrt[b*d - a*e] + Sqrt[b]*Sqrt[d + e*x]]*(Log[Sqrt[
b*d - a*e] + Sqrt[b]*Sqrt[d + e*x]] + 2*Log[1/2 - (Sqrt[b]*Sqrt[d + e*x])/(
2*Sqrt[b*d - a*e])]) + 2*PolyLog[2, (1 + (Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d -
 a*e])/2]))/(6*(b*d - a*e)^(5/2)*(d + e*x)^(3/2))
```

fricas [F] time = 0.47, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{ex+d}\,\log\left(bx+a\right)}{be^3x^4+ad^3+\left(3\,bde^2+ae^3\right)x^3+3\left(bd^2e+ade^2\right)x^2+\left(bd^3+3\,ad^2e\right)x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)/(b*x+a)/(e*x+d)^(5/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(e*x + d)*log(b*x + a)/(b*e^3*x^4 + a*d^3 + (3*b*d*e^2 + a*e^3
)*x^3 + 3*(b*d^2*e + a*d*e^2)*x^2 + (b*d^3 + 3*a*d^2*e)*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log\left(bx+a\right)}{(bx+a)(ex+d)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)/(b*x+a)/(e*x+d)^(5/2),x, algorithm="giac")
```

```
[Out] integrate(log(b*x + a)/((b*x + a)*(e*x + d)^(5/2)), x)
```

maple [F] time = 0.50, size = 0, normalized size = 0.00

$$\int \frac{\ln\left(bx+a\right)}{\left(bx+a\right)\left(ex+d\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(b*x+a)/(b*x+a)/(e*x+d)^(5/2),x)
```

```
[Out] int(ln(b*x+a)/(b*x+a)/(e*x+d)^(5/2),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)/(b*x+a)/(e*x+d)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln(a+bx)}{(a+bx)\,(d+ex)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(a + b*x)/((a + b*x)*(d + e*x)^(5/2)),x)
```

```
[Out] int(log(a + b*x)/((a + b*x)*(d + e*x)^(5/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(b*x+a)/(b*x+a)/(e*x+d)**(5/2),x)
```

```
[Out] Timed out
```

3.209 $\int \frac{(h+ix)^q(a+b\log(c(e+fx)))^p}{de+dfx}\,dx$

Optimal. Leaf size=35

$$\text{Int}\left(\frac{(h+ix)^q(a+b\log(c(e+fx)))^p}{de+dfx},x\right)$$

```
[Out] Unintegrable((i*x+h)^q*(a+b*ln(c*(f*x+e)))^p/(d*f*x+d*e),x)
```

Rubi [A] time = 0.11, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(h+ix)^q(a+b\log(c(e+fx)))^p}{de+dfx}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[((h + i*x)^q*(a + b*Log[c*(e + f*x)])^p)/(d*e + d*f*x),x]
[Out] Defer[Int][((h + i*x)^q*(a + b*Log[c*(e + f*x)])^p)/(d*e + d*f*x), x]
```

Rubi steps

$$\int \frac{(h+209x)^q(a+b\log(c(e+fx)))^p}{de+dfx}\,dx = \int \frac{(h+209x)^q(a+b\log(c(e+fx)))^p}{de+dfx}\,dx$$

Mathematica [A] time = 0.62, size = 0, normalized size = 0.00

$$\int \frac{(h+ix)^q(a+b\log(c(e+fx)))^p}{de+dfx}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[((h + i*x)^q*(a + b*Log[c*(e + f*x)])^p)/(d*e + d*f*x),x]
[Out] Integrate[((h + i*x)^q*(a + b*Log[c*(e + f*x)])^p)/(d*e + d*f*x), x]
```

fricas [A] time = 0.49, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{(ix+h)^q\left(b\log\left(cfx+ce\right)+a\right)^p}{dfx+de},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^q*(a+b*log(c*(f*x+e)))^p/(d*f*x+d*e),x, algorithm="fricas
")
[Out] integral((i*x + h)^q*(b*log(c*f*x + c*e) + a)^p/(d*f*x + d*e), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^q*(a+b*log(c*(f*x+e)))^p/(d*f*x+d*e),x, algorithm="giac")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:Simplification assuming c near 0Simplification assuming f
 near 0Simplification assuming t_nostep near 0Simplification assuming c nea
r 0Simplification assuming f near 0Simplification assuming t_nostep near 0S
implification assuming c near 0Simplification assuming f near 0Simplificati
on assuming t_nostep near 0Simplification assuming c near 0Simplification a
ssuming f near 0Simplification assuming t_nostep near 0Simplification assum
ing c near 0Simplification assuming f near 0Simplification assuming x near
0Simplification assuming c near 0Simplification assuming f near 0Simplifica
tion assuming x near 0Evaluation time: 0.78Unable to divide, perhaps due to
 rounding error%%%{-i,[0,0,5,0,2,0,0,3,0,2,0]%%%}+%%%{-5,[0,0,4,0,2,0,1,3,0
,2,0]%%%}+%%%{10*i,[0,0,3,0,2,0,2,3,0,2,0]%%%}+%%%{10,[0,0,2,0,2,0,3,3,0,2,
0]%%%}+%%%{-5*i,[0,0,1,0,2,0,4,3,0,2,0]%%%}+%%%{-1,[0,0,0,0,2,0,5,3,0,2,0]%
%%} / %%%{-i,[0,0,6,0,3,0,0,3,0,2,0]%%%}+%%%{-5,[0,0,5,0,3,0,1,3,0,2,0]%%%}
+%%%{-i,[0,0,5,0,2,1,0,3,0,2,0]%%%}+%%%{10*i,[0,0,4,0,3,0,2,3,0,2,0]%%%}+%%
%{-5,[0,0,4,0,2,1,1,3,0,2,0]%%%}+%%%{10,[0,0,3,0,3,0,3,3,0,2,0]%%%}+%%%{10*
i,[0,0,3,0,2,1,2,3,0,2,0]%%%}+%%%{-5*i,[0,0,2,0,3,0,4,3,0,2,0]%%%}+%%%{10,[
0,0,2,0,2,1,3,3,0,2,0]%%%}+%%%{-1,[0,0,1,0,3,0,5,3,0,2,0]%%%}+%%%{-5*i,[0,0
,1,0,2,1,4,3,0,2,0]%%%}+%%%{-1,[0,0,0,0,2,1,5,3,0,2,0]%%%} Error: Bad Argum
ent Value
```

maple [A] time = 0.88, size = 0, normalized size = 0.00

$$\int \frac{\left(b\ln\left(\left(fx+e\right)c\right)+a\right)^{p}\left(ix+h\right)^{q}}{dfx+de}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)^q*(b*ln((f*x+e)*c)+a)^p/(d*f*x+d*e),x)
```

```
[Out] int((i*x+h)^q*(b*ln((f*x+e)*c)+a)^p/(d*f*x+d*e),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(ix+h\right)^{q}\left(b\log\left(\left(fx+e\right)c\right)+a\right)^{p}}{dfx+de}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^q*(a+b*log(c*(f*x+e)))^p/(d*f*x+d*e),x, algorithm="maxima
")
```

```
[Out] integrate((i*x + h)^q*(b*log((f*x + e)*c) + a)^p/(d*f*x + d*e), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{{\left(h+i\,x\right)}^q\,{\left(a+b\,\ln\left(c\,\left(e+f\,x\right)\right)\right)}^p}{d\,e+d\,f\,x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((h + i*x)^q*(a + b*log(c*(e + f*x)))^p)/(d*e + d*f*x),x)
```

```
[Out] int(((h + i*x)^q*(a + b*log(c*(e + f*x)))^p)/(d*e + d*f*x), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)**q*(a+b*ln(c*(f*x+e)))**p/(d*f*x+d*e),x)
```

```
[Out] Timed out
```

3.210 $\int \frac{(h+ix)^3(a+b\log(c(e+fx)))^p}{de+dfx}\,dx$

Optimal. Leaf size=305

$$\frac{i^3 3^{-p-1} e^{-\frac{3a}{b}}(a+b\log(c(e+fx)))^p \left(-\frac{a+b\log(c(e+fx))}{b}\right)^{-p} \Gamma\left(p+1,-\frac{3(a+b\log(c(e+fx)))}{b}\right)}{c^3df^4}+\frac{3i^2 2^{-p-1} e^{-\frac{2a}{b}}(fh-ei)(a+b$$

```
[Out] (-e*i+f*h)^3*(a+b*ln(c*(f*x+e)))^(1+p)/b/d/f^4/(1+p)+3^(-1-p)*i^3*GAMMA(1+p
,-3*(a+b*ln(c*(f*x+e)))/b)*(a+b*ln(c*(f*x+e)))^p/c^3/d/exp(3*a/b)/f^4/(((-a
-b*ln(c*(f*x+e)))/b)^p)+3*2^(-1-p)*i^2*(-e*i+f*h)*GAMMA(1+p,-2*(a+b*ln(c*(f
*x+e)))/b)*(a+b*ln(c*(f*x+e)))^p/c^2/d/exp(2*a/b)/f^4/(((-a-b*ln(c*(f*x+e))
)/b)^p)+3*i*(-e*i+f*h)^2*GAMMA(1+p,(-a-b*ln(c*(f*x+e)))/b)*(a+b*ln(c*(f*x+e
)))^p/c/d/exp(a/b)/f^4/(((-a-b*ln(c*(f*x+e)))/b)^p)
```

Rubi [A] time = 0.66, antiderivative size = 305, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 8, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {2411, 12, 2353, 2299, 2181, 2302, 30, 2309}

$$\frac{3i^2 2^{-p-1} e^{-\frac{2a}{b}}(fh-ei)(a+b\log(c(e+fx)))^p \left(-\frac{a+b\log(c(e+fx))}{b}\right)^{-p} \text{Gamma}\left(p+1,-\frac{2(a+b\log(c(e+fx)))}{b}\right)}{c^2df^4}+\frac{i^3 3^{-p-1} e^{-}$$

Antiderivative was successfully verified.

```
[In] Int[((h + i*x)^3*(a + b*Log[c*(e + f*x)])^p)/(d*e + d*f*x),x]
```

```
[Out] ((f*h - e*i)^3*(a + b*Log[c*(e + f*x)])^(1 + p))/(b*d*f^4*(1 + p)) + (3^(-1
 - p)*i^3*Gamma[1 + p, (-3*(a + b*Log[c*(e + f*x)]))/b]*(a + b*Log[c*(e + f
*x)])^p)/(c^3*d*E^((3*a)/b)*f^4*(-((a + b*Log[c*(e + f*x)])/b))^p) + (3*2^(
-1 - p)*i^2*(f*h - e*i)*Gamma[1 + p, (-2*(a + b*Log[c*(e + f*x)]))/b]*(a +
b*Log[c*(e + f*x)])^p)/(c^2*d*E^((2*a)/b)*f^4*(-((a + b*Log[c*(e + f*x)])/b
))^p) + (3*i*(f*h - e*i)^2*Gamma[1 + p, -((a + b*Log[c*(e + f*x)])/b)]*(a +
 b*Log[c*(e + f*x)])^p)/(c*d*E^(a/b)*f^4*(-((a + b*Log[c*(e + f*x)])/b))^p)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
ntegerQ[m]
```

Rule 2299

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[1/(n*c^(1
/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b,
 c, p}, x] && IntegerQ[1/n]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2309

```
Int[((a_.) + Log[(c_.)*(x_)]*(b_.))^(p_)*(x_)^(m_.), x_Symbol] :> Dist[1/c^
(m + 1), Subst[Int[E^((m + 1)*x)*(a + b*x)^p, x], x, Log[c*x]], x] /; FreeQ
[{a, b, c, p}, x] && IntegerQ[m]
```

Rule 2353

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((f_.)*(x_))^(m_.)*((d_) +
(e_.)*(x_)^(r_.))^(q_.), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[
c*x^n])^p, (f*x)^m*(d + e*x^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b
, c, d, e, f, m, n, p, q, r}, x] && IntegerQ[q] && (GtQ[q, 0] || (IGtQ[p, 0
] && IntegerQ[m] && IntegerQ[r]))
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rubi steps

$$\int \frac{(h+210x)^3(a+b\log(c(e+fx)))^p}{de+dfx}\,dx = \frac{\text{Subst}\left(\int \frac{\left(\frac{-210e+fh}{f}+\frac{210x}{f}\right)^3(a+b\log(cx))^p}{dx}\,dx, x, e+fx\right)}{f}$$

$$= \frac{\text{Subst}\left(\int \frac{\left(\frac{-210e+fh}{f}+\frac{210x}{f}\right)^3(a+b\log(cx))^p}{x}\,dx, x, e+fx\right)}{df}$$

$$= \frac{\text{Subst}\left(\int \left(\frac{630(210e-fh)^2(a+b\log(cx))^p}{f^3} - \frac{(210e-fh)^3(a+b\log(cx))^p}{f^3x} - \frac{132300(210e-\ldots}{}\right.\right.}{df}$$

$$= \frac{9261000\,\text{Subst}\left(\int x^2(a+b\log(cx))^p\,dx, x, e+fx\right)}{df^4} - \frac{(132300(210e-\ldots}{}$$

$$= \frac{9261000\,\text{Subst}\left(\int e^{3x}(a+bx)^p\,dx, x, \log(c(e+fx))\right)}{c^3df^4} - \frac{(132300(210e\ldots}{}$$

$$= -\frac{(210e-fh)^3(a+b\log(c(e+fx)))^{1+p}}{bdf^4(1+p)} + \frac{343000\ 3^{2-p}e^{-\frac{3a}{b}}\Gamma\left(1+p,-\ldots\right.}{}$$

Mathematica [A] time = 1.38, size = 247, normalized size = 0.81

$$\frac{6^{-p-1}e^{-\frac{3a}{b}}(a+b\log(c(e+fx)))^p\left(-\frac{a+b\log(c(e+fx))}{b}\right)^{-p}\left(c3^{p+1}e^{a/b}(fh-ei)\left(c2^{p+1}e^{a/b}(fh-ei)\left(3bi(p+1)\Gamma\left(p+1,-\frac{a\ldots}{}\right.\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((h + i*x)^3*(a + b*Log[c*(e + f*x)])^p)/(d*e + d*f*x),x]
```

```
[Out] (6^(-1 - p)*(a + b*Log[c*(e + f*x)])^p*(2^(1 + p)*b*i^3*(1 + p)*Gamma[1 + p
, (-3*(a + b*Log[c*(e + f*x)]))/b] + 3^(1 + p)*c*E^(a/b)*(f*h - e*i)*(3*b*i
^2*(1 + p)*Gamma[1 + p, (-2*(a + b*Log[c*(e + f*x)]))/b] + 2^(1 + p)*c*E^(a
/b)*(f*h - e*i)*(3*b*i*(1 + p)*Gamma[1 + p, -((a + b*Log[c*(e + f*x)])/b)]
- b*c*E^(a/b)*(f*h - e*i)*(-((a + b*Log[c*(e + f*x)])/b))^(1 + p)))))/(b*c^
3*d*E^((3*a)/b)*f^4*(1 + p)*(-((a + b*Log[c*(e + f*x)])/b))^p)
```

fricas [F] time = 0.48, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(i^{3} x^{3} + 3 \, h i^{2} x^{2} + 3 \, h^{2} i x + h^{3}\right) {\left(b \log\left(c f x + c e\right) + a\right)}^{p}}{d f x + d e}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^3*(a+b*log(c*(f*x+e)))^p/(d*f*x+d*e),x, algorithm="fricas
")
```

```
[Out] integral((i^3*x^3 + 3*h*i^2*x^2 + 3*h^2*i*x + h^3)*(b*log(c*f*x + c*e) + a)
^p/(d*f*x + d*e), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{{\left(i x + h\right)}^{3} {\left(b \log\left({\left(f x + e\right)} c\right) + a\right)}^{p}}{d f x + d e}\,{d x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^3*(a+b*log(c*(f*x+e)))^p/(d*f*x+d*e),x, algorithm="giac")
```

```
[Out] integrate((i*x + h)^3*(b*log((f*x + e)*c) + a)^p/(d*f*x + d*e), x)
```

maple [F] time = 0.50, size = 0, normalized size = 0.00

$$\int \frac{\left(i x +h \right)^{3} \left(b \ln \left(\left(f x +e \right) c \right)+a \right)^{p}}{d f x +d e}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)^3*(b*ln((f*x+e)*c)+a)^p/(d*f*x+d*e),x)
```

```
[Out] int((i*x+h)^3*(b*ln((f*x+e)*c)+a)^p/(d*f*x+d*e),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{{\left(b c \log\left(c f x + c e\right) + a c\right)} {\left(b \log\left(c f x + c e\right) + a\right)}^{p} h^{3}}{b c d f {\left(p + 1\right)}} + \int \frac{{\left(i^{3} x^{3} + 3 \, h i^{2} x^{2} + 3 \, h^{2} i x\right)} {\left(b \log\left(f x + e\right) + b \log\left(c\right) + a\right)}^{p}}{d f x + d e}\,{d x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^3*(a+b*log(c*(f*x+e)))^p/(d*f*x+d*e),x, algorithm="maxima
")
```

```
[Out] (b*c*log(c*f*x + c*e) + a*c)*(b*log(c*f*x + c*e) + a)^p*h^3/(b*c*d*f*(p + 1
)) + integrate((i^3*x^3 + 3*h*i^2*x^2 + 3*h^2*i*x)*(b*log(f*x + e) + b*log(
c) + a)^p/(d*f*x + d*e), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(h+i\,x\right)}^3\,{\left(a+b\,\ln\left(c\,\left(e+f\,x\right)\right)\right)}^p}{d\,e+d\,f\,x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((h + i*x)^3*(a + b*log(c*(e + f*x)))^p)/(d*e + d*f*x),x)
[Out] int(((h + i*x)^3*(a + b*log(c*(e + f*x)))^p)/(d*e + d*f*x), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)**3*(a+b*ln(c*(f*x+e)))**p/(d*f*x+d*e),x)
[Out] Timed out
```

3.211 $\int \frac{(h+ix)^2(a+b\log(c(e+fx)))^p}{de+dfx}\,dx$

Optimal. Leaf size=210

$$\frac{i^2 2^{-p-1} e^{-\frac{2a}{b}}(a+b\log(c(e+fx)))^p\left(-\frac{a+b\log(c(e+fx))}{b}\right)^{-p}\Gamma\left(p+1,-\frac{2(a+b\log(c(e+fx)))}{b}\right)}{c^2df^3}+\frac{(fh-ei)^2(a+b\log(c(e+f}{bdf^3(p+1)}$$

```
[Out] (-e*i+f*h)^2*(a+b*ln(c*(f*x+e)))^(1+p)/b/d/f^3/(1+p)+2^(-1-p)*i^2*GAMMA(1+p
,-2*(a+b*ln(c*(f*x+e)))/b)*(a+b*ln(c*(f*x+e)))^p/c^2/d/exp(2*a/b)/f^3/(((-a
-b*ln(c*(f*x+e)))/b)^p)+2*i*(-e*i+f*h)*GAMMA(1+p,(-a-b*ln(c*(f*x+e)))/b)*(a
+b*ln(c*(f*x+e)))^p/c/d/exp(a/b)/f^3/(((-a-b*ln(c*(f*x+e)))/b)^p)
```

Rubi [A] time = 0.47, antiderivative size = 210, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 8, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {2411, 12, 2353, 2299, 2181, 2302, 30, 2309}

$$\frac{i^2 2^{-p-1} e^{-\frac{2a}{b}}(a+b\log(c(e+fx)))^p\left(-\frac{a+b\log(c(e+fx))}{b}\right)^{-p}\text{Gamma}\left(p+1,-\frac{2(a+b\log(c(e+fx)))}{b}\right)}{c^2df^3}+\frac{2ie^{-\frac{a}{b}}(fh-ei)(a+b}{}$$

Antiderivative was successfully verified.

```
[In] Int[((h + i*x)^2*(a + b*Log[c*(e + f*x)])^p)/(d*e + d*f*x),x]
```

```
[Out] ((f*h - e*i)^2*(a + b*Log[c*(e + f*x)])^(1 + p))/(b*d*f^3*(1 + p)) + (2^(-1
 - p)*i^2*Gamma[1 + p, (-2*(a + b*Log[c*(e + f*x)]))/b]*(a + b*Log[c*(e + f
*x)])^p)/(c^2*d*E^((2*a)/b)*f^3*(-((a + b*Log[c*(e + f*x)])/b))^p) + (2*i*(
f*h - e*i)*Gamma[1 + p, -((a + b*Log[c*(e + f*x)])/b)]*(a + b*Log[c*(e + f*
x)])^p)/(c*d*E^(a/b)*f^3*(-((a + b*Log[c*(e + f*x)])/b))^p)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
ntegerQ[m]
```

Rule 2299

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[1/(n*c^(1
/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b,
 c, p}, x] && IntegerQ[1/n]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
```

```
x]
```

Rule 2309

```
Int[((a_.) + Log[(c_.)*(x_)]*(b_.))^(p_)*(x_)^(m_.), x_Symbol] :> Dist[1/c^
(m + 1), Subst[Int[E^((m + 1)*x)*(a + b*x)^p, x], x, Log[c*x]], x] /; FreeQ
[{a, b, c, p}, x] && IntegerQ[m]
```

Rule 2353

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((f_.)*(x_))^(m_.)*((d_) +
(e_.)*(x_)^(r_.))^(q_.), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[
c*x^n])^p, (f*x)^m*(d + e*x^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b
, c, d, e, f, m, n, p, q, r}, x] && IntegerQ[q] && (GtQ[q, 0] || (IGtQ[p, 0
] && IntegerQ[m] && IntegerQ[r]))
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rubi steps

$$\int \frac{(h+211x)^2(a+b\log(c(e+fx)))^p}{de+dfx}\,dx = \frac{\text{Subst}\left(\int \frac{\left(\frac{-211e+fh}{f}+\frac{211x}{f}\right)^2(a+b\log(cx))^p}{dx}\,dx, x, e+fx\right)}{f}$$

$$= \frac{\text{Subst}\left(\int \frac{\left(\frac{-211e+fh}{f}+\frac{211x}{f}\right)^2(a+b\log(cx))^p}{x}\,dx, x, e+fx\right)}{df}$$

$$= \frac{\text{Subst}\left(\int\left(-\frac{422(211e-fh)(a+b\log(cx))^p}{f^2}+\frac{(211e-fh)^2(a+b\log(cx))^p}{f^2x}+\frac{44521x(a+b\,l\ldots}{f^2}\right.\right.}{df}$$

$$= \frac{44521\,\text{Subst}\left(\int x(a+b\log(cx))^p\,dx, x, e+fx\right)}{df^3} - \frac{(422(211e-fh))\,\text{Su}\ldots}{}$$

$$= \frac{44521\,\text{Subst}\left(\int e^{2x}(a+bx)^p\,dx, x, \log(c(e+fx))\right)}{c^2df^3} - \frac{(422(211e-fh))\ldots}{}$$

$$= \frac{(211e-fh)^2(a+b\log(c(e+fx)))^{1+p}}{bdf^3(1+p)} + \frac{44521\;2^{-1-p}e^{-\frac{2a}{b}}\Gamma\left(1+p,-\frac{2(a\ldots}{}\right.}{}$$

Mathematica [A] time = 0.65, size = 189, normalized size = 0.90

$$\frac{2^{-p-1}e^{-\frac{2a}{b}}(a+b\log(c(e+fx)))^p\left(-\frac{a+b\log(c(e+fx))}{b}\right)^{-p}\left(c2^{p+1}e^{a/b}(fh-ei)\left(2bi(p+1)\Gamma\left(p+1,-\frac{a+b\log(c(e+fx))}{b}\right)-bce\ldots\right.\right.}{bc^2df^3(p+1)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((h + i*x)^2*(a + b*Log[c*(e + f*x)])^p)/(d*e + d*f*x),x]
```

```
[Out] (2^(-1 - p)*(a + b*Log[c*(e + f*x)])^p*(b*i^2*(1 + p)*Gamma[1 + p, (-2*(a +
 b*Log[c*(e + f*x)]))/b] + 2^(1 + p)*c*E^(a/b)*(f*h - e*i)*(2*b*i*(1 + p)*G
amma[1 + p, -((a + b*Log[c*(e + f*x)])/b)] - b*c*E^(a/b)*(f*h - e*i)*(-((a
+ b*Log[c*(e + f*x)])/b))^(1 + p))))/(b*c^2*d*E^((2*a)/b)*f^3*(1 + p)*(-((a
 + b*Log[c*(e + f*x)])/b))^p)
```

fricas [F] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(i^2x^2 + 2\,hix + h^2\right)\left(b\log\left(cfx + ce\right) + a\right)^p}{dfx + de}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2*(a+b*log(c*(f*x+e)))^p/(d*f*x+d*e),x, algorithm="fricas
")
```

```
[Out] integral((i^2*x^2 + 2*h*i*x + h^2)*(b*log(c*f*x + c*e) + a)^p/(d*f*x + d*e)
, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(ix + h)^2\left(b\log\left(\left(fx + e\right)c\right) + a\right)^p}{dfx + de}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2*(a+b*log(c*(f*x+e)))^p/(d*f*x+d*e),x, algorithm="giac")
```

```
[Out] integrate((i*x + h)^2*(b*log((f*x + e)*c) + a)^p/(d*f*x + d*e), x)
```

maple [F] time = 0.48, size = 0, normalized size = 0.00

$$\int \frac{(ix + h)^2\left(b\ln\left(\left(fx + e\right)c\right) + a\right)^p}{dfx + de}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)^2*(b*ln((f*x+e)*c)+a)^p/(d*f*x+d*e),x)
```

```
[Out] int((i*x+h)^2*(b*ln((f*x+e)*c)+a)^p/(d*f*x+d*e),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\left(bc\log\left(cfx + ce\right) + ac\right)\left(b\log\left(cfx + ce\right) + a\right)^p h^2}{bcdf\left(p + 1\right)} + \int \frac{\left(i^2x^2 + 2\,hix\right)\left(b\log\left(fx + e\right) + b\log(c) + a\right)^p}{dfx + de}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2*(a+b*log(c*(f*x+e)))^p/(d*f*x+d*e),x, algorithm="maxima
")
```

```
[Out] (b*c*log(c*f*x + c*e) + a*c)*(b*log(c*f*x + c*e) + a)^p*h^2/(b*c*d*f*(p + 1
)) + integrate((i^2*x^2 + 2*h*i*x)*(b*log(f*x + e) + b*log(c) + a)^p/(d*f*x
 + d*e), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(h + i\,x)^2\,\left(a + b\,\ln\left(c\,\left(e + f\,x\right)\right)\right)^p}{d\,e + d\,f\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((h + i*x)^2*(a + b*log(c*(e + f*x)))^p)/(d*e + d*f*x),x)
[Out] int(((h + i*x)^2*(a + b*log(c*(e + f*x)))^p)/(d*e + d*f*x), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)**2*(a+b*ln(c*(f*x+e)))**p/(d*f*x+d*e),x)
[Out] Timed out
```

3.212 $\int \frac{(h+ix)(a+b\log(c(e+fx)))^p}{de+dfx}\,dx$

Optimal. Leaf size=115

$$\frac{(fh-ei)(a+b\log(c(e+fx)))^{p+1}}{bdf^2(p+1)}+\frac{ie^{-\frac{a}{b}}(a+b\log(c(e+fx)))^p\left(-\frac{a+b\log(c(e+fx))}{b}\right)^{-p}\Gamma\left(p+1,-\frac{a+b\log(c(e+fx))}{b}\right)}{cdf^2}$$

```
[Out] (-e*i+f*h)*(a+b*ln(c*(f*x+e)))^(1+p)/b/d/f^2/(1+p)+i*GAMMA(1+p,(-a-b*ln(c*(
f*x+e)))/b)*(a+b*ln(c*(f*x+e)))^p/c/d/exp(a/b)/f^2/(((-a-b*ln(c*(f*x+e)))/b
)^p)
```

Rubi [A] time = 0.28, antiderivative size = 115, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.233, Rules used = {2411, 12, 2353, 2299, 2181, 2302, 30}

$$\frac{ie^{-\frac{a}{b}}(a+b\log(c(e+fx)))^p\left(-\frac{a+b\log(c(e+fx))}{b}\right)^{-p}\text{Gamma}\left(p+1,-\frac{a+b\log(c(e+fx))}{b}\right)}{cdf^2}+\frac{(fh-ei)(a+b\log(c(e+fx)))^{p+1}}{bdf^2(p+1)}$$

Antiderivative was successfully verified.

```
[In] Int[((h + i*x)*(a + b*Log[c*(e + f*x)])^p)/(d*e + d*f*x),x]
```

```
[Out] ((f*h - e*i)*(a + b*Log[c*(e + f*x)])^(1 + p))/(b*d*f^2*(1 + p)) + (i*Gamma
[1 + p, -((a + b*Log[c*(e + f*x)])/b)]*(a + b*Log[c*(e + f*x)])^p)/(c*d*E^(
a/b)*f^2*(-((a + b*Log[c*(e + f*x)])/b))^p)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)]])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
ntegerQ[m]
```

Rule 2299

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[1/(n*c^(1
/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b,
 c, p}, x] && IntegerQ[1/n]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2353

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((f_.)*(x_))^(m_.)*((d_) +
(e_.)*(x_)^(r_.))^(q_.), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[
c*x^n])^p, (f*x)^m*(d + e*x^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b
, c, d, e, f, m, n, p, q, r}, x] && IntegerQ[q] && (GtQ[q, 0] || (IGtQ[p, 0
] && IntegerQ[m] && IntegerQ[r]))
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rubi steps

$$\int \frac{(h+212x)(a+b\log(c(e+fx)))^p}{de+dfx}\,dx = \frac{\text{Subst}\left(\int \frac{\left(\frac{-212e+fh}{f}+\frac{212x}{f}\right)(a+b\log(cx))^p}{dx}\,dx, x, e+fx\right)}{f}$$
$$= \frac{\text{Subst}\left(\int \frac{\left(\frac{-212e+fh}{f}+\frac{212x}{f}\right)(a+b\log(cx))^p}{x}\,dx, x, e+fx\right)}{df}$$
$$= \frac{\text{Subst}\left(\int \left(\frac{212(a+b\log(cx))^p}{f}+\frac{(-212e+fh)(a+b\log(cx))^p}{fx}\right)dx, x, e+fx\right)}{df}$$
$$= \frac{212\,\text{Subst}\left(\int (a+b\log(cx))^p\,dx, x, e+fx\right)}{df^2} - \frac{(212e-fh)\,\text{Subst}\left(\int \frac{(a+}{}\right.}{df^2}$$
$$= \frac{212\,\text{Subst}\left(\int e^x(a+bx)^p\,dx, x, \log(c(e+fx))\right)}{cdf^2} - \frac{(212e-fh)\,\text{Subst}\left(\int\right.}{}$$
$$= -\frac{(212e-fh)(a+b\log(c(e+fx)))^{1+p}}{bdf^2(1+p)} + \frac{212e^{-\frac{a}{b}}\Gamma\left(1+p,-\frac{a+b\log(c(e+fx}{b}\right.}{}$$

Mathematica [A] time = 0.27, size = 106, normalized size = 0.92

$$\frac{(a+b\log(c(e+fx)))^p\left(\frac{(fh-ei)(a+b\log(c(e+fx)))}{b(p+1)}+\frac{ie^{-\frac{a}{b}}\left(-\frac{a+b\log(c(e+fx))}{b}\right)^{-p}\Gamma\left(p+1,-\frac{a+b\log(c(e+fx))}{b}\right)}{c}\right)}{df^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((h + i*x)*(a + b*Log[c*(e + f*x)])^p)/(d*e + d*f*x),x]
```

```
[Out] ((a + b*Log[c*(e + f*x)])^p*(((f*h - e*i)*(a + b*Log[c*(e + f*x)]))/(b*(1 +
 p)) + (i*Gamma[1 + p, -((a + b*Log[c*(e + f*x)])/b)])/(c*E^(a/b)*(-((a + b
*Log[c*(e + f*x)])/b))^p)))/(d*f^2)
```

fricas [A] time = 0.47, size = 118, normalized size = 1.03

$$\frac{(bip+bi)e^{\left(-\frac{bp\log\left(-\frac{1}{b}\right)+a}{b}\right)}\Gamma\left(p+1,-\frac{b\log(cfx+ce)+a}{b}\right)+\left(acfh-acei+\left(bcfh-bcei\right)\log\left(cfx+ce\right)\right)\left(b\log\left(cfx+ce\right)\right.}{bcdf^2p+bcdf^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*log(c*(f*x+e)))^p/(d*f*x+d*e),x, algorithm="fricas")
```

```
[Out] ((b*i*p + b*i)*e^(-(b*p*log(-1/b) + a)/b)*gamma(p + 1, -(b*log(c*f*x + c*e)
 + a)/b) + (a*c*f*h - a*c*e*i + (b*c*f*h - b*c*e*i)*log(c*f*x + c*e))*(b*lo
g(c*f*x + c*e) + a)^p)/(b*c*d*f^2*p + b*c*d*f^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(ix+h)\left(b\log\left(\left(fx+e\right)c\right)+a\right)^{p}}{dfx+de}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*log(c*(f*x+e)))^p/(d*f*x+d*e),x, algorithm="giac")
```

```
[Out] integrate((i*x + h)*(b*log((f*x + e)*c) + a)^p/(d*f*x + d*e), x)
```

maple [F] time = 0.34, size = 0, normalized size = 0.00

$$\int \frac{(ix+h)\left(b\ln\left(\left(fx+e\right)c\right)+a\right)^{p}}{dfx+de}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)*(b*ln((f*x+e)*c)+a)^p/(d*f*x+d*e),x)
```

```
[Out] int((i*x+h)*(b*ln((f*x+e)*c)+a)^p/(d*f*x+d*e),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$i\int \frac{\left(b\log\left(fx+e\right)+b\log(c)+a\right)^{p}x}{dfx+de}\,dx+\frac{\left(bc\log\left(cfx+ce\right)+ac\right)\left(b\log\left(cfx+ce\right)+a\right)^{p}h}{bcdf\left(p+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*log(c*(f*x+e)))^p/(d*f*x+d*e),x, algorithm="maxima")
```

```
[Out] i*integrate((b*log(f*x + e) + b*log(c) + a)^p*x/(d*f*x + d*e), x) + (b*c*lo
g(c*f*x + c*e) + a*c)*(b*log(c*f*x + c*e) + a)^p*h/(b*c*d*f*(p + 1))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(h+i\,x)\,\left(a+b\,\ln\left(c\,\left(e+f\,x\right)\right)\right)^{p}}{d\,e+d\,f\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((h + i*x)*(a + b*log(c*(e + f*x)))^p)/(d*e + d*f*x),x)
```

```
[Out] int(((h + i*x)*(a + b*log(c*(e + f*x)))^p)/(d*e + d*f*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{h\left(a+b\log\left(ce+cfx\right)\right)^{p}}{e+fx}\,dx+\int \frac{ix\left(a+b\log\left(ce+cfx\right)\right)^{p}}{e+fx}\,dx}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*ln(c*(f*x+e)))**p/(d*f*x+d*e),x)
```

```
[Out] (Integral(h*(a + b*log(c*e + c*f*x))**p/(e + f*x), x) + Integral(i*x*(a + b
*log(c*e + c*f*x))**p/(e + f*x), x))/d
```

3.213 $\int \frac{(a+b\log(c(e+fx)))^p}{de+dfx}\,dx$

Optimal. Leaf size=31

$$\frac{(a+b\log(c(e+fx)))^{p+1}}{bdf(p+1)}$$

```
[Out] (a+b*ln(c*(f*x+e)))^(1+p)/b/d/f/(1+p)
```

Rubi [A] time = 0.08, antiderivative size = 31, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.160, Rules used = {2390, 12, 2302, 30}

$$\frac{(a+b\log(c(e+fx)))^{p+1}}{bdf(p+1)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(e + f*x)])^p/(d*e + d*f*x),x]
```

```
[Out] (a + b*Log[c*(e + f*x)])^(1 + p)/(b*d*f*(1 + p))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(a+b\log(c(e+fx)))^p}{de+dfx}\,dx &= \frac{\text{Subst}\left(\int \frac{(a+b\log(cx))^p}{dx}\,dx, x, e+fx\right)}{f}\\
&= \frac{\text{Subst}\left(\int \frac{(a+b\log(cx))^p}{x}\,dx, x, e+fx\right)}{df}\\
&= \frac{\text{Subst}\left(\int x^p\,dx, x, a+b\log(c(e+fx))\right)}{bdf}\\
&= \frac{(a+b\log(c(e+fx)))^{1+p}}{bdf(1+p)}
\end{aligned}$$

Mathematica [A] time = 0.01, size = 31, normalized size = 1.00

$$\frac{(a+b\log(c(e+fx)))^{p+1}}{bdf(p+1)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(e + f*x)])^p/(d*e + d*f*x),x]
[Out] (a + b*Log[c*(e + f*x)])^(1 + p)/(b*d*f*(1 + p))
```

fricas [A] time = 0.45, size = 41, normalized size = 1.32

$$\frac{\left(b\log\left(cfx+ce\right)+a\right)\left(b\log\left(cfx+ce\right)+a\right)^{p}}{bdfp+bdf}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^p/(d*f*x+d*e),x, algorithm="fricas")
[Out] (b*log(c*f*x + c*e) + a)*(b*log(c*f*x + c*e) + a)^p/(b*d*f*p + b*d*f)
```

giac [A] time = 0.20, size = 31, normalized size = 1.00

$$\frac{\left(b\log\left(\left(fx+e\right)c\right)+a\right)^{p+1}}{\left(bp+b\right)df}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^p/(d*f*x+d*e),x, algorithm="giac")
[Out] (b*log((f*x + e)*c) + a)^(p + 1)/((b*p + b)*d*f)
```

maple [A] time = 0.05, size = 32, normalized size = 1.03

$$\frac{\left(b\ln\left(\left(fx+e\right)c\right)+a\right)^{p+1}}{\left(p+1\right)bdf}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln((f*x+e)*c)+a)^p/(d*f*x+d*e),x)
[Out] (b*ln((f*x+e)*c)+a)^(p+1)/b/d/f/(p+1)
```

maxima [A] time = 0.47, size = 32, normalized size = 1.03

$$\frac{\left(b\log\left(cfx+ce\right)+a\right)^{p+1}}{bdf\left(p+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^p/(d*f*x+d*e),x, algorithm="maxima")
[Out] (b*log(c*f*x + c*e) + a)^(p + 1)/(b*d*f*(p + 1))
```

mupad [B] time = 0.35, size = 31, normalized size = 1.00

$$\frac{\left(a+b\,\ln\left(c\,\left(e+f\,x\right)\right)\right)^{p+1}}{b\,d\,f\,\left(p+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(e + f*x)))^p/(d*e + d*f*x),x)
```

```
[Out] (a + b*log(c*(e + f*x)))^(p + 1)/(b*d*f*(p + 1))
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{\left(a+b\log\left(ce+cfx\right)\right)^p}{e+fx}\,dx}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(f*x+e)))**p/(d*f*x+d*e),x)
```

```
[Out] Integral((a + b*log(c*e + c*f*x))**p/(e + f*x), x)/d
```

3.214 $\int \frac{(a+b\log(c(e+fx)))^p}{(de+dfx)(h+ix)}\,dx$

Optimal. Leaf size=35

$$\text{Int}\left(\frac{(a+b\log(c(e+fx)))^p}{(h+ix)(de+dfx)},x\right)$$

```
[Out] Unintegrable((a+b*ln(c*(f*x+e)))^p/(d*f*x+d*e)/(i*x+h),x)
```

Rubi [A] time = 0.13, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{(a+b\log(c(e+fx)))^p}{(de+dfx)(h+ix)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(a + b*Log[c*(e + f*x)])^p/((d*e + d*f*x)*(h + i*x)),x]
```

```
[Out] Defer[Int][(a + b*Log[c*(e + f*x)])^p/((d*e + d*f*x)*(h + i*x)), x]
```

Rubi steps

$$\int \frac{(a+b\log(c(e+fx)))^p}{(h+214x)(de+dfx)}\,dx = \int \frac{(a+b\log(c(e+fx)))^p}{(h+214x)(de+dfx)}\,dx$$

Mathematica [A] time = 0.65, size = 0, normalized size = 0.00

$$\int \frac{(a+b\log(c(e+fx)))^p}{(de+dfx)(h+ix)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*Log[c*(e + f*x)])^p/((d*e + d*f*x)*(h + i*x)),x]
```

```
[Out] Integrate[(a + b*Log[c*(e + f*x)])^p/((d*e + d*f*x)*(h + i*x)), x]
```

fricas [A] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(b\log\left(cfx+ce\right)+a\right)^p}{dfix^2+deh+\left(dfh+dei\right)x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^p/(d*f*x+d*e)/(i*x+h),x, algorithm="fricas")
```

```
[Out] integral((b*log(c*f*x + c*e) + a)^p/(d*f*i*x^2 + d*e*h + (d*f*h + d*e*i)*x)
, x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\log\left(\left(fx+e\right)c\right)+a\right)^p}{\left(dfx+de\right)(ix+h)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^p/(d*f*x+d*e)/(i*x+h),x, algorithm="giac")
```

```
[Out] integrate((b*log((f*x + e)*c) + a)^p/((d*f*x + d*e)*(i*x + h)), x)
```

maple [A] time = 0.50, size = 0, normalized size = 0.00

$$\int \frac{\left(b\ln\left(\left(fx+e\right)c\right)+a\right)^{p}}{\left(dfx+de\right)\left(ix+h\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln((f*x+e)*c)+a)^p/(d*f*x+d*e)/(i*x+h),x)
[Out] int((b*ln((f*x+e)*c)+a)^p/(d*f*x+d*e)/(i*x+h),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\log\left(\left(fx+e\right)c\right)+a\right)^{p}}{\left(dfx+de\right)\left(ix+h\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^p/(d*f*x+d*e)/(i*x+h),x, algorithm="maxima")
[Out] integrate((b*log((f*x + e)*c) + a)^p/((d*f*x + d*e)*(i*x + h)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\left(a+b\,\ln\left(c\,\left(e+f\,x\right)\right)\right)^{p}}{\left(h+i\,x\right)\,\left(d\,e+d\,f\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(e + f*x)))^p/((h + i*x)*(d*e + d*f*x)),x)
[Out] int((a + b*log(c*(e + f*x)))^p/((h + i*x)*(d*e + d*f*x)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{\left(a+b\log\left(ce+cfx\right)\right)^{p}}{eh+eix+fhx+fix^{2}}\,dx}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(f*x+e)))**p/(d*f*x+d*e)/(i*x+h),x)
[Out] Integral((a + b*log(c*e + c*f*x))**p/(e*h + e*i*x + f*h*x + f*i*x**2), x)/d
```

3.215 $\int \frac{(a+b\log(c(e+fx)))^p}{(de+dfx)(h+ix)^2}\,dx$

Optimal. Leaf size=35

$$\text{Int}\left(\frac{(a+b\log(c(e+fx)))^p}{(h+ix)^2(de+dfx)},x\right)$$

```
[Out] Unintegrable((a+b*ln(c*(f*x+e)))^p/(d*f*x+d*e)/(i*x+h)^2,x)
```

Rubi [A] time = 0.13, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(a+b\log(c(e+fx)))^p}{(de+dfx)(h+ix)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(a + b*Log[c*(e + f*x)])^p/((d*e + d*f*x)*(h + i*x)^2),x]
[Out] Defer[Int][(a + b*Log[c*(e + f*x)])^p/((d*e + d*f*x)*(h + i*x)^2), x]
```

Rubi steps

$$\int \frac{(a+b\log(c(e+fx)))^p}{(h+215x)^2(de+dfx)}\,dx=\int \frac{(a+b\log(c(e+fx)))^p}{(h+215x)^2(de+dfx)}\,dx$$

Mathematica [A] time = 1.68, size = 0, normalized size = 0.00

$$\int \frac{(a+b\log(c(e+fx)))^p}{(de+dfx)(h+ix)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*Log[c*(e + f*x)])^p/((d*e + d*f*x)*(h + i*x)^2),x]
[Out] Integrate[(a + b*Log[c*(e + f*x)])^p/((d*e + d*f*x)*(h + i*x)^2), x]
```

fricas [A] time = 0.47, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(b\log\left(cfx+ce\right)+a\right)^p}{dfi^2x^3+deh^2+\left(2\,dfhi+dei^2\right)x^2+\left(dfh^2+2\,dehi\right)x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^p/(d*f*x+d*e)/(i*x+h)^2,x, algorithm="fricas
")
[Out] integral((b*log(c*f*x + c*e) + a)^p/(d*f*i^2*x^3 + d*e*h^2 + (2*d*f*h*i + d
*e*i^2)*x^2 + (d*f*h^2 + 2*d*e*h*i)*x), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^p/(d*f*x+d*e)/(i*x+h)^2,x, algorithm="giac")
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Unable to divide, perhaps due to rounding er
```

```
ror%%%{1,[0,1,0,0,0,0]%%%} / %%%{1,[0,0,1,1,0,0]%%%}+%%%{i,[0,0,1,0,1,1]%%%
} Error: Bad Argument Value
```

maple [A] time = 0.50, size = 0, normalized size = 0.00

$$\int \frac{\left(b \ln \left(\left(fx+e\right) c\right)+a\right)^{p}}{\left(dfx+de\right) \left(ix+h\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln((f*x+e)*c)+a)^p/(d*f*x+d*e)/(i*x+h)^2,x)
```

```
[Out] int((b*ln((f*x+e)*c)+a)^p/(d*f*x+d*e)/(i*x+h)^2,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b \log \left(\left(fx+e\right)c\right)+a\right)^{p}}{\left(dfx+de\right)\left(ix+h\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^p/(d*f*x+d*e)/(i*x+h)^2,x, algorithm="maxima
")
```

```
[Out] integrate((b*log((f*x + e)*c) + a)^p/((d*f*x + d*e)*(i*x + h)^2), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\left(a+b\,\ln\left(c\,\left(e+f\,x\right)\right)\right)^{p}}{\left(h+i\,x\right)^{2}\,\left(d\,e+d\,f\,x\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(e + f*x)))^p/((h + i*x)^2*(d*e + d*f*x)),x)
```

```
[Out] int((a + b*log(c*(e + f*x)))^p/((h + i*x)^2*(d*e + d*f*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(f*x+e)))**p/(d*f*x+d*e)/(i*x+h)**2,x)
```

```
[Out] Timed out
```

3.216 $\int \frac{(a+b\log(c(e+fx)))^p}{(de+dfx)(h+ix)^3}\,dx$

Optimal. Leaf size=35

$$\mathrm{Int}\left(\frac{(a+b\log(c(e+fx)))^p}{(h+ix)^3(de+dfx)},x\right)$$

```
[Out] Unintegrable((a+b*ln(c*(f*x+e)))^p/(d*f*x+d*e)/(i*x+h)^3,x)
```

Rubi [A] time = 0.13, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(a+b\log(c(e+fx)))^p}{(de+dfx)(h+ix)^3}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(a + b*Log[c*(e + f*x)])^p/((d*e + d*f*x)*(h + i*x)^3),x]
[Out] Defer[Int][(a + b*Log[c*(e + f*x)])^p/((d*e + d*f*x)*(h + i*x)^3), x]
```

Rubi steps

$$\int \frac{(a+b\log(c(e+fx)))^p}{(h+216x)^3(de+dfx)}\,dx=\int \frac{(a+b\log(c(e+fx)))^p}{(h+216x)^3(de+dfx)}\,dx$$

Mathematica [A] time = 3.85, size = 0, normalized size = 0.00

$$\int \frac{(a+b\log(c(e+fx)))^p}{(de+dfx)(h+ix)^3}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*Log[c*(e + f*x)])^p/((d*e + d*f*x)*(h + i*x)^3),x]
[Out] Integrate[(a + b*Log[c*(e + f*x)])^p/((d*e + d*f*x)*(h + i*x)^3), x]
```

fricas [A] time = 0.50, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\left(b\log\left(cfx+ce\right)+a\right)^p}{dfi^3x^4+deh^3+\left(3\,dfhi^2+dei^3\right)x^3+3\left(dfh^2i+dehi^2\right)x^2+\left(dfh^3+3\,deh^2i\right)x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^p/(d*f*x+d*e)/(i*x+h)^3,x, algorithm="fricas
")
[Out] integral((b*log(c*f*x + c*e) + a)^p/(d*f*i^3*x^4 + d*e*h^3 + (3*d*f*h*i^2 +
 d*e*i^3)*x^3 + 3*(d*f*h^2*i + d*e*h*i^2)*x^2 + (d*f*h^3 + 3*d*e*h^2*i)*x),
 x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\log\left(\left(fx+e\right)c\right)+a\right)^p}{\left(dfx+de\right)(ix+h)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^p/(d*f*x+d*e)/(i*x+h)^3,x, algorithm="giac")
```

```
[Out] integrate((b*log((f*x + e)*c) + a)^p/((d*f*x + d*e)*(i*x + h)^3), x)
```

maple [A] time = 0.50, size = 0, normalized size = 0.00

$$\int \frac{\left(b\ln\left(\left(fx+e\right)c\right)+a\right)^{p}}{\left(dfx+de\right)\left(ix+h\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln((f*x+e)*c)+a)^p/(d*f*x+d*e)/(i*x+h)^3,x)
```

```
[Out] int((b*ln((f*x+e)*c)+a)^p/(d*f*x+d*e)/(i*x+h)^3,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\log\left(\left(fx+e\right)c\right)+a\right)^{p}}{\left(dfx+de\right)\left(ix+h\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^p/(d*f*x+d*e)/(i*x+h)^3,x, algorithm="maxima
")
```

```
[Out] integrate((b*log((f*x + e)*c) + a)^p/((d*f*x + d*e)*(i*x + h)^3), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{{\left(a+b\,\ln\left(c\,\left(e+f\,x\right)\right)\right)}^p}{{\left(h+i\,x\right)}^3\,\left(d\,e+d\,f\,x\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(e + f*x)))^p/((h + i*x)^3*(d*e + d*f*x)),x)
```

```
[Out] int((a + b*log(c*(e + f*x)))^p/((h + i*x)^3*(d*e + d*f*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(f*x+e)))**p/(d*f*x+d*e)/(i*x+h)**3,x)
```

```
[Out] Timed out
```

3.217 $\int \frac{(h+ix)^3\left(a+b\log(c(d+ex)^n)\right)}{f+gx}\,dx$

Optimal. Leaf size=402

$$\frac{(gh-fi)^3\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^4}+\frac{(h+ix)^2(gh-fi)\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g^2}+\frac{(h+ix)^3\left(a+b\log\right.}{3g}$$

```
[Out] a*i*(-f*i+g*h)^2*x/g^3-1/3*b*i*(-d*i+e*h)^2*n*x/e^2/g-1/2*b*i*(-d*i+e*h)*(-
f*i+g*h)*n*x/e/g^2-b*i*(-f*i+g*h)^2*n*x/g^3-1/6*b*(-d*i+e*h)*n*(i*x+h)^2/e/
g-1/4*b*(-f*i+g*h)*n*(i*x+h)^2/g^2-1/9*b*n*(i*x+h)^3/g-1/3*b*(-d*i+e*h)^3*n
*ln(e*x+d)/e^3/g-1/2*b*(-d*i+e*h)^2*(-f*i+g*h)*n*ln(e*x+d)/e^2/g^2+b*i*(-f*
i+g*h)^2*(e*x+d)*ln(c*(e*x+d)^n)/e/g^3+1/2*(-f*i+g*h)*(i*x+h)^2*(a+b*ln(c*(
e*x+d)^n))/g^2+1/3*(i*x+h)^3*(a+b*ln(c*(e*x+d)^n))/g+(-f*i+g*h)^3*(a+b*ln(c
*(e*x+d)^n))*ln(e*(g*x+f)/(-d*g+e*f))/g^4+b*(-f*i+g*h)^3*n*polylog(2,-g*(e*
x+d)/(-d*g+e*f))/g^4
```

Rubi [A] time = 0.36, antiderivative size = 402, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 8, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.276, Rules used = {2418, 2389, 2295, 2394, 2393, 2391, 2395, 43}

$$\frac{bn(gh-fi)^3\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g^4}+\frac{(h+ix)^2(gh-fi)\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g^2}+\frac{(gh-fi)^3\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\right.}{g^4}$$

Antiderivative was successfully verified.

```
[In] Int[((h + i*x)^3*(a + b*Log[c*(d + e*x)^n]))/(f + g*x),x]
```

```
[Out] (a*i*(g*h - f*i)^2*x)/g^3 - (b*i*(e*h - d*i)^2*n*x)/(3*e^2*g) - (b*i*(e*h -
 d*i)*(g*h - f*i)*n*x)/(2*e*g^2) - (b*i*(g*h - f*i)^2*n*x)/g^3 - (b*(e*h -
d*i)*n*(h + i*x)^2)/(6*e*g) - (b*(g*h - f*i)*n*(h + i*x)^2)/(4*g^2) - (b*n*
(h + i*x)^3)/(9*g) - (b*(e*h - d*i)^3*n*Log[d + e*x])/(3*e^3*g) - (b*(e*h -
 d*i)^2*(g*h - f*i)*n*Log[d + e*x])/(2*e^2*g^2) + (b*i*(g*h - f*i)^2*(d + e
*x)*Log[c*(d + e*x)^n])/(e*g^3) + ((g*h - f*i)*(h + i*x)^2*(a + b*Log[c*(d
+ e*x)^n]))/(2*g^2) + ((h + i*x)^3*(a + b*Log[c*(d + e*x)^n]))/(3*g) + ((g*
h - f*i)^3*(a + b*Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/g^4 +
 (b*(g*h - f*i)^3*n*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/g^4
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rubi steps

$$\int \frac{(h+217x)^3\left(a+b\log\left(c(d+ex)^n\right)\right)}{f+gx}\,dx = \int\left(\frac{217(-217f+gh)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^3}+\frac{217(-217f+gh)(h$$

$$=\frac{217\int(h+217x)^2\left(a+b\log\left(c(d+ex)^n\right)\right)\,dx}{g}-\frac{(217(217f-gh))\int(h$$

$$=\frac{217a(217f-gh)^2x}{g^3}-\frac{(217f-gh)(h+217x)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g^2}$$

$$=\frac{217a(217f-gh)^2x}{g^3}-\frac{(217f-gh)(h+217x)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g^2}$$

$$=\frac{217a(217f-gh)^2x}{g^3}-\frac{217b(217d-eh)^2nx}{3e^2g}-\frac{217b(217d-eh)(217f-}{2eg^2}$$

Mathematica [A] time = 0.62, size = 379, normalized size = 0.94

$$e\left(gix\left(6ae^2\left(6f^2i^2-3fgi(6h+ix)+g^2\left(18h^2+9hix+2i^2x^2\right)\right)-bn\left(12d^2g^2i^2-6degi(-3fi+9gh+gix)+e^2\left(3\right.\right.\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((h + i*x)^3*(a + b*Log[c*(d + e*x)^n]))/(f + g*x),x]
```

```
[Out] (6*b*d^2*g^2*i^2*(-9*e*g*h + 3*e*f*i + 2*d*g*i)*n*Log[d + e*x] + e*(g*i*x*(
6*a*e^2*(6*f^2*i^2 - 3*f*g*i*(6*h + i*x) + g^2*(18*h^2 + 9*h*i*x + 2*i^2*x^
2)) - b*n*(12*d^2*g^2*i^2 - 6*d*e*g*i*(9*g*h - 3*f*i + g*i*x) + e^2*(36*f^2
*i^2 - 9*f*g*i*(12*h + i*x) + g^2*(108*h^2 + 27*h*i*x + 4*i^2*x^2)))) + 36*
a*e^2*(g*h - f*i)^3*Log[(e*(f + g*x))/(e*f - d*g)] + 6*b*e*Log[c*(d + e*x)^
n]*(g*i*(6*d*(3*g^2*h^2 - 3*f*g*h*i + f^2*i^2) + e*x*(6*f^2*i^2 - 3*f*g*i*(
6*h + i*x) + g^2*(18*h^2 + 9*h*i*x + 2*i^2*x^2))) + 6*e*(g*h - f*i)^3*Log[(
e*(f + g*x))/(e*f - d*g)])) + 36*b*e^3*(g*h - f*i)^3*n*PolyLog[2, (g*(d + e
*x))/(-(e*f) + d*g)])/(36*e^3*g^4)
```

fricas [F] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{ai^3x^3 + 3\,ahi^2x^2 + 3\,ah^2ix + ah^3 + \left(bi^3x^3 + 3\,bhi^2x^2 + 3\,bh^2ix + bh^3\right)\log\left((ex+d)^n c\right)}{gx+f}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^3*(a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="fricas")
```

```
[Out] integral((a*i^3*x^3 + 3*a*h*i^2*x^2 + 3*a*h^2*i*x + a*h^3 + (b*i^3*x^3 + 3*
b*h*i^2*x^2 + 3*b*h^2*i*x + b*h^3)*log((e*x + d)^n*c))/(g*x + f), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(ix+h)^3\left(b\log\left((ex+d)^n c\right) + a\right)}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^3*(a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="giac")
```

```
[Out] integrate((i*x + h)^3*(b*log((e*x + d)^n*c) + a)/(g*x + f), x)
```

maple [C] time = 0.31, size = 2801, normalized size = 6.97

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)^3*(b*ln(c*(e*x+d)^n)+a)/(g*x+f),x)
```

```
[Out] 1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*i^3/g^3*f^2*x-1/2*I*b*Pi*csgn(I*
(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/g^4*ln(g*x+f)*f^3*i^3+3*b*n/g^2*ln(g*x+f)*
ln((d*g-e*f+(g*x+f)*e)/(d*g-e*f))*f*h^2*i-3*b/e*n/g^2*i^2*d*ln(d*g-e*f+(g*x
+f)*e)*f*h+3/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/g^2*l
n(g*x+f)*f*h^2*i+3*b*n/g^2*dilog((d*g-e*f+(g*x+f)*e)/(d*g-e*f))*f*h^2*i+b*n
/g^4*ln(g*x+f)*ln((d*g-e*f+(g*x+f)*e)/(d*g-e*f))*f^3*i^3+3*b*n/g^2*i^2*h*x*
f+1/6*b/e*n/g*i^3*d*x^2-1/3*b/e^2*n/g*i^3*d^2*x-3/2*I*b*Pi*csgn(I*c)*csgn(I
*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*i/g*h^2*x+1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+
d)^n)*csgn(I*c*(e*x+d)^n)/g^4*ln(g*x+f)*f^3*i^3-3*b*n/g^3*dilog((d*g-e*f+(g
*x+f)*e)/(d*g-e*f))*f^2*h*i^2+1/3*b/e^3*n/g*i^3*d^3*ln(d*g-e*f+(g*x+f)*e)+1
/6*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*i^3/g*x^3+1/2*I*b*Pi*csgn
(I*c)*csgn(I*c*(e*x+d)^n)^2/g*ln(g*x+f)*h^3+1/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^
3*i^3/g^2*x^2*f-3/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*i^2/g*x^2*h+1/2*I*b*Pi*csg
n(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/g*ln(g*x+f)*h^3-3/2*I*b*Pi*csgn(I*c*(e
*x+d)^n)^3*i/g*h^2*x-1/2*b/e*n/g^2*i^3*d*x*f+3/2*b/e*n/g^2*i^2*d*h*f+1/2*b/
e^2*n/g^2*i^3*d^2*ln(d*g-e*f+(g*x+f)*e)*f+b/e*n/g^3*i^3*d*ln(d*g-e*f+(g*x+f
)*e)*f^2-3*b*n/g^3*ln(g*x+f)*ln((d*g-e*f+(g*x+f)*e)/(d*g-e*f))*f^2*h*i^2+3/
```

```
2*b/e*n/g*i^2*d*h*x+3*b/e*n/g*i*d*ln(d*g-e*f+(g*x+f)*e)*h^2-3/2*b/e^2*n/g*i
^2*d^2*ln(d*g-e*f+(g*x+f)*e)*h-1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/g
^4*ln(g*x+f)*f^3*i^3-1/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*i^3/g^2*x^2
*f+1/3*a*i^3/g*x^3+a/g*ln(g*x+f)*h^3+1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/g^4*l
n(g*x+f)*f^3*i^3-1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*i^3/g^3*f^2*x-2/3*b/e*n/g
^3*i^3*d*f^2-1/6*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*i^3
/g*x^3-1/3*b/e^2*n/g^2*i^3*d^2*f+1/6*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2
*i^3/g*x^3-1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*i^3/g^2*x^2*f
-3*b*ln(c)/g^2*ln(g*x+f)*f*h^2*i+3*b*ln(c)/g^3*ln(g*x+f)*f^2*h*i^2-3*b*ln(c
)*i^2/g^2*f*h*x-1/9*b*n/g*i^3*x^3+3/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*cs
gn(I*c*(e*x+d)^n)*i^2/g^2*f*h*x-3/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn
(I*c*(e*x+d)^n)/g^3*ln(g*x+f)*f^2*h*i^2+3/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+
d)^n)^2*i/g*h^2*x-1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/g*ln(g*x+f)*h^3-1/2*I*b*
Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/g*ln(g*x+f)*h^3-1/2*I*b*
Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*i^3/g^3*f^2*x+1/4*I*b*Pi
*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*i^3/g^2*x^2*f-3/2*I*b*Pi*c
sgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/g^2*ln(g*x+f)*f*h^2*i+1/2*I*b*Pi*csg
n(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*i^3/g^3*f^2*x-3*b*ln((e*x+d)^n)*i^2/g^
2*f*h*x+a*i^3/g^3*f^2*x+3*a*i/g*h^2*x-a/g^4*ln(g*x+f)*f^3*i^3+1/3*b*ln(c)*i
^3/g*x^3+b*ln(c)/g*ln(g*x+f)*h^3+3/2*a*i^2/g*x^2*h-49/36*b*n/g^4*i^3*f^3-b*
n/g*dilog((d*g-e*f+(g*x+f)*e)/(d*g-e*f))*h^3-1/2*a*i^3/g^2*x^2*f-b*n/g^3*i^
3*x*f^2-3*b*n/g*i*h^2*x+b*n/g^4*dilog((d*g-e*f+(g*x+f)*e)/(d*g-e*f))*f^3*i^
3-b*n/g*ln(g*x+f)*ln((d*g-e*f+(g*x+f)*e)/(d*g-e*f))*h^3-1/2*b*ln((e*x+d)^n)
*i^3/g^2*x^2*f-3/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*i
^2/g*x^2*h-3/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/g^3*ln(g*x+f)*f^2*h*i^2+3/2*I*b
*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/g^3*ln(g*x+f)*f^2*h*i^2+1/3*b*ln((e*x+d
)^n)*i^3/g*x^3+b*ln((e*x+d)^n)/g*ln(g*x+f)*h^3+3*b*ln((e*x+d)^n)/g^3*ln(g*x
+f)*f^2*h*i^2-3/4*b*n/g*i^2*h*x^2+1/4*b*n/g^2*i^3*x^2*f-3/2*I*b*Pi*csgn(I*c
)*csgn(I*c*(e*x+d)^n)^2*i^2/g^2*f*h*x-3*b*n/g^2*i*h^2*f+15/4*b*n/g^3*i^2*h*
f^2+3/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/g^3*ln(g*x+f)*f^2*h*
i^2-3*a*i^2/g^2*f*h*x+3*a/g^3*ln(g*x+f)*f^2*h*i^2-3*a/g^2*ln(g*x+f)*f*h^2*i
-1/2*b*ln(c)*i^3/g^2*x^2*f+3/2*b*ln(c)*i^2/g*x^2*h+b*ln(c)*i^3/g^3*f^2*x+3*
b*ln(c)*i/g*h^2*x-b*ln(c)/g^4*ln(g*x+f)*f^3*i^3+3/2*b*ln((e*x+d)^n)*i^2/g*x
^2*h+b*ln((e*x+d)^n)*i^3/g^3*f^2*x+3*b*ln((e*x+d)^n)*i/g*h^2*x-b*ln((e*x+d)
^n)/g^4*ln(g*x+f)*f^3*i^3-1/6*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*i^3/g*x^3-3/2*I*
b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/g^2*ln(g*x+f)*f*h^2*i+3/2*I*b*Pi*csgn(
I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*i/g*h^2*x+3/4*I*b*Pi*csgn(I*c)*csgn(I*c*
(e*x+d)^n)^2*i^2/g*x^2*h+3/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*i^2/g^2*f*h*x-3*b
*ln((e*x+d)^n)/g^2*ln(g*x+f)*f*h^2*i+3/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/g^2*l
n(g*x+f)*f*h^2*i-3/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*i^2/g^2
*f*h*x+3/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*i^2/g*x^2*h
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$3\,ah^2i\left(\frac{x}{g}-\frac{f\log\left(gx+f\right)}{g^2}\right)-\frac{1}{6}\,ai^3\left(\frac{6\,f^3\log\left(gx+f\right)}{g^4}-\frac{2\,g^2x^3-3\,fgx^2+6\,f^2x}{g^3}\right)+\frac{3}{2}\,ahi^2\left(\frac{2\,f^2\log\left(gx+f\right)}{g^3}+\frac{gx^2}{\quad}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^3*(a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="maxima")
```

```
[Out] 3*a*h^2*i*(x/g - f*log(g*x + f)/g^2) - 1/6*a*i^3*(6*f^3*log(g*x + f)/g^4 -
(2*g^2*x^3 - 3*f*g*x^2 + 6*f^2*x)/g^3) + 3/2*a*h*i^2*(2*f^2*log(g*x + f)/g^
3 + (g*x^2 - 2*f*x)/g^2) + a*h^3*log(g*x + f)/g + integrate((b*i^3*x^3*log(
c) + 3*b*h*i^2*x^2*log(c) + 3*b*h^2*i*x*log(c) + b*h^3*log(c) + (b*i^3*x^3
+ 3*b*h*i^2*x^2 + 3*b*h^2*i*x + b*h^3)*log((e*x + d)^n))/(g*x + f), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(h+i\,x\right)}^3\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}{f+g\,x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((h + i*x)^3*(a + b*log(c*(d + e*x)^n)))/(f + g*x),x)
[Out] int(((h + i*x)^3*(a + b*log(c*(d + e*x)^n)))/(f + g*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a + b \log\left(c \left(d + ex\right)^{n}\right)\right) \left(h + ix\right)^{3}}{f + gx}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)**3*(a+b*ln(c*(e*x+d)**n))/(g*x+f),x)
[Out] Integral((a + b*log(c*(d + e*x)**n))*(h + i*x)**3/(f + g*x), x)
```

3.218 $\int \frac{(h+ix)^2(a+b\log(c(d+ex)^n))}{f+gx}\,dx$

Optimal. Leaf size=241

$$\frac{(gh-fi)^2\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^3}+\frac{(h+ix)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g}+\frac{aix(gh-fi)}{g^2}+\frac{bi(d+ex)(gh-$$

```
[Out] a*i*(-f*i+g*h)*x/g^2-1/2*b*i*(-d*i+e*h)*n*x/e/g-b*i*(-f*i+g*h)*n*x/g^2-1/4*
b*n*(i*x+h)^2/g-1/2*b*(-d*i+e*h)^2*n*ln(e*x+d)/e^2/g+b*i*(-f*i+g*h)*(e*x+d)
*ln(c*(e*x+d)^n)/e/g^2+1/2*(i*x+h)^2*(a+b*ln(c*(e*x+d)^n))/g+(-f*i+g*h)^2*(
a+b*ln(c*(e*x+d)^n))*ln(e*(g*x+f)/(-d*g+e*f))/g^3+b*(-f*i+g*h)^2*n*polylog(
2,-g*(e*x+d)/(-d*g+e*f))/g^3
```

Rubi [A] time = 0.22, antiderivative size = 241, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 8, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.276$, Rules used = {2418, 2389, 2295, 2394, 2393, 2391, 2395, 43}

$$\frac{bn(gh-fi)^2\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g^3}+\frac{(gh-fi)^2\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^3}+\frac{(h+ix)^2\left(a+b\log\left(c(d+e\right.\right.}{2g}$$

Antiderivative was successfully verified.

```
[In] Int[((h + i*x)^2*(a + b*Log[c*(d + e*x)^n]))/(f + g*x),x]
```

```
[Out] (a*i*(g*h - f*i)*x)/g^2 - (b*i*(e*h - d*i)*n*x)/(2*e*g) - (b*i*(g*h - f*i)*
n*x)/g^2 - (b*n*(h + i*x)^2)/(4*g) - (b*(e*h - d*i)^2*n*Log[d + e*x])/(2*e^
2*g) + (b*i*(g*h - f*i)*(d + e*x)*Log[c*(d + e*x)^n])/(e*g^2) + ((h + i*x)^
2*(a + b*Log[c*(d + e*x)^n]))/(2*g) + ((g*h - f*i)^2*(a + b*Log[c*(d + e*x)
^n])*Log[(e*(f + g*x))/(e*f - d*g)])/g^3 + (b*(g*h - f*i)^2*n*PolyLog[2, -(
(g*(d + e*x))/(e*f - d*g))])/g^3
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
```

```
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rubi steps

$$\int \frac{(h+218x)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{f+gx}\,dx = \int \left(\frac{218(-218f+gh)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^2}+\frac{218(h+218x)\left(a\right.}{}\right.$$

$$=\frac{218\int(h+218x)\left(a+b\log\left(c(d+ex)^n\right)\right)dx}{g}-\frac{(218(218f-gh))\int}{}$$

$$=-\frac{218a(218f-gh)x}{g^2}+\frac{(h+218x)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g}+\frac{(218}{}$$

$$=-\frac{218a(218f-gh)x}{g^2}+\frac{(h+218x)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g}+\frac{(218}{}$$

$$=-\frac{218a(218f-gh)x}{g^2}+\frac{109b(218d-eh)nx}{eg}+\frac{218b(218f-gh)nx}{g^2}$$

Mathematica [A] time = 0.31, size = 224, normalized size = 0.93

$$\frac{e\left(gix(2ae(-2fi+4gh+gix)+bn(2dgi-e(-4fi+8gh+gix)))+4ae(gh-fi)^2\log\left(\frac{e(f+gx)}{ef-dg}\right)+2b\log\left(c(d+e\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((h + i*x)^2*(a + b*Log[c*(d + e*x)^n]))/(f + g*x),x]
```

```
[Out] (-2*b*d^2*g^2*i^2*n*Log[d + e*x] + e*(g*i*x*(2*a*e*(4*g*h - 2*f*i + g*i*x)
+ b*n*(2*d*g*i - e*(8*g*h - 4*f*i + g*i*x))) + 4*a*e*(g*h - f*i)^2*Log[(e*(
f + g*x))/(e*f - d*g)] + 2*b*Log[c*(d + e*x)^n]*(g*i*(d*(4*g*h - 2*f*i) + e
```

```
*x*(4*g*h - 2*f*i + g*i*x)) + 2*e*(g*h - f*i)^2*Log[(e*(f + g*x))/(e*f - d*
g)])) + 4*b*e^2*(g*h - f*i)^2*n*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)])/(
4*e^2*g^3)
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{ai^2x^2 + 2\,ahix + ah^2 + \left(bi^2x^2 + 2\,bhix + bh^2\right)\log\left((ex+d)^n c\right)}{gx+f}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2*(a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="fricas")
```

```
[Out] integral((a*i^2*x^2 + 2*a*h*i*x + a*h^2 + (b*i^2*x^2 + 2*b*h*i*x + b*h^2)*l
og((e*x + d)^n*c))/(g*x + f), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(ix+h)^2\left(b\log\left((ex+d)^n c\right) + a\right)}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2*(a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="giac")
```

```
[Out] integrate((i*x + h)^2*(b*log((e*x + d)^n*c) + a)/(g*x + f), x)
```

maple [C] time = 0.28, size = 1605, normalized size = 6.66

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)^2*(b*ln(c*(e*x+d)^n)+a)/(g*x+f),x)
```

```
[Out] 2*a*i/g*h*x+a/g^3*ln(g*x+f)*f^2*i^2-a*i^2/g^2*f*x+1/2*b*ln(c)*i^2/g*x^2+b*l
n(c)/g*ln(g*x+f)*h^2-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)
*i/g*h*x-1/4*b*n/g*i^2*x^2-b*n/g*dilog((d*g-e*f+(g*x+f)*e)/(d*g-e*f))*h^2+5
/4*b*n/g^3*f^2*i^2+1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/g*ln(g*x+f)*h
^2+1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*i^2/g^2*f*x+2*b*n/g^2*dilog((d*g-e*f+(g
*x+f)*e)/(d*g-e*f))*f*h*i-b*n/g^3*ln(g*x+f)*ln((d*g-e*f+(g*x+f)*e)/(d*g-e*f
))*f^2*i^2+1/2*b/e*n/g^2*i^2*d*f+2*b/e*n/g*i*d*ln(d*g-e*f+(g*x+f)*e)*h-b/e*
n/g^2*i^2*d*ln(d*g-e*f+(g*x+f)*e)*f+2*b*n/g^2*ln(g*x+f)*ln((d*g-e*f+(g*x+f)
*e)/(d*g-e*f))*f*h*i+1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/g*l
n(g*x+f)*h^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3*i/g*h*x-2*b*ln(c)/g^2*ln(g*x+f)*f
*h*i+1/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*i^2/g*x^2-I*b*Pi*csgn(I*(e*
x+d)^n)*csgn(I*c*(e*x+d)^n)^2/g^2*ln(g*x+f)*f*h*i+1/2*I*b*Pi*csgn(I*c)*csgn
(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*i^2/g^2*f*x+1/2*b/e*n/g*i^2*d*x-1/2*b/e^2
*n/g*i^2*d^2*ln(d*g-e*f+(g*x+f)*e)+1/2*a*i^2/g*x^2+a/g*ln(g*x+f)*h^2-1/2*I*
b*Pi*csgn(I*c*(e*x+d)^n)^3/g^3*ln(g*x+f)*f^2*i^2+1/4*I*b*Pi*csgn(I*(e*x+d)^
n)*csgn(I*c*(e*x+d)^n)^2*i^2/g*x^2+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d
)^n)^2*i/g*h*x+I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/g^2*l
n(g*x+f)*f*h*i-I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/g^2*ln(g*x+f)*f*h*i-2
*b*n/g^2*f*h*i+I*b*Pi*csgn(I*c*(e*x+d)^n)^3/g^2*ln(g*x+f)*f*h*i+I*b*Pi*csgn
(I*c)*csgn(I*c*(e*x+d)^n)^2*i/g*h*x+b*ln((e*x+d)^n)/g*ln(g*x+f)*h^2+1/2*b*l
n((e*x+d)^n)*i^2/g*x^2-1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x
+d)^n)*i^2/g*x^2+1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/g^3*ln(g*x+f)*f
^2*i^2-1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*i^2/g^2*f*x-b*n/g
^3*dilog((d*g-e*f+(g*x+f)*e)/(d*g-e*f))*f^2*i^2-b*n/g*ln(g*x+f)*ln((d*g-e*f
+(g*x+f)*e)/(d*g-e*f))*h^2+b*n/g^2*i^2*x*f-2*b*n/g*i*h*x-b*ln(c)*i^2/g^2*f*
x+2*b*ln(c)*i/g*h*x+b*ln(c)/g^3*ln(g*x+f)*f^2*i^2-2*a/g^2*ln(g*x+f)*f*h*i-1
```

```
/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/g^3*ln(g*x+f)*f^2
*i^2-1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/g*ln(g*x+f)*h^2-2*b*ln((e*x+d)^n)/g^2
*ln(g*x+f)*f*h*i-1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*i^2/g^2*f*x-b*l
n((e*x+d)^n)*i^2/g^2*f*x+2*b*ln((e*x+d)^n)*i/g*h*x+b*ln((e*x+d)^n)/g^3*ln(g
*x+f)*f^2*i^2+1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/g^3*ln(g*x
+f)*f^2*i^2-1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/g*ln
(g*x+f)*h^2-1/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*i^2/g*x^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$2\,ahi\left(\frac{x}{g}-\frac{f\log\left(gx+f\right)}{g^2}\right)+\frac{1}{2}\,ai^2\left(\frac{2\,f^2\log\left(gx+f\right)}{g^3}+\frac{gx^2-2\,fx}{g^2}\right)+\frac{ah^2\log\left(gx+f\right)}{g}+\int\frac{bi^2x^2\log(c)+2\,bhix$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2*(a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="maxima")
```

```
[Out] 2*a*h*i*(x/g - f*log(g*x + f)/g^2) + 1/2*a*i^2*(2*f^2*log(g*x + f)/g^3 + (g
*x^2 - 2*f*x)/g^2) + a*h^2*log(g*x + f)/g + integrate((b*i^2*x^2*log(c) + 2
*b*h*i*x*log(c) + b*h^2*log(c) + (b*i^2*x^2 + 2*b*h*i*x + b*h^2)*log((e*x +
 d)^n))/(g*x + f), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(h+i\,x\right)}^2\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}{f+g\,x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((h + i*x)^2*(a + b*log(c*(d + e*x)^n)))/(f + g*x),x)
```

```
[Out] int(((h + i*x)^2*(a + b*log(c*(d + e*x)^n)))/(f + g*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a + b \log{\left(c \left(d + e x\right)^{n} \right)}\right) \left(h + i x\right)^{2}}{f + g x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)**2*(a+b*ln(c*(e*x+d)**n))/(g*x+f),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))*(h + i*x)**2/(f + g*x), x)
```

3.219 $\int \frac{(h+ix)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f+gx}\,dx$

Optimal. Leaf size=119

$$\frac{(gh-fi)\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^2}+\frac{aix}{g}+\frac{bi(d+ex)\log\left(c(d+ex)^n\right)}{eg}+\frac{bn(gh-fi)\text{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)}{g^2}-\frac{binx}{g}$$

```
[Out] a*i*x/g-b*i*n*x/g+b*i*(e*x+d)*ln(c*(e*x+d)^n)/e/g+(-f*i+g*h)*(a+b*ln(c*(e*x
+d)^n))*ln(e*(g*x+f)/(-d*g+e*f))/g^2+b*(-f*i+g*h)*n*polylog(2,-g*(e*x+d)/(-
d*g+e*f))/g^2
```

Rubi [A] time = 0.14, antiderivative size = 119, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {2418, 2389, 2295, 2394, 2393, 2391}

$$\frac{bn(gh-fi)\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g^2}+\frac{(gh-fi)\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^2}+\frac{aix}{g}+\frac{bi(d+ex)\log\left(c(d+ex)^n\right)}{eg}$$

Antiderivative was successfully verified.

```
[In] Int[((h + i*x)*(a + b*Log[c*(d + e*x)^n]))/(f + g*x),x]
```

```
[Out] (a*i*x)/g - (b*i*n*x)/g + (b*i*(d + e*x)*Log[c*(d + e*x)^n])/(e*g) + ((g*h
- f*i)*(a + b*Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/g^2 + (b*
(g*h - f*i)*n*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/g^2
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rubi steps

$$\int \frac{(h+219x)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f+gx}\,dx = \int \left(\frac{219\left(a+b\log\left(c(d+ex)^n\right)\right)}{g}+\frac{(-219f+gh)\left(a+b\log\left(c(d+e\right.\right.}{g(f+gx)}\right.$$

$$=\frac{219\int\left(a+b\log\left(c(d+ex)^n\right)\right)dx}{g}+\frac{(-219f+gh)\int\frac{a+b\log(c(d+ex)^n)}{f+gx}}{g}$$

$$=\frac{219ax}{g}-\frac{(219f-gh)\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g^2}+\frac{(219b}{}$$

$$=\frac{219ax}{g}-\frac{(219f-gh)\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g^2}+\frac{(219b}{}$$

$$=\frac{219ax}{g}-\frac{219bnx}{g}+\frac{219b(d+ex)\log\left(c(d+ex)^n\right)}{eg}-\frac{(219f-gh)\left(a\right.}{}$$

Mathematica [A] time = 0.12, size = 110, normalized size = 0.92

$$\frac{(gh-fi)\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)+agix+\frac{bgi(d+ex)\log(c(d+ex)^n)}{e}+bn(gh-fi)\text{Li}_2\left(\frac{g(d+ex)}{dg-ef}\right)-bginx}{g^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((h + i*x)*(a + b*Log[c*(d + e*x)^n]))/(f + g*x),x]
```

```
[Out] (a*g*i*x - b*g*i*n*x + (b*g*i*(d + e*x)*Log[c*(d + e*x)^n])/e + (g*h - f*i)
*(a + b*Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)] + b*(g*h - f*i)*
n*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)])/g^2
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{aix+ah+(bix+bh)\log\left((ex+d)^n c\right)}{gx+f},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="fricas")
```

```
[Out] integral((a*i*x + a*h + (b*i*x + b*h)*log((e*x + d)^n*c))/(g*x + f), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(ix+h)\left(b\log\left((ex+d)^n c\right)+a\right)}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="giac")
```

```
[Out] integrate((i*x + h)*(b*log((e*x + d)^n*c) + a)/(g*x + f), x)
```

maple [C] time = 0.32, size = 750, normalized size = 6.30

$$\frac{i\pi bfi\,\mathrm{csgn}\,(ic)\,\mathrm{csgn}\left(i\,(ex+d)^n\right)\mathrm{csgn}\left(ic\,(ex+d)^n\right)\ln\left(gx+f\right)}{2g^2}-\frac{afi\ln\left(gx+f\right)}{g^2}+\frac{ah\ln\left(gx+f\right)}{g}+\frac{bix\ln\left((ex+d\right.}{g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)*(b*ln(c*(e*x+d)^n)+a)/(g*x+f),x)
```

```
[Out] 1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/g^2*ln(g*x+f)*f*
i-a/g^2*ln(g*x+f)*f*i+a/g*ln(g*x+f)*h+b*ln((e*x+d)^n)*i/g*x+b/e*n/g*i*d*ln(
d*g-e*f+(g*x+f)*e)+b*n/g^2*ln(g*x+f)*ln((d*g-e*f+(g*x+f)*e)/(d*g-e*f))*f*i+
b*ln((e*x+d)^n)/g*ln(g*x+f)*h-1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I
*c*(e*x+d)^n)*i/g*x-1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/g^2*
ln(g*x+f)*f*i-b*ln(c)/g^2*ln(g*x+f)*f*i-b*n/g^2*i*f+b*ln(c)/g*ln(g*x+f)*h+b
*ln(c)*i/g*x-1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/g*l
n(g*x+f)*h-1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/g^2*ln(g*x+f)*f*i+1/2
*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/g^2*ln(g*x+f)*f*i-b*n/g*dilog((d*g-e*f+(g*x+f
)*e)/(d*g-e*f))*h+1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*i/g*x+
1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*i/g*x+1/2*I*b*Pi*csgn(I*c)*csgn(
I*c*(e*x+d)^n)^2/g*ln(g*x+f)*h+1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d
)^n)^2/g*ln(g*x+f)*h-1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*i/g*x+a*i*x/g-1/2*I*b
*Pi*csgn(I*c*(e*x+d)^n)^3/g*ln(g*x+f)*h-b*ln((e*x+d)^n)/g^2*ln(g*x+f)*f*i+b
*n/g^2*dilog((d*g-e*f+(g*x+f)*e)/(d*g-e*f))*f*i-b*n/g*ln(g*x+f)*ln((d*g-e*f
+(g*x+f)*e)/(d*g-e*f))*h-b*i*n*x/g
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$ai\left(\frac{x}{g}-\frac{f\log\left(gx+f\right)}{g^2}\right)+\frac{ah\log\left(gx+f\right)}{g}+\int\frac{bix\log(c)+bh\log(c)+(bix+bh)\log\left((ex+d)^n\right)}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="maxima")
```

```
[Out] a*i*(x/g - f*log(g*x + f)/g^2) + a*h*log(g*x + f)/g + integrate((b*i*x*log(
c) + b*h*log(c) + (b*i*x + b*h)*log((e*x + d)^n))/(g*x + f), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int\frac{(h+i\,x)\,\left(a+b\,\ln\left(c\,(d+e\,x)^n\right)\right)}{f+g\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((h + i*x)*(a + b*log(c*(d + e*x)^n)))/(f + g*x),x)
```

```
[Out] int(((h + i*x)*(a + b*log(c*(d + e*x)^n)))/(f + g*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(a+b\log\left(c\,(d+ex)^n\right)\right)(h+ix)}{f+gx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*ln(c*(e*x+d)**n))/(g*x+f),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))*(h + i*x)/(f + g*x), x)
```

3.220 $\int \frac{a+b\log(c(d+ex)^n)}{f+gx}\,dx$

Optimal. Leaf size=63

$$\frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g}+\frac{bn\text{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)}{g}$$

```
[Out] (a+b*ln(c*(e*x+d)^n))*ln(e*(g*x+f)/(-d*g+e*f))/g+b*n*polylog(2,-g*(e*x+d)/(
-d*g+e*f))/g
```

Rubi [A] time = 0.05, antiderivative size = 63, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {2394, 2393, 2391}

$$\frac{bn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g}+\frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(f + g*x),x]
```

```
[Out] ((a + b*Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/g + (b*n*PolyLo
g[2, -((g*(d + e*x))/(e*f - d*g))])/g
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{a+b\log\left(c(d+ex)^n\right)}{f+gx}\,dx &= \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g}-\frac{(ben)\int \frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)}{d+ex}\,dx}{g}\\
&= \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g}-\frac{(bn)\,\text{Subst}\left(\int \frac{\log\left(1+\frac{gx}{ef-dg}\right)}{x}\,dx,x,d+ex\right)}{g}\\
&= \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g}+\frac{bn\text{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)}{g}
\end{aligned}$$

Mathematica [A] time = 0.01, size = 62, normalized size = 0.98

$$\frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g}+\frac{bn\text{Li}_2\left(\frac{g(d+ex)}{dg-ef}\right)}{g}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(f + g*x),x]
[Out] ((a + b*Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/g + (b*n*PolyLo
g[2, (g*(d + e*x))/(-(e*f) + d*g)])/g
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b\log\left((ex+d)^n c\right)+a}{gx+f},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="fricas")
[Out] integral((b*log((e*x + d)^n*c) + a)/(g*x + f), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{b\log\left((ex+d)^n c\right)+a}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="giac")
[Out] integrate((b*log((e*x + d)^n*c) + a)/(g*x + f), x)
```

maple [C] time = 0.11, size = 261, normalized size = 4.14

$$-\frac{i\pi b\,\text{csgn}\left(ic\right)\text{csgn}\left(i\left(ex+d\right)^n\right)\text{csgn}\left(ic\left(ex+d\right)^n\right)\ln\left(gx+f\right)}{2g}+\frac{i\pi b\,\text{csgn}\left(ic\right)\text{csgn}\left(ic\left(ex+d\right)^n\right)^2\ln\left(gx+f\right)}{2g}+\cdots$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)/(g*x+f),x)
[Out] b/g*ln((e*x+d)^n)*ln(g*x+f)-b/g*n*dilog((d*g-e*f+(g*x+f)*e)/(d*g-e*f))-b/g*
n*ln((d*g-e*f+(g*x+f)*e)/(d*g-e*f))*ln(g*x+f)-1/2*I*ln(g*x+f)/g*b*Pi*csgn(I
*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/2*I*ln(g*x+f)/g*b*Pi*csgn(I*c)*
csgn(I*c*(e*x+d)^n)^2+1/2*I*ln(g*x+f)/g*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*
x+d)^n)^2-1/2*I*ln(g*x+f)/g*b*Pi*csgn(I*c*(e*x+d)^n)^3+b/g*ln(c)*ln(g*x+f)+
a/g*ln(g*x+f)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$b\int\frac{\log\left((ex+d)^n\right)+\log(c)}{gx+f}\,dx+\frac{a\log\left(gx+f\right)}{g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="maxima")
[Out] b*integrate((log((e*x + d)^n) + log(c))/(g*x + f), x) + a*log(g*x + f)/g
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}{f+g\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/(f + g*x),x)
[Out] int((a + b*log(c*(d + e*x)^n))/(f + g*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a+b\log\left(c\left(d+ex\right)^{n}\right)}{f+gx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(g*x+f),x)
[Out] Integral((a + b*log(c*(d + e*x)**n))/(f + g*x), x)
```

3.221 $\int \frac{a+b\log(c(d+ex)^n)}{(f+gx)(h+ix)}\,dx$

Optimal. Leaf size=155

$$\frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{gh-fi}-\frac{\log\left(\frac{e(h+ix)}{eh-di}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{gh-fi}+\frac{bn\text{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)}{gh-fi}-\frac{bn\text{Li}_2\left(-\frac{i(d+ex)}{eh-di}\right)}{gh-fi}$$

```
[Out] (a+b*ln(c*(e*x+d)^n))*ln(e*(g*x+f)/(-d*g+e*f))/(-f*i+g*h)-(a+b*ln(c*(e*x+d)
^n))*ln(e*(i*x+h)/(-d*i+e*h))/(-f*i+g*h)+b*n*polylog(2,-g*(e*x+d)/(-d*g+e*f
))/(-f*i+g*h)-b*n*polylog(2,-i*(e*x+d)/(-d*i+e*h))/(-f*i+g*h)
```

Rubi [A] time = 0.20, antiderivative size = 155, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 4, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.138, Rules used = {2418, 2394, 2393, 2391}

$$\frac{bn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{gh-fi}-\frac{bn\text{PolyLog}\left(2,-\frac{i(d+ex)}{eh-di}\right)}{gh-fi}+\frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{gh-fi}-\frac{\log\left(\frac{e(h+ix)}{eh-di}\right)\left(a+b\log\right.}{gh-fi}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/((f + g*x)*(h + i*x)),x]
```

```
[Out] ((a + b*Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/(g*h - f*i) - (
(a + b*Log[c*(d + e*x)^n])*Log[(e*(h + i*x))/(e*h - d*i)])/(g*h - f*i) + (b
*n*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/(g*h - f*i) - (b*n*PolyLog[2,
-((i*(d + e*x))/(e*h - d*i))])/(g*h - f*i)
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rubi steps

$$\int \frac{a+b\log(c(d+ex)^n)}{(h+221x)(f+gx)}\,dx = \int \left(\frac{221\left(a+b\log(c(d+ex)^n)\right)}{(221f-gh)(h+221x)} - \frac{g\left(a+b\log(c(d+ex)^n)\right)}{(221f-gh)(f+gx)}\right)dx$$
$$= \frac{221\int \frac{a+b\log(c(d+ex)^n)}{h+221x}\,dx}{221f-gh} - \frac{g\int \frac{a+b\log(c(d+ex)^n)}{f+gx}\,dx}{221f-gh}$$
$$= \frac{\log\left(-\frac{e(h+221x)}{221d-eh}\right)\left(a+b\log(c(d+ex)^n)\right)}{221f-gh} - \frac{\left(a+b\log(c(d+ex)^n)\right)\log\left(\frac{e(f+gx)}{ef-dg}\right)}{221f-gh}$$
$$= \frac{\log\left(-\frac{e(h+221x)}{221d-eh}\right)\left(a+b\log(c(d+ex)^n)\right)}{221f-gh} - \frac{\left(a+b\log(c(d+ex)^n)\right)\log\left(\frac{e(f+gx)}{ef-dg}\right)}{221f-gh}$$
$$= \frac{\log\left(-\frac{e(h+221x)}{221d-eh}\right)\left(a+b\log(c(d+ex)^n)\right)}{221f-gh} - \frac{\left(a+b\log(c(d+ex)^n)\right)\log\left(\frac{e(f+gx)}{ef-dg}\right)}{221f-gh}$$

Mathematica [A] time = 0.07, size = 111, normalized size = 0.72

$$\frac{\left(a+b\log(c(d+ex)^n)\right)\left(\log\left(\frac{e(f+gx)}{ef-dg}\right)-\log\left(\frac{e(h+ix)}{eh-di}\right)\right)+bn\text{Li}_2\left(\frac{g(d+ex)}{dg-ef}\right)-bn\text{Li}_2\left(\frac{i(d+ex)}{di-eh}\right)}{gh-fi}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/((f + g*x)*(h + i*x)),x]
```

```
[Out] ((a + b*Log[c*(d + e*x)^n])*(Log[(e*(f + g*x))/(e*f - d*g)] - Log[(e*(h + i
*x))/(e*h - d*i)]) + b*n*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - b*n*Pol
yLog[2, (i*(d + e*x))/(-(e*h) + d*i)])/(g*h - f*i)
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b\log\left((ex+d)^n c\right)+a}{gix^2+fh+\left(gh+fi\right)x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)/(i*x+h),x, algorithm="fricas")
```

```
[Out] integral((b*log((e*x + d)^n*c) + a)/(g*i*x^2 + f*h + (g*h + f*i)*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b\log\left((ex+d)^n c\right)+a}{\left(gx+f\right)(ix+h)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)/(i*x+h),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)/((g*x + f)*(i*x + h)), x)
```

maple [C] time = 0.31, size = 647, normalized size = 4.17

$$\frac{i\pi b\,\text{csgn}(ic)\,\text{csgn}\left(i(ex+d)^n\right)\text{csgn}\left(ic(ex+d)^n\right)\ln\left(gx+f\right)}{2fi-2gh} - \frac{i\pi b\,\text{csgn}(ic)\,\text{csgn}\left(i(ex+d)^n\right)\text{csgn}\left(ic(ex+d\right.}{2\left(fi-gh\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)/(g*x+f)/(i*x+h),x)
```

```
[Out] -b*ln((e*x+d)^n)/(f*i-g*h)*ln(g*x+f)+b*ln((e*x+d)^n)/(f*i-g*h)*ln(i*x+h)-b*
n/(f*i-g*h)*dilog(((i*x+h)*e+d*i-e*h)/(d*i-e*h))-b*n/(f*i-g*h)*ln(i*x+h)*ln
(((i*x+h)*e+d*i-e*h)/(d*i-e*h))+b*n/(f*i-g*h)*dilog((d*g-e*f+(g*x+f)*e)/(d*
g-e*f))+b*n/(f*i-g*h)*ln(g*x+f)*ln((d*g-e*f+(g*x+f)*e)/(d*g-e*f))-1/2*I*b*P
i*csgn(I*c*(e*x+d)^n)^3/(f*i-g*h)*ln(i*x+h)+1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(
e*x+d)^n)^2/(f*i-g*h)*ln(i*x+h)+1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn
(I*c*(e*x+d)^n)/(f*i-g*h)*ln(g*x+f)-1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*
csgn(I*c*(e*x+d)^n)/(f*i-g*h)*ln(i*x+h)-1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+
d)^n)^2/(f*i-g*h)*ln(g*x+f)+1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/(f*i-g*h)*ln(g
*x+f)+1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/(f*i-g*h)*ln(i*x+h
)-1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/(f*i-g*h)*ln(g*x+f)-b*
ln(c)/(f*i-g*h)*ln(g*x+f)+b*ln(c)/(f*i-g*h)*ln(i*x+h)-a/(f*i-g*h)*ln(g*x+f)
+a/(f*i-g*h)*ln(i*x+h)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$a\left(\frac{\log\left(gx+f\right)}{gh-fi}-\frac{\log\left(ix+h\right)}{gh-fi}\right)+b\int\frac{\log\left((ex+d)^{n}\right)+\log(c)}{gix^{2}+fh+\left(gh+fi\right)x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)/(i*x+h),x, algorithm="maxima")
```

```
[Out] a*(log(g*x + f)/(g*h - f*i) - log(i*x + h)/(g*h - f*i)) + b*integrate((log(
(e*x + d)^n) + log(c))/(g*i*x^2 + f*h + (g*h + f*i)*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int\frac{a+b\,\ln\left(c\,(d+e\,x)^{n}\right)}{\left(f+g\,x\right)\,(h+i\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/((f + g*x)*(h + i*x)),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))/((f + g*x)*(h + i*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{a+b\log\left(c\,(d+ex)^{n}\right)}{\left(f+gx\right)(h+ix)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(g*x+f)/(i*x+h),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))/((f + g*x)*(h + i*x)), x)
```

3.222 $\int \frac{a+b\log(c(d+ex)^n)}{(f+gx)(h+ix)^2}\,dx$

Optimal. Leaf size=252

$$\frac{a+b\log\left(c(d+ex)^n\right)}{(h+ix)(gh-fi)}+\frac{g\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{(gh-fi)^2}-\frac{g\log\left(\frac{e(h+ix)}{eh-di}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{(gh-fi)^2}+\frac{bgn\mathrm{Li}_2}{(gh}$$

```
[Out] -b*e*n*ln(e*x+d)/(-d*i+e*h)/(-f*i+g*h)+(a+b*ln(c*(e*x+d)^n))/(-f*i+g*h)/(i*
x+h)+g*(a+b*ln(c*(e*x+d)^n))*ln(e*(g*x+f)/(-d*g+e*f))/(-f*i+g*h)^2+b*e*n*ln
(i*x+h)/(-d*i+e*h)/(-f*i+g*h)-g*(a+b*ln(c*(e*x+d)^n))*ln(e*(i*x+h)/(-d*i+e*
h))/(-f*i+g*h)^2+b*g*n*polylog(2,-g*(e*x+d)/(-d*g+e*f))/(-f*i+g*h)^2-b*g*n*
polylog(2,-i*(e*x+d)/(-d*i+e*h))/(-f*i+g*h)^2
```

Rubi [A] time = 0.26, antiderivative size = 252, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 7, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.241, Rules used = {2418, 2394, 2393, 2391, 2395, 36, 31}

$$\frac{bgn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{(gh-fi)^2}-\frac{bgn\text{PolyLog}\left(2,-\frac{i(d+ex)}{eh-di}\right)}{(gh-fi)^2}+\frac{a+b\log\left(c(d+ex)^n\right)}{(h+ix)(gh-fi)}+\frac{g\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+\right.\right.}{(gh-fi)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/((f + g*x)*(h + i*x)^2),x]
```

```
[Out] -((b*e*n*Log[d + e*x])/((e*h - d*i)*(g*h - f*i))) + (a + b*Log[c*(d + e*x)^
n])/((g*h - f*i)*(h + i*x)) + (g*(a + b*Log[c*(d + e*x)^n])*Log[(e*(f + g*x
))/(e*f - d*g)])/(g*h - f*i)^2 + (b*e*n*Log[h + i*x])/((e*h - d*i)*(g*h - f
*i)) - (g*(a + b*Log[c*(d + e*x)^n])*Log[(e*(h + i*x))/(e*h - d*i)])/(g*h -
 f*i)^2 + (b*g*n*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/(g*h - f*i)^2 -
(b*g*n*PolyLog[2, -((i*(d + e*x))/(e*h - d*i))])/(g*h - f*i)^2
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
```

```
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rubi steps

$$\int \frac{a+b\log(c(d+ex)^n)}{(h+222x)^2(f+gx)}\,dx = \int \left(\frac{222\left(a+b\log(c(d+ex)^n)\right)}{(222f-gh)(h+222x)^2} - \frac{222g\left(a+b\log(c(d+ex)^n)\right)}{(222f-gh)^2(h+222x)} + \frac{g^2\left(a+b\log(c(\right.}{(222f-gh)^2(}\right.$$

$$= -\frac{(222g)\int \frac{a+b\log(c(d+ex)^n)}{h+222x}\,dx}{(222f-gh)^2} + \frac{g^2\int \frac{a+b\log(c(d+ex)^n)}{f+gx}\,dx}{(222f-gh)^2} + \frac{222\int \frac{a+b\log(c(d+ex)^n)}{(h+222x)^2}\,dx}{222f-gh}$$

$$= -\frac{a+b\log(c(d+ex)^n)}{(222f-gh)(h+222x)} - \frac{g\log\left(-\frac{e(h+222x)}{222d-eh}\right)\left(a+b\log(c(d+ex)^n)\right)}{(222f-gh)^2} + \frac{g\left(a+b\log\right.}{}$$

$$= -\frac{a+b\log(c(d+ex)^n)}{(222f-gh)(h+222x)} - \frac{g\log\left(-\frac{e(h+222x)}{222d-eh}\right)\left(a+b\log(c(d+ex)^n)\right)}{(222f-gh)^2} + \frac{g\left(a+b\log\right.}{}$$

$$= \frac{ben\log(h+222x)}{(222d-eh)(222f-gh)} - \frac{ben\log(d+ex)}{(222d-eh)(222f-gh)} - \frac{a+b\log(c(d+ex)^n)}{(222f-gh)(h+222x)} - \frac{g\log}{}$$

Mathematica [A] time = 0.19, size = 196, normalized size = 0.78

$$\frac{\frac{(gh-fi)\left(a+b\log(c(d+ex)^n)\right)}{h+ix} + g\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log(c(d+ex)^n)\right) - g\log\left(\frac{e(h+ix)}{eh-di}\right)\left(a+b\log(c(d+ex)^n)\right) - \frac{ben(gh-fi)}{}}{(gh-fi)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/((f + g*x)*(h + i*x)^2),x]
```

```
[Out] (((g*h - f*i)*(a + b*Log[c*(d + e*x)^n]))/(h + i*x) + g*(a + b*Log[c*(d + e
*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)] - (b*e*(g*h - f*i)*n*(Log[d + e*x] -
 Log[h + i*x]))/(e*h - d*i) - g*(a + b*Log[c*(d + e*x)^n])*Log[(e*(h + i*x)
)/(e*h - d*i)] + b*g*n*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - b*g*n*Pol
yLog[2, (i*(d + e*x))/(-(e*h) + d*i)])/(g*h - f*i)^2
```

fricas [F] time = 0.49, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b\log\left((ex+d)^n c\right)+a}{gi^2x^3+fh^2+\left(2\,ghi+fi^2\right)x^2+\left(gh^2+2\,fhi\right)x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)/(i*x+h)^2,x, algorithm="fricas")
```

```
[Out] integral((b*log((e*x + d)^n*c) + a)/(g*i^2*x^3 + f*h^2 + (2*g*h*i + f*i^2)*
x^2 + (g*h^2 + 2*f*h*i)*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b \log\left((ex+d)^n c\right) + a}{\left(gx+f\right)(ix+h)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)/(i*x+h)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)/((g*x + f)*(i*x + h)^2), x)
```

maple [C] time = 0.30, size = 970, normalized size = 3.85

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)/(g*x+f)/(i*x+h)^2,x)
```

```
[Out] a*g/(f*i-g*h)^2*ln(g*x+f)-a/(f*i-g*h)/(i*x+h)-b*ln((e*x+d)^n)/(f*i-g*h)/(i*
x+h)-a*g/(f*i-g*h)^2*ln(i*x+h)-b*ln(c)/(f*i-g*h)/(i*x+h)+1/2*I*b*Pi*csgn(I*
c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/(f*i-g*h)/(i*x+h)-1/2*I*b*Pi*csgn(
I*c*(e*x+d)^n)^3*g/(f*i-g*h)^2*ln(g*x+f)+1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*g
/(f*i-g*h)^2*ln(i*x+h)-1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*g/(f*i-g*
h)^2*ln(i*x+h)+1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*g/(f*i-g*
h)^2*ln(g*x+f)+1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*g/(f*i-g*h)^2*ln(
g*x+f)-1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*g/(f*i-g*h)^2*ln(
i*x+h)-1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*g/(f*i-g*
h)^2*ln(g*x+f)-b*n*g/(f*i-g*h)^2*dilog((d*g-e*f+(g*x+f)*e)/(d*g-e*f))+b*n*g
/(f*i-g*h)^2*dilog((d*i-e*h+(i*x+h)*e)/(d*i-e*h))-b*ln(c)*g/(f*i-g*h)^2*ln(
i*x+h)+b*ln(c)*g/(f*i-g*h)^2*ln(g*x+f)-b*ln((e*x+d)^n)*g/(f*i-g*h)^2*ln(i*x
+h)+b*ln((e*x+d)^n)*g/(f*i-g*h)^2*ln(g*x+f)-b*n*g/(f*i-g*h)^2*ln(g*x+f)*ln(
(d*g-e*f+(g*x+f)*e)/(d*g-e*f))+b*e*n/(f*i-g*h)/(d*i-e*h)*ln(i*x+h)-b*e*n/(f
*i-g*h)/(d*i-e*h)*ln(e*x+d)+b*n*g/(f*i-g*h)^2*ln(i*x+h)*ln((d*i-e*h+(i*x+h)
*e)/(d*i-e*h))+1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*g
/(f*i-g*h)^2*ln(i*x+h)+1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/(f*i-g*h)/(i*x+h)-1
/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/(f*i-g*h)/(i*x+h)-1/2*I*b
*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/(f*i-g*h)/(i*x+h)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$a\left(\frac{g \log\left(gx+f\right)}{g^2h^2 - 2\,fghi + f^2i^2} - \frac{g \log\left(ix+h\right)}{g^2h^2 - 2\,fghi + f^2i^2} + \frac{1}{gh^2 - fhi + \left(ghi - fi^2\right)x}\right) + b\int \frac{\log\left((ex+d)^n\right) +}{gi^2x^3 + fh^2 + \left(2\,ghi + fi^2\right)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)/(i*x+h)^2,x, algorithm="maxima")
```

```
[Out] a*(g*log(g*x + f)/(g^2*h^2 - 2*f*g*h*i + f^2*i^2) - g*log(i*x + h)/(g^2*h^2
 - 2*f*g*h*i + f^2*i^2) + 1/(g*h^2 - f*h*i + (g*h*i - f*i^2)*x)) + b*integr
ate((log((e*x + d)^n) + log(c))/(g*i^2*x^3 + f*h^2 + (2*g*h*i + f*i^2)*x^2
+ (g*h^2 + 2*f*h*i)*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,\ln\left(c\,(d+e\,x)^n\right)}{\left(f+g\,x\right)\,(h+i\,x)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/((f + g*x)*(h + i*x)^2),x)
[Out] int((a + b*log(c*(d + e*x)^n))/((f + g*x)*(h + i*x)^2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a+b\log\left(c\,(d+ex)^n\right)}{\left(f+gx\right)(h+ix)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(g*x+f)/(i*x+h)**2,x)
[Out] Integral((a + b*log(c*(d + e*x)**n))/((f + g*x)*(h + i*x)**2), x)
```

3.223 $\int \frac{a+b\log(c(d+ex)^n)}{(f+gx)(h+ix)^3}\,dx$

Optimal. Leaf size=402

$$\frac{g^2\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{(gh-fi)^3}-\frac{g^2\log\left(\frac{e(h+ix)}{eh-di}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{(gh-fi)^3}+\frac{g\left(a+b\log\left(c(d+ex)^n\right)\right)}{(h+ix)(gh-fi)^2}+\frac{a}{2}$$

```
[Out] -1/2*b*e*n/(-d*i+e*h)/(-f*i+g*h)/(i*x+h)-b*e*g*n*ln(e*x+d)/(-d*i+e*h)/(-f*i
+g*h)^2-1/2*b*e^2*n*ln(e*x+d)/(-d*i+e*h)^2/(-f*i+g*h)+1/2*(a+b*ln(c*(e*x+d)
^n))/(-f*i+g*h)/(i*x+h)^2+g*(a+b*ln(c*(e*x+d)^n))/(-f*i+g*h)^2/(i*x+h)+g^2*
(a+b*ln(c*(e*x+d)^n))*ln(e*(g*x+f)/(-d*g+e*f))/(-f*i+g*h)^3+b*e*g*n*ln(i*x+
h)/(-d*i+e*h)/(-f*i+g*h)^2+1/2*b*e^2*n*ln(i*x+h)/(-d*i+e*h)^2/(-f*i+g*h)-g^
2*(a+b*ln(c*(e*x+d)^n))*ln(e*(i*x+h)/(-d*i+e*h))/(-f*i+g*h)^3+b*g^2*n*polyl
og(2,-g*(e*x+d)/(-d*g+e*f))/(-f*i+g*h)^3-b*g^2*n*polylog(2,-i*(e*x+d)/(-d*i
+e*h))/(-f*i+g*h)^3
```

Rubi [A] time = 0.37, antiderivative size = 402, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 8, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.276, Rules used = {2418, 2394, 2393, 2391, 2395, 44, 36, 31}

$$\frac{bg^2n\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{(gh-fi)^3}-\frac{bg^2n\text{PolyLog}\left(2,-\frac{i(d+ex)}{eh-di}\right)}{(gh-fi)^3}+\frac{g^2\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{(gh-fi)^3}-\frac{g^2\log\left(\frac{e(h+i}{eh-d}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/((f + g*x)*(h + i*x)^3),x]
```

```
[Out] -(b*e*n)/(2*(e*h - d*i)*(g*h - f*i)*(h + i*x)) - (b*e*g*n*Log[d + e*x])/((e
*h - d*i)*(g*h - f*i)^2) - (b*e^2*n*Log[d + e*x])/(2*(e*h - d*i)^2*(g*h - f
*i)) + (a + b*Log[c*(d + e*x)^n])/(2*(g*h - f*i)*(h + i*x)^2) + (g*(a + b*L
og[c*(d + e*x)^n]))/((g*h - f*i)^2*(h + i*x)) + (g^2*(a + b*Log[c*(d + e*x)
^n])*Log[(e*(f + g*x))/(e*f - d*g)])/(g*h - f*i)^3 + (b*e*g*n*Log[h + i*x])
/((e*h - d*i)*(g*h - f*i)^2) + (b*e^2*n*Log[h + i*x])/(2*(e*h - d*i)^2*(g*h
 - f*i)) - (g^2*(a + b*Log[c*(d + e*x)^n])*Log[(e*(h + i*x))/(e*h - d*i)])/
(g*h - f*i)^3 + (b*g^2*n*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/(g*h - f
*i)^3 - (b*g^2*n*PolyLog[2, -((i*(d + e*x))/(e*h - d*i))])/(g*h - f*i)^3
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rubi steps

$$\int \frac{a+b\log\left(c(d+ex)^n\right)}{(h+223x)^3(f+gx)}\,dx = \int \left(\frac{223\left(a+b\log\left(c(d+ex)^n\right)\right)}{(223f-gh)(h+223x)^3} - \frac{223g\left(a+b\log\left(c(d+ex)^n\right)\right)}{(223f-gh)^2(h+223x)^2} + \frac{223g^2\left(a+b\log\right.}{(223f-gh)^3}\right.$$

$$= \frac{\left(223g^2\right)\int \frac{a+b\log(c(d+ex)^n)}{h+223x}\,dx}{(223f-gh)^3} - \frac{g^3\int \frac{a+b\log(c(d+ex)^n)}{f+gx}\,dx}{(223f-gh)^3} - \frac{(223g)\int \frac{a+b\log(c(d+ex)^n)}{(h+223x)^2}\,dx}{(223f-gh)^2}$$

$$= -\frac{a+b\log\left(c(d+ex)^n\right)}{2(223f-gh)(h+223x)^2} + \frac{g\left(a+b\log\left(c(d+ex)^n\right)\right)}{(223f-gh)^2(h+223x)} + \frac{g^2\log\left(-\frac{e(h+223x)}{223d-eh}\right)\left(a+b\right.}{(223f-g}$$

$$= -\frac{a+b\log\left(c(d+ex)^n\right)}{2(223f-gh)(h+223x)^2} + \frac{g\left(a+b\log\left(c(d+ex)^n\right)\right)}{(223f-gh)^2(h+223x)} + \frac{g^2\log\left(-\frac{e(h+223x)}{223d-eh}\right)\left(a+b\right.}{(223f-g}$$

$$= -\frac{ben}{2(223d-eh)(223f-gh)(h+223x)} - \frac{begn\log(h+223x)}{(223d-eh)(223f-gh)^2} - \frac{be^2n\log(h}{2(223d-eh)^2(}$$

Mathematica [A] time = 0.40, size = 311, normalized size = 0.77

$$2g^2\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right) + \frac{2g(gh-fi)\left(a+b\log(c(d+ex)^n)\right)}{h+ix} + \frac{(gh-fi)^2\left(a+b\log(c(d+ex)^n)\right)}{(h+ix)^2} - 2g^2\log\left(\frac{e(h+ix)}{eh-di}\right)\left(a\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/((f + g*x)*(h + i*x)^3),x]
```

```
[Out] (((g*h - f*i)^2*(a + b*Log[c*(d + e*x)^n]))/(h + i*x)^2 + (2*g*(g*h - f*i)*
(a + b*Log[c*(d + e*x)^n]))/(h + i*x) + 2*g^2*(a + b*Log[c*(d + e*x)^n])*Lo
g[(e*(f + g*x))/(e*f - d*g)] - (2*b*e*g*(g*h - f*i)*n*(Log[d + e*x] - Log[h
 + i*x]))/(e*h - d*i) - (b*e*(g*h - f*i)^2*n*(e*h - d*i + e*(h + i*x)*Log[d
 + e*x] - e*(h + i*x)*Log[h + i*x]))/((e*h - d*i)^2*(h + i*x)) - 2*g^2*(a +
 b*Log[c*(d + e*x)^n])*Log[(e*(h + i*x))/(e*h - d*i)] + 2*b*g^2*n*PolyLog[2
, (g*(d + e*x))/(-(e*f) + d*g)] - 2*b*g^2*n*PolyLog[2, (i*(d + e*x))/(-(e*h
) + d*i)])/(2*(g*h - f*i)^3)
```

fricas [F] time = 0.48, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{b\log\left((ex+d)^{n}c\right)+a}{gi^{3}x^{4}+fh^{3}+\left(3\,ghi^{2}+fi^{3}\right)x^{3}+3\left(gh^{2}i+fhi^{2}\right)x^{2}+\left(gh^{3}+3\,fh^{2}i\right)x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)/(i*x+h)^3,x, algorithm="fricas")
```

```
[Out] integral((b*log((e*x + d)^n*c) + a)/(g*i^3*x^4 + f*h^3 + (3*g*h*i^2 + f*i^3
)*x^3 + 3*(g*h^2*i + f*h*i^2)*x^2 + (g*h^3 + 3*f*h^2*i)*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{b\log\left((ex+d)^{n}c\right)+a}{\left(gx+f\right)(ix+h)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)/(i*x+h)^3,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)/((g*x + f)*(i*x + h)^3), x)
```

maple [C] time = 0.32, size = 1468, normalized size = 3.65

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)/(g*x+f)/(i*x+h)^3,x)
```

```
[Out] -1/2*a/(f*i-g*h)/(i*x+h)^2-1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*g^2/(
f*i-g*h)^3*ln(g*x+f)-1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*g^2
/(f*i-g*h)^3*ln(g*x+f)+1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*g
^2/(f*i-g*h)^3*ln(i*x+h)+1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2
*g/(f*i-g*h)^2/(i*x+h)+1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*g/(f*i-g*
h)^2/(i*x+h)+1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*g^2/(f*i-g*h)^3*ln(
i*x+h)+1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*g^2/(f*i-g*h)^3*ln(g*x+f)-1/2*I*b*P
i*csgn(I*c*(e*x+d)^n)^3*g^2/(f*i-g*h)^3*ln(i*x+h)-1/2*b*ln((e*x+d)^n)/(f*i-
g*h)/(i*x+h)^2+1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/(
f*i-g*h)/(i*x+h)^2+b*ln(c)*g^2/(f*i-g*h)^3*ln(i*x+h)+b*ln(c)*g/(f*i-g*h)^2/
(i*x+h)-b*ln(c)*g^2/(f*i-g*h)^3*ln(g*x+f)+1/2*b*e*n/(f*i-g*h)^2/(d*i-e*h)/(
i*x+h)*g*h+1/2*b*e^2*n/(f*i-g*h)^2/(d*i-e*h)^2*ln(e*x+d)*f*i-3/2*b*e^2*n/(f
*i-g*h)^2/(d*i-e*h)^2*ln(e*x+d)*g*h-1/2*b*e^2*n/(f*i-g*h)^2/(d*i-e*h)^2*ln(
i*x+h)*f*i+3/2*b*e^2*n/(f*i-g*h)^2/(d*i-e*h)^2*ln(i*x+h)*g*h-1/2*b*e*n/(f*i
-g*h)^2/(d*i-e*h)/(i*x+h)*f*i+a*g/(f*i-g*h)^2/(i*x+h)-1/2*b*ln(c)/(f*i-g*h)
/(i*x+h)^2-a*g^2/(f*i-g*h)^3*ln(g*x+f)+a*g^2/(f*i-g*h)^3*ln(i*x+h)+b*n*g^2/
(f*i-g*h)^3*dilog((d*g-e*f+(g*x+f)*e)/(d*g-e*f))-b*n*g^2/(f*i-g*h)^3*dilog(
```

```
(d*i-e*h+(i*x+h)*e)/(d*i-e*h))-b*n*g^2/(f*i-g*h)^3*ln(i*x+h)*ln((d*i-e*h+(i
*x+h)*e)/(d*i-e*h))-b*e*n/(f*i-g*h)^2/(d*i-e*h)^2*ln(i*x+h)*d*g*i+b*e*n/(f*
i-g*h)^2/(d*i-e*h)^2*ln(e*x+d)*d*g*i-1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*g/(f*
i-g*h)^2/(i*x+h)-1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/(f*i-g*
h)/(i*x+h)^2-1/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/(f*i-g*h)/(i*x+h)^2
+b*ln((e*x+d)^n)*g^2/(f*i-g*h)^3*ln(i*x+h)+b*ln((e*x+d)^n)*g/(f*i-g*h)^2/(i
*x+h)-b*ln((e*x+d)^n)*g^2/(f*i-g*h)^3*ln(g*x+f)-1/2*I*b*Pi*csgn(I*c)*csgn(I
*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*g/(f*i-g*h)^2/(i*x+h)+1/2*I*b*Pi*csgn(I*c)*
csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*g^2/(f*i-g*h)^3*ln(g*x+f)-1/2*I*b*Pi*
csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*g^2/(f*i-g*h)^3*ln(i*x+h)+b
*n*g^2/(f*i-g*h)^3*ln(g*x+f)*ln((d*g-e*f+(g*x+f)*e)/(d*g-e*f))+1/4*I*b*Pi*c
sgn(I*c*(e*x+d)^n)^3/(f*i-g*h)/(i*x+h)^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{2}\left(\frac{2\,g^2\log\left(gx+f\right)}{g^3h^3-3\,fg^2h^2i+3\,f^2ghi^2-f^3i^3}-\frac{2\,g^2\log\left(ix+h\right)}{g^3h^3-3\,fg^2h^2i+3\,f^2ghi^2-f^3i^3}+\frac{2}{g^2h^4-2\,fgh^3i+f^2h^2i^2+\left(g^2h^2i^2-\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)/(i*x+h)^3,x, algorithm="maxima")
```

```
[Out] 1/2*(2*g^2*log(g*x + f)/(g^3*h^3 - 3*f*g^2*h^2*i + 3*f^2*g*h*i^2 - f^3*i^3)
 - 2*g^2*log(i*x + h)/(g^3*h^3 - 3*f*g^2*h^2*i + 3*f^2*g*h*i^2 - f^3*i^3) +
 (2*g*i*x + 3*g*h - f*i)/(g^2*h^4 - 2*f*g*h^3*i + f^2*h^2*i^2 + (g^2*h^2*i^
2 - 2*f*g*h*i^3 + f^2*i^4)*x^2 + 2*(g^2*h^3*i - 2*f*g*h^2*i^2 + f^2*h*i^3)*
x))*a + b*integrate((log((e*x + d)^n) + log(c))/(g*i^3*x^4 + f*h^3 + (3*g*h
*i^2 + f*i^3)*x^3 + 3*(g*h^2*i + f*h*i^2)*x^2 + (g*h^3 + 3*f*h^2*i)*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}{\left(f+g\,x\right)\,{\left(h+i\,x\right)}^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/((f + g*x)*(h + i*x)^3),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))/((f + g*x)*(h + i*x)^3), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a+b\log\left(c\left(d+ex\right)^n\right)}{\left(f+gx\right)\left(h+ix\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(g*x+f)/(i*x+h)**3,x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))/((f + g*x)*(h + i*x)**3), x)
```

3.224 $\int \frac{(h+ix)^2\left(a+b\log(c(d+ex)^n)\right)^2}{f+gx}\,dx$

Optimal. Leaf size=469

$$\frac{i(d+ex)(eh-di)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{e^2g}-\frac{bi^2n(d+ex)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2e^2g}+\frac{i^2(d+ex)^2\left(a+b\log\left(c(d+\right.\right.}{2e^2g}$$

```
[Out] -2*a*b*i*(-d*i+e*h)*n*x/e/g-2*a*b*i*(-f*i+g*h)*n*x/g^2+2*b^2*i*(-d*i+e*h)*n
^2*x/e/g+2*b^2*i*(-f*i+g*h)*n^2*x/g^2+1/4*b^2*i^2*n^2*(e*x+d)^2/e^2/g-2*b^2
*i*(-d*i+e*h)*n*(e*x+d)*ln(c*(e*x+d)^n)/e^2/g-2*b^2*i*(-f*i+g*h)*n*(e*x+d)*
ln(c*(e*x+d)^n)/e/g^2-1/2*b*i^2*n*(e*x+d)^2*(a+b*ln(c*(e*x+d)^n))/e^2/g+i*(
-d*i+e*h)*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^2/e^2/g+i*(-f*i+g*h)*(e*x+d)*(a+b*l
n(c*(e*x+d)^n))^2/e/g^2+1/2*i^2*(e*x+d)^2*(a+b*ln(c*(e*x+d)^n))^2/e^2/g+(-f
*i+g*h)^2*(a+b*ln(c*(e*x+d)^n))^2*ln(e*(g*x+f)/(-d*g+e*f))/g^3+2*b*(-f*i+g*
h)^2*n*(a+b*ln(c*(e*x+d)^n))*polylog(2,-g*(e*x+d)/(-d*g+e*f))/g^3-2*b^2*(-f
*i+g*h)^2*n^2*polylog(3,-g*(e*x+d)/(-d*g+e*f))/g^3
```

Rubi [A] time = 0.55, antiderivative size = 469, normalized size of antiderivative = 1.00, number of steps used = 19, number of rules used = 12, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.387, Rules used = {2418, 2389, 2296, 2295, 2396, 2433, 2374, 6589, 2401, 2390, 2305, 2304}

$$\frac{2bn(gh-fi)^2\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^3}-\frac{2b^2n^2(gh-fi)^2\text{PolyLog}\left(3,-\frac{g(d+ex)}{ef-dg}\right)}{g^3}+\frac{i(d+ex)(}{}$$

Antiderivative was successfully verified.

```
[In] Int[((h + i*x)^2*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x),x]
```

```
[Out] (-2*a*b*i*(e*h - d*i)*n*x)/(e*g) - (2*a*b*i*(g*h - f*i)*n*x)/g^2 + (2*b^2*i
*(e*h - d*i)*n^2*x)/(e*g) + (2*b^2*i*(g*h - f*i)*n^2*x)/g^2 + (b^2*i^2*n^2*
(d + e*x)^2)/(4*e^2*g) - (2*b^2*i*(e*h - d*i)*n*(d + e*x)*Log[c*(d + e*x)^n
])/(e^2*g) - (2*b^2*i*(g*h - f*i)*n*(d + e*x)*Log[c*(d + e*x)^n])/(e*g^2) -
 (b*i^2*n*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n]))/(2*e^2*g) + (i*(e*h - d*i
)*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(e^2*g) + (i*(g*h - f*i)*(d + e*x
)*(a + b*Log[c*(d + e*x)^n])^2)/(e*g^2) + (i^2*(d + e*x)^2*(a + b*Log[c*(d
+ e*x)^n])^2)/(2*e^2*g) + ((g*h - f*i)^2*(a + b*Log[c*(d + e*x)^n])^2*Log[(
e*(f + g*x))/(e*f - d*g)])/g^3 + (2*b*(g*h - f*i)^2*n*(a + b*Log[c*(d + e*x
)^n])*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/g^3 - (2*b^2*(g*h - f*i)^2*
n^2*PolyLog[3, -((g*(d + e*x))/(e*f - d*g))])/g^3
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(h+224x)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{f+gx}dx = \int\left(\frac{224(-224f+gh)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{g^2}+\frac{224(h+224x)}{}\right.$$

$$=\frac{224\int(h+224x)\left(a+b\log\left(c(d+ex)^n\right)\right)^2\,dx}{g}-\frac{(224(224f-gh)}{}$$

$$=\frac{(224f-gh)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^2\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g^3}+\frac{224\int\left(\frac{(-2}{}\right.}{}$$

$$=-\frac{224(224f-gh)(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{eg^2}+\frac{(224f-gh}{}$$

$$=\frac{448ab(224f-gh)nx}{g^2}-\frac{224(224f-gh)(d+ex)\left(a+b\log\left(c(d+\right.\right.}{eg^2}$$

$$=\frac{448ab(224f-gh)nx}{g^2}-\frac{448b^2(224f-gh)n^2x}{g^2}+\frac{448b^2(224f-g}{}$$

$$=\frac{448ab(224d-eh)nx}{eg}+\frac{448ab(224f-gh)nx}{g^2}-\frac{448b^2(224f-gh}{g^2}$$

$$=\frac{448ab(224d-eh)nx}{eg}+\frac{448ab(224f-gh)nx}{g^2}-\frac{448b^2(224d-eh}{eg}$$

Mathematica [A] time = 0.64, size = 876, normalized size = 1.87

$$\frac{8be^2g^2n\left(a-bn\log(d+ex)+b\log\left(c(d+ex)^n\right)\right)\left(\log(d+ex)\log\left(\frac{e(f+gx)}{ef-dg}\right)+\text{Li}_2\left(\frac{g(d+ex)}{dg-ef}\right)\right)h^2+4b^2e^2g^2n^2\left(\text{lo}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((h + i*x)^2*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x),x]
```

```
[Out] (4*e^2*g*i*(2*g*h - f*i)*x*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2
+ 2*e^2*g^2*i^2*x^2*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 + 4*e^2
*(g*h - f*i)^2*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2*Log[f + g*x]
 + 8*b*e^2*g^2*h^2*n*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*(Log[d +
 e*x]*Log[(e*(f + g*x))/(e*f - d*g)] + PolyLog[2, (g*(d + e*x))/(-(e*f) + d
*g)]) + 2*b*i^2*n*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*(e*g*(e*x*(
4*f - g*x) + 2*d*(2*f + g*x)) - 2*Log[d + e*x]*(g*(d + e*x)*(2*e*f + d*g -
e*g*x) - 2*e^2*f^2*Log[(e*(f + g*x))/(e*f - d*g)]) + 4*e^2*f^2*PolyLog[2, (
g*(d + e*x))/(-(e*f) + d*g)]) - 16*b*e*g*h*i*n*(a - b*n*Log[d + e*x] + b*Lo
g[c*(d + e*x)^n])*(-(g*(d + e*x)*(-1 + Log[d + e*x])) + e*f*(Log[d + e*x]*L
```

```
og[(e*(f + g*x))/(e*f - d*g)] + PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)]))
+ 8*b^2*e*g*h*i*n^2*(g*(2*e*x - 2*(d + e*x)*Log[d + e*x] + (d + e*x)*Log[d
+ e*x]^2) - e*f*(Log[d + e*x]^2*Log[(e*(f + g*x))/(e*f - d*g)] + 2*Log[d +
e*x]*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - 2*PolyLog[3, (g*(d + e*x))/
(-(e*f) + d*g)])) - b^2*i^2*n^2*(4*e*f*g*(2*e*x - 2*(d + e*x)*Log[d + e*x]
+ (d + e*x)*Log[d + e*x]^2) + g^2*(e*x*(6*d - e*x) + (-6*d^2 - 4*d*e*x + 2*
e^2*x^2)*Log[d + e*x] + 2*(d^2 - e^2*x^2)*Log[d + e*x]^2) - 4*e^2*f^2*(Log[
d + e*x]^2*Log[(e*(f + g*x))/(e*f - d*g)] + 2*Log[d + e*x]*PolyLog[2, (g*(d
 + e*x))/(-(e*f) + d*g)] - 2*PolyLog[3, (g*(d + e*x))/(-(e*f) + d*g)])) + 4
*b^2*e^2*g^2*h^2*n^2*(Log[d + e*x]^2*Log[(e*(f + g*x))/(e*f - d*g)] + 2*Log
[d + e*x]*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - 2*PolyLog[3, (g*(d + e
*x))/(-(e*f) + d*g)]))/(4*e^2*g^3)
```

fricas [F] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{a^2i^2x^2 + 2\,a^2hix + a^2h^2 + \left(b^2i^2x^2 + 2\,b^2hix + b^2h^2\right)\log\left((ex+d)^n c\right)^2 + 2\left(abi^2x^2 + 2\,abhix + abh^2\right)\log}{gx+f}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2*(a+b*log(c*(e*x+d)^n))^2/(g*x+f),x, algorithm="fricas")
```

```
[Out] integral((a^2*i^2*x^2 + 2*a^2*h*i*x + a^2*h^2 + (b^2*i^2*x^2 + 2*b^2*h*i*x
+ b^2*h^2)*log((e*x + d)^n*c)^2 + 2*(a*b*i^2*x^2 + 2*a*b*h*i*x + a*b*h^2)*l
og((e*x + d)^n*c))/(g*x + f), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(ix+h)^2\left(b\log\left((ex+d)^n c\right)+a\right)^2}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2*(a+b*log(c*(e*x+d)^n))^2/(g*x+f),x, algorithm="giac")
```

```
[Out] integrate((i*x + h)^2*(b*log((e*x + d)^n*c) + a)^2/(g*x + f), x)
```

maple [F] time = 1.77, size = 0, normalized size = 0.00

$$\int \frac{(ix+h)^2\left(b\ln\left(c\,(ex+d)^n\right)+a\right)^2}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)^2*(b*ln(c*(e*x+d)^n)+a)^2/(g*x+f),x)
```

```
[Out] int((i*x+h)^2*(b*ln(c*(e*x+d)^n)+a)^2/(g*x+f),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$2\,a^2hi\left(\frac{x}{g} - \frac{f\log\left(gx+f\right)}{g^2}\right) + \frac{1}{2}\,a^2i^2\left(\frac{2\,f^2\log\left(gx+f\right)}{g^3} + \frac{gx^2 - 2\,fx}{g^2}\right) + \frac{a^2h^2\log\left(gx+f\right)}{g} + \int \frac{b^2h^2\log(c)^2 + 2\,abh}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2*(a+b*log(c*(e*x+d)^n))^2/(g*x+f),x, algorithm="maxima")
```

```
[Out] 2*a^2*h*i*(x/g - f*log(g*x + f)/g^2) + 1/2*a^2*i^2*(2*f^2*log(g*x + f)/g^3
+ (g*x^2 - 2*f*x)/g^2) + a^2*h^2*log(g*x + f)/g + integrate((b^2*h^2*log(c)
^2 + 2*a*b*h^2*log(c) + (b^2*i^2*log(c)^2 + 2*a*b*i^2*log(c))*x^2 + (b^2*i^
```

```
2*x^2 + 2*b^2*h*i*x + b^2*h^2)*log((e*x + d)^n)^2 + 2*(b^2*h*i*log(c)^2 + 2
*a*b*h*i*log(c))*x + 2*(b^2*h^2*log(c) + a*b*h^2 + (b^2*i^2*log(c) + a*b*i^
2)*x^2 + 2*(b^2*h*i*log(c) + a*b*h*i)*x)*log((e*x + d)^n))/(g*x + f), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(h+i\,x)^2\,\left(a+b\,\ln\left(c\,(d+e\,x)^n\right)\right)^2}{f+g\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((h + i*x)^2*(a + b*log(c*(d + e*x)^n))^2)/(f + g*x),x)
[Out] int(((h + i*x)^2*(a + b*log(c*(d + e*x)^n))^2)/(f + g*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\log\left(c\,(d+ex)^n\right)\right)^2\,(h+ix)^2}{f+gx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)**2*(a+b*ln(c*(e*x+d)**n))**2/(g*x+f),x)
[Out] Integral((a + b*log(c*(d + e*x)**n))**2*(h + i*x)**2/(f + g*x), x)
```

3.225 $\int \frac{(h+ix)\left(a+b\log(c(d+ex)^n)\right)^2}{f+gx}\,dx$

Optimal. Leaf size=215

$$\frac{2bn(gh-fi)\text{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^2}+\frac{(gh-fi)\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{g^2}+\frac{i(d+ex)\left(a\right.}{}$$

```
[Out] -2*a*b*i*n*x/g+2*b^2*i*n^2*x/g-2*b^2*i*n*(e*x+d)*ln(c*(e*x+d)^n)/e/g+i*(e*x
+d)*(a+b*ln(c*(e*x+d)^n))^2/e/g+(-f*i+g*h)*(a+b*ln(c*(e*x+d)^n))^2*ln(e*(g*
x+f)/(-d*g+e*f))/g^2+2*b*(-f*i+g*h)*n*(a+b*ln(c*(e*x+d)^n))*polylog(2,-g*(e
*x+d)/(-d*g+e*f))/g^2-2*b^2*(-f*i+g*h)*n^2*polylog(3,-g*(e*x+d)/(-d*g+e*f))
/g^2
```

Rubi [A] time = 0.27, antiderivative size = 215, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 8, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.276, Rules used = {2418, 2389, 2296, 2295, 2396, 2433, 2374, 6589}

$$\frac{2bn(gh-fi)\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^2}-\frac{2b^2n^2(gh-fi)\text{PolyLog}\left(3,-\frac{g(d+ex)}{ef-dg}\right)}{g^2}+\frac{(gh-fi)\log\left(\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[((h + i*x)*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x),x]
```

```
[Out] (-2*a*b*i*n*x)/g + (2*b^2*i*n^2*x)/g - (2*b^2*i*n*(d + e*x)*Log[c*(d + e*x)
^n])/(e*g) + (i*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(e*g) + ((g*h - f*i
)*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(f + g*x))/(e*f - d*g)])/g^2 + (2*b*(
g*h - f*i)*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((g*(d + e*x))/(e*f - d
*g))])/g^2 - (2*b^2*(g*h - f*i)*n^2*PolyLog[3, -((g*(d + e*x))/(e*f - d*g))
])/g^2
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(h+225x)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{f+gx}\,dx = \int \left(\frac{225\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{g} + \frac{(-225f+gh)\left(a+b\log\left(c(d\right.\right.}{g(f+gx)}\right.$$

$$= \frac{225\int \left(a+b\log\left(c(d+ex)^n\right)\right)^2\,dx}{g} + \frac{(-225f+gh)\int \frac{\left(a+b\log(c(d+e\right.}{f+gx}}{g}$$

$$= -\frac{(225f-gh)\left(a+b\log\left(c(d+ex)^n\right)\right)^2\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g^2} + \frac{225\,\mathrm{Subst}}{}$$

$$= \frac{225(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{eg} - \frac{(225f-gh)\left(a+b\log\left(c(\right.\right.}{g^2}$$

$$= -\frac{450abnx}{g} + \frac{225(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{eg} - \frac{(225f-gh)}{}$$

$$= -\frac{450abnx}{g} + \frac{450b^2n^2x}{g} - \frac{450b^2n(d+ex)\log\left(c(d+ex)^n\right)}{eg} + \frac{225(}{}$$

Mathematica [B] time = 0.34, size = 460, normalized size = 2.14

$$\frac{e(gh-fi)\log(f+gx)\left(a+b\log\left(c(d+ex)^n\right)-bn\log(d+ex)\right)^2+2beghn\left(\text{Li}_2\left(\frac{g(d+ex)}{dg-ef}\right)+\log(d+ex)\log\left(\frac{e(f+gx)}{ef-dg}\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((h + i*x)*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x),x]
```

```
[Out] (e*g*i*x*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 + e*(g*h - f*i)*(a
 - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2*Log[f + g*x] + 2*b*e*g*h*n*(a
 - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*(Log[d + e*x]*Log[(e*(f + g*x))
/(e*f - d*g)] + PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)]) - 2*b*i*n*(a - b*
n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*(-(g*(d + e*x)*(-1 + Log[d + e*x]))
+ e*f*(Log[d + e*x]*Log[(e*(f + g*x))/(e*f - d*g)] + PolyLog[2, (g*(d + e*x
))/(-(e*f) + d*g)])) + b^2*i*n^2*(g*(2*e*x - 2*(d + e*x)*Log[d + e*x] + (d
+ e*x)*Log[d + e*x]^2) - e*f*(Log[d + e*x]^2*Log[(e*(f + g*x))/(e*f - d*g)]
 + 2*Log[d + e*x]*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - 2*PolyLog[3, (
g*(d + e*x))/(-(e*f) + d*g)])) + b^2*e*g*h*n^2*(Log[d + e*x]^2*Log[(e*(f +
g*x))/(e*f - d*g)] + 2*Log[d + e*x]*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)
] - 2*PolyLog[3, (g*(d + e*x))/(-(e*f) + d*g)]))/(e*g^2)
```

fricas [F] time = 0.48, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{a^2ix+a^2h+\left(b^2ix+b^2h\right)\log\left((ex+d)^nc\right)^2+2\left(abix+abh\right)\log\left((ex+d)^nc\right)}{gx+f},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*log(c*(e*x+d)^n))^2/(g*x+f),x, algorithm="fricas")
```

```
[Out] integral((a^2*i*x + a^2*h + (b^2*i*x + b^2*h)*log((e*x + d)^n*c)^2 + 2*(a*b
*i*x + a*b*h)*log((e*x + d)^n*c))/(g*x + f), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{(ix+h)\left(b\log\left((ex+d)^nc\right)+a\right)^2}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*log(c*(e*x+d)^n))^2/(g*x+f),x, algorithm="giac")
```

```
[Out] integrate((i*x + h)*(b*log((e*x + d)^n*c) + a)^2/(g*x + f), x)
```

maple [F] time = 1.78, size = 0, normalized size = 0.00

$$\int\frac{(ix+h)\left(b\ln\left(c\,(ex+d)^n\right)+a\right)^2}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)*(b*ln(c*(e*x+d)^n)+a)^2/(g*x+f),x)
```

```
[Out] int((i*x+h)*(b*ln(c*(e*x+d)^n)+a)^2/(g*x+f),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$a^2i\left(\frac{x}{g}-\frac{f\log\left(gx+f\right)}{g^2}\right)+\frac{a^2h\log\left(gx+f\right)}{g}+\int\frac{b^2h\log(c)^2+2\,abh\log(c)+\left(b^2ix+b^2h\right)\log\left((ex+d)^n\right)^2+\left(b^2i\log\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*log(c*(e*x+d)^n))^2/(g*x+f),x, algorithm="maxima")
```

```
[Out] a^2*i*(x/g - f*log(g*x + f)/g^2) + a^2*h*log(g*x + f)/g + integrate((b^2*h*
log(c)^2 + 2*a*b*h*log(c) + (b^2*i*x + b^2*h)*log((e*x + d)^n)^2 + (b^2*i*l
og(c)^2 + 2*a*b*i*log(c))*x + 2*(b^2*h*log(c) + a*b*h + (b^2*i*log(c) + a*b
*i)*x)*log((e*x + d)^n))/(g*x + f), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(h+i\,x)\,\left(a+b\,\ln\left(c\,(d+e\,x)^n\right)\right)^2}{f+g\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((h + i*x)*(a + b*log(c*(d + e*x)^n))^2)/(f + g*x),x)
```

```
[Out] int(((h + i*x)*(a + b*log(c*(d + e*x)^n))^2)/(f + g*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\log\left(c\,(d+ex)^n\right)\right)^2 (h+ix)}{f+gx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*ln(c*(e*x+d)**n))**2/(g*x+f),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**2*(h + i*x)/(f + g*x), x)
```

3.226 $\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{f+gx}\,dx$

Optimal. Leaf size=111

$$\frac{2bn\text{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g}+\frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{g}-\frac{2b^2n^2\text{Li}_3\left(-\frac{g(d+ex)}{ef-dg}\right)}{g}$$

```
[Out] (a+b*ln(c*(e*x+d)^n))^2*ln(e*(g*x+f)/(-d*g+e*f))/g+2*b*n*(a+b*ln(c*(e*x+d)^
n))*polylog(2,-g*(e*x+d)/(-d*g+e*f))/g-2*b^2*n^2*polylog(3,-g*(e*x+d)/(-d*g
+e*f))/g
```

Rubi [A] time = 0.11, antiderivative size = 111, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {2396, 2433, 2374, 6589}

$$\frac{2bn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g}-\frac{2b^2n^2\text{PolyLog}\left(3,-\frac{g(d+ex)}{ef-dg}\right)}{g}+\frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex\right.\right.}{g}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^2/(f + g*x),x]
```

```
[Out] ((a + b*Log[c*(d + e*x)^n])^2*Log[(e*(f + g*x))/(e*f - d*g)])/g + (2*b*n*(a
 + b*Log[c*(d + e*x)^n])*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/g - (2*b
^2*n^2*PolyLog[3, -((g*(d + e*x))/(e*f - d*g))])/g
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{f+gx}\,dx = \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} - \frac{(2ben)\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e(f+gx)}{ef-dg}\right)}{d+ex}d}{g}$$

$$= \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} - \frac{(2bn)\,\mathrm{Subst}\left(\int \frac{\left(a+b\log(cx^n)\right)\log\left(\frac{e\left(\frac{ef-dg}{e}\right.}{ef-}\right.}{x}\right.}{g}$$

$$= \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} + \frac{2bn\left(a+b\log\left(c(d+ex)^n\right)\right)\mathrm{Li}_2\left(-\frac{g(}{e}\right.}{g}$$

$$= \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} + \frac{2bn\left(a+b\log\left(c(d+ex)^n\right)\right)\mathrm{Li}_2\left(-\frac{g(}{e}\right.}{g}$$

Mathematica [B] time = 0.12, size = 242, normalized size = 2.18

$$\frac{\log(f+gx)\left(a+b\log\left(c(d+ex)^n\right)-bn\log(d+ex)\right)^2+2abn\left(\mathrm{Li}_2\left(\frac{g(d+ex)}{dg-ef}\right)+\log(d+ex)\log\left(\frac{e(f+gx)}{ef-dg}\right)\right)+2b^2n}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^2/(f + g*x),x]
```

```
[Out] ((a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2*Log[f + g*x] + 2*a*b*n*(Lo
g[d + e*x]*Log[(e*(f + g*x))/(e*f - d*g)] + PolyLog[2, (g*(d + e*x))/(-(e*f
) + d*g)]) + 2*b^2*n*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n])*(Log[d + e*x]
*Log[(e*(f + g*x))/(e*f - d*g)] + PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)])
 + b^2*n^2*(Log[d + e*x]^2*Log[(e*(f + g*x))/(e*f - d*g)] + 2*Log[d + e*x]*
PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - 2*PolyLog[3, (g*(d + e*x))/(-(e*
f) + d*g)]))/g
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{b^2\log\left((ex+d)^n c\right)^2+2\,ab\log\left((ex+d)^n c\right)+a^2}{gx+f},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f),x, algorithm="fricas")
```

```
[Out] integral((b^2*log((e*x + d)^n*c)^2 + 2*a*b*log((e*x + d)^n*c) + a^2)/(g*x +
 f), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)^2}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2/(g*x + f), x)
```

maple [C] time = 0.09, size = 2018, normalized size = 18.18

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)^2/(g*x+f),x)
```

```
[Out] -I/g*n*dilog((d*g-e*f+(g*x+f)*e)/(d*g-e*f))*b^2*Pi*csgn(I*(e*x+d)^n)*csgn(I
*c*(e*x+d)^n)^2+I*ln(g*x+f)/g*ln((e*x+d)^n)*b^2*Pi*csgn(I*c)*csgn(I*c*(e*x+
d)^n)^2+I*ln(g*x+f)/g*ln(c)*Pi*b^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*ln(g*x
+f)/g*Pi*a*b*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+I*ln(g*x+f)/g*ln((e*x+
d)^n)*b^2*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+I*ln(g*x+f)/g*Pi*a*b*c
sgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*ln(g*x+f)/g*ln(c)*Pi*b^2*csgn(I*(e*x+d)^n)
*csgn(I*c*(e*x+d)^n)^2+I/g*n*ln(g*x+f)*ln((d*g-e*f+(g*x+f)*e)/(d*g-e*f))*b^
2*Pi*csgn(I*c*(e*x+d)^n)^3-I/g*n*dilog((d*g-e*f+(g*x+f)*e)/(d*g-e*f))*b^2*P
i*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-I*ln(g*x+f)/g*ln((e*x+d)^n)*b^2*Pi*csgn(I
*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-I*ln(g*x+f)/g*Pi*a*b*csgn(I*c)*cs
gn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-I*ln(g*x+f)/g*ln(c)*Pi*b^2*csgn(I*c)*cs
gn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-I/g*n*ln(g*x+f)*ln((d*g-e*f+(g*x+f)*e)/
(d*g-e*f))*b^2*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+a^2/g*ln(g*x+f)+I
/g*n*dilog((d*g-e*f+(g*x+f)*e)/(d*g-e*f))*b^2*Pi*csgn(I*c*(e*x+d)^n)^3-ln(g
*x+f)/g*Pi^2*b^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^4-1/4*ln(g
*x+f)/g*Pi^2*b^2*csgn(I*c*(e*x+d)^n)^6+b^2/g*ln(c)^2*ln(g*x+f)-1/4*ln(g*x+f
)/g*Pi^2*b^2*csgn(I*c)^2*csgn(I*c*(e*x+d)^n)^4+1/2*ln(g*x+f)/g*Pi^2*b^2*csg
n(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^5-1/4*ln(g*x+f)/g*Pi^2*b^2*csgn(I*(e*x+d
)^n)^2*csgn(I*c*(e*x+d)^n)^4+1/2*ln(g*x+f)/g*Pi^2*b^2*csgn(I*c)*csgn(I*c*(e
*x+d)^n)^5+1/2*ln(g*x+f)/g*Pi^2*b^2*csgn(I*c)*csgn(I*(e*x+d)^n)^2*csgn(I*c*
(e*x+d)^n)^3+1/2*ln(g*x+f)/g*Pi^2*b^2*csgn(I*c)^2*csgn(I*(e*x+d)^n)*csgn(I*
c*(e*x+d)^n)^3+b^2/g*n^2*ln(-d*g+e*f+(e*x+d)*g)*ln(e*x+d)^2+2*b^2*n*dilog((
-d*g+e*f+(e*x+d)*g)/(-d*g+e*f))/g*ln((e*x+d)^n)+b^2/g*ln((e*x+d)^n)^2*ln(-d
*g+e*f+(e*x+d)*g)-1/4*ln(g*x+f)/g*Pi^2*b^2*csgn(I*c)^2*csgn(I*(e*x+d)^n)^2*
csgn(I*c*(e*x+d)^n)^2-I*ln(g*x+f)/g*Pi*a*b*csgn(I*c*(e*x+d)^n)^3-I*ln(g*x+f
)/g*ln(c)*Pi*b^2*csgn(I*c*(e*x+d)^n)^3-2*b/g*n*dilog((d*g-e*f+(g*x+f)*e)/(d
*g-e*f))*a-2/g*n*dilog((d*g-e*f+(g*x+f)*e)/(d*g-e*f))*b^2*ln(c)+2*a*b/g*ln(
c)*ln(g*x+f)-I/g*n*ln(g*x+f)*ln((d*g-e*f+(g*x+f)*e)/(d*g-e*f))*b^2*Pi*csgn(
I*c)*csgn(I*c*(e*x+d)^n)^2-I*ln(g*x+f)/g*ln((e*x+d)^n)*b^2*Pi*csgn(I*c*(e*x
+d)^n)^3+I/g*n*dilog((d*g-e*f+(g*x+f)*e)/(d*g-e*f))*b^2*Pi*csgn(I*c)*csgn(I
*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-2*b^2*n^2/g*polylog(3,1/(d*g-e*f)*(e*x+d)*g
)+I/g*n*ln(g*x+f)*ln((d*g-e*f+(g*x+f)*e)/(d*g-e*f))*b^2*Pi*csgn(I*c)*csgn(I
*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+b^2/g*n^2*ln(-1/(d*g-e*f)*(e*x+d)*g+1)*ln(e
*x+d)^2+2*b^2*n^2/g*ln(e*x+d)*polylog(2,1/(d*g-e*f)*(e*x+d)*g)-2*b^2*n^2*di
log((-d*g+e*f+(e*x+d)*g)/(-d*g+e*f))/g*ln(e*x+d)-2*b^2/g*n^2*ln((-d*g+e*f+(
e*x+d)*g)/(-d*g+e*f))*ln(e*x+d)^2+2*a*b/g*ln((e*x+d)^n)*ln(g*x+f)+2*b^2/g*l
n(c)*ln((e*x+d)^n)*ln(g*x+f)-2*b^2/g*n*ln(c)*ln((d*g-e*f+(g*x+f)*e)/(d*g-e*
f))*ln(g*x+f)-2*a*b/g*n*ln((d*g-e*f+(g*x+f)*e)/(d*g-e*f))*ln(g*x+f)-2*b^2/g
*n*ln((e*x+d)^n)*ln(-d*g+e*f+(e*x+d)*g)*ln(e*x+d)+2*b^2/g*n*ln((e*x+d)^n)*l
n((-d*g+e*f+(e*x+d)*g)/(-d*g+e*f))*ln(e*x+d)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{a^2 \log\left(gx+f\right)}{g}+\int \frac{b^2 \log\left(\left(ex+d\right)^n\right)^2 + b^2 \log(c)^2 + 2\,ab\log(c) + 2\left(b^2\log(c)+ab\right)\log\left(\left(ex+d\right)^n\right)}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f),x, algorithm="maxima")
```

```
[Out] a^2*log(g*x + f)/g + integrate((b^2*log((e*x + d)^n)^2 + b^2*log(c)^2 + 2*a
*b*log(c) + 2*(b^2*log(c) + a*b)*log((e*x + d)^n))/(g*x + f), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)^2}{f+g\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^2/(f + g*x),x)
[Out] int((a + b*log(c*(d + e*x)^n))^2/(f + g*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\log\left(c\left(d+ex\right)^n\right)\right)^2}{f+gx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2/(g*x+f),x)
[Out] Integral((a + b*log(c*(d + e*x)**n))**2/(f + g*x), x)
```

3.227 $\int \frac{(a+b\log(c(d+ex)^n))^2}{(f+gx)(h+ix)}\,dx$

Optimal. Leaf size=264

$$\frac{2bn\text{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{gh-fi}-\frac{2bn\text{Li}_2\left(-\frac{i(d+ex)}{eh-di}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{gh-fi}+\frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d\right.\right.}{gh-fi}$$

```
[Out] (a+b*ln(c*(e*x+d)^n))^2*ln(e*(g*x+f)/(-d*g+e*f))/(-f*i+g*h)-(a+b*ln(c*(e*x+
d)^n))^2*ln(e*(i*x+h)/(-d*i+e*h))/(-f*i+g*h)+2*b*n*(a+b*ln(c*(e*x+d)^n))*po
lylog(2,-g*(e*x+d)/(-d*g+e*f))/(-f*i+g*h)-2*b*n*(a+b*ln(c*(e*x+d)^n))*polyl
og(2,-i*(e*x+d)/(-d*i+e*h))/(-f*i+g*h)-2*b^2*n^2*polylog(3,-g*(e*x+d)/(-d*g
+e*f))/(-f*i+g*h)+2*b^2*n^2*polylog(3,-i*(e*x+d)/(-d*i+e*h))/(-f*i+g*h)
```

Rubi [A] time = 0.37, antiderivative size = 264, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.161, Rules used = {2418, 2396, 2433, 2374, 6589}

$$\frac{2bn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{gh-fi}-\frac{2bn\text{PolyLog}\left(2,-\frac{i(d+ex)}{eh-di}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{gh-fi}-\frac{2b^2n^2\text{Poly}}{g}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^2/((f + g*x)*(h + i*x)),x]
```

```
[Out] ((a + b*Log[c*(d + e*x)^n])^2*Log[(e*(f + g*x))/(e*f - d*g)])/(g*h - f*i) -
 ((a + b*Log[c*(d + e*x)^n])^2*Log[(e*(h + i*x))/(e*h - d*i)])/(g*h - f*i)
+ (2*b*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))
])/(g*h - f*i) - (2*b*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((i*(d + e*x
))/(e*h - d*i))])/(g*h - f*i) - (2*b^2*n^2*PolyLog[3, -((g*(d + e*x))/(e*f
- d*g))])/(g*h - f*i) + (2*b^2*n^2*PolyLog[3, -((i*(d + e*x))/(e*h - d*i))]
)/(g*h - f*i)
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{(h+227x)(f+gx)}\,dx = \int \left(\frac{227\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{(227f-gh)(h+227x)} - \frac{g\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{(227f-gh)(f+gx)}\right) dx$$

$$= \frac{227\int \frac{\left(a+b\log(c(d+ex)^n)\right)^2}{h+227x}\,dx}{227f-gh} - \frac{g\int \frac{\left(a+b\log(c(d+ex)^n)\right)^2}{f+gx}\,dx}{227f-gh}$$

$$= \frac{\log\left(-\frac{e(h+227x)}{227d-eh}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{227f-gh} - \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2\log\left(\frac{e(f-}{ef-}\right.}{227f-gh}$$

$$= \frac{\log\left(-\frac{e(h+227x)}{227d-eh}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{227f-gh} - \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2\log\left(\frac{e(f-}{ef-}\right.}{227f-gh}$$

$$= \frac{\log\left(-\frac{e(h+227x)}{227d-eh}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{227f-gh} - \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2\log\left(\frac{e(f-}{ef-}\right.}{227f-gh}$$

$$= \frac{\log\left(-\frac{e(h+227x)}{227d-eh}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{227f-gh} - \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2\log\left(\frac{e(f-}{ef-}\right.}{227f-gh}$$

Mathematica [A] time = 0.32, size = 353, normalized size = 1.34

$$2bn\left(a+b\log\left(c(d+ex)^n\right)-bn\log(d+ex)\right)\left(\log(d+ex)\left(\log\left(\frac{e(f+gx)}{ef-dg}\right)-\log\left(\frac{e(h+ix)}{eh-di}\right)\right)+\text{Li}_2\left(\frac{g(d+ex)}{dg-ef}\right)-\text{Li}_2\left(\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^2/((f + g*x)*(h + i*x)),x]
```

```
[Out] ((a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2*Log[f + g*x] - (a - b*n*Lo
g[d + e*x] + b*Log[c*(d + e*x)^n])^2*Log[h + i*x] + 2*b*n*(a - b*n*Log[d +
e*x] + b*Log[c*(d + e*x)^n])*(Log[d + e*x]*(Log[(e*(f + g*x))/(e*f - d*g)]
- Log[(e*(h + i*x))/(e*h - d*i)]) + PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)
] - PolyLog[2, (i*(d + e*x))/(-(e*h) + d*i)]) + b^2*n^2*(Log[d + e*x]^2*Log
[(e*(f + g*x))/(e*f - d*g)] - Log[d + e*x]^2*Log[(e*(h + i*x))/(e*h - d*i)]
 + 2*Log[d + e*x]*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - 2*Log[d + e*x]
*PolyLog[2, (i*(d + e*x))/(-(e*h) + d*i)] - 2*PolyLog[3, (g*(d + e*x))/(-(e
*f) + d*g)] + 2*PolyLog[3, (i*(d + e*x))/(-(e*h) + d*i)]))/(g*h - f*i)
```

fricas [F] time = 0.42, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b^2\log\left((ex+d)^n c\right)^2 + 2\,ab\log\left((ex+d)^n c\right) + a^2}{gix^2 + fh + \left(gh + fi\right)x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)/(i*x+h),x, algorithm="fricas")
```

```
[Out] integral((b^2*log((e*x + d)^n*c)^2 + 2*a*b*log((e*x + d)^n*c) + a^2)/(g*i*x
^2 + f*h + (g*h + f*i)*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\log\left((ex+d)^n c\right) + a\right)^2}{\left(gx + f\right)(ix + h)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)/(i*x+h),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2/((g*x + f)*(i*x + h)), x)
```

maple [C] time = 0.63, size = 4712, normalized size = 17.85

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)^2/(g*x+f)/(i*x+h),x)
```

```
[Out] -a^2/(f*i-g*h)*ln(g*x+f)+a^2/(f*i-g*h)*ln(i*x+h)-I*n/(f*i-g*h)*ln(g*x+f)*ln
((d*g-e*f+(g*x+f)*e)/(d*g-e*f))*b^2*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c
*(e*x+d)^n)-2*b^2*n^2/(f*i-g*h)*polylog(3,-i*(e*x+d)/(-d*i+e*h))+2*b^2*n^2/
(f*i-g*h)*polylog(3,-g*(e*x+d)/(-d*g+e*f))+I*ln((e*x+d)^n)/(f*i-g*h)*ln(g*x
+f)*b^2*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*n/(f*i-g*h)*ln
(g*x+f)*ln((d*g-e*f+(g*x+f)*e)/(d*g-e*f))*b^2*Pi*csgn(I*c)*csgn(I*c*(e*x+d)
^n)^2+I*n/(f*i-g*h)*ln(g*x+f)*ln((d*g-e*f+(g*x+f)*e)/(d*g-e*f))*b^2*Pi*csgn
(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+I*n/(f*i-g*h)*dilog((d*i-e*h+(i*x+h)*e)
/(d*i-e*h))*b^2*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I/(f*i-g
*h)*ln(g*x+f)*ln(c)*Pi*b^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+
b^2/(f*i-g*h)*ln((e*x+d)*i-d*i+e*h)*ln((e*x+d)^n)^2-b^2/(f*i-g*h)*ln(-d*g+e
*f+(e*x+d)*g)*ln((e*x+d)^n)^2+I/(f*i-g*h)*ln(g*x+f)*Pi*a*b*csgn(I*c)*csgn(I
*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-2*b^2*n/(f*i-g*h)*dilog((-d*g+e*f+(e*x+d)*g
)/(-d*g+e*f))*ln((e*x+d)^n)-1/4/(f*i-g*h)*ln(i*x+h)*Pi^2*b^2*csgn(I*c*(e*x+
d)^n)^6-2*ln((e*x+d)^n)/(f*i-g*h)*ln(g*x+f)*b^2*ln(c)+2/(f*i-g*h)*ln(i*x+h)
*ln((e*x+d)^n)*b^2*ln(c)-2*b*ln((e*x+d)^n)/(f*i-g*h)*ln(g*x+f)*a+2*b^2*n/(f
*i-g*h)*dilog(((e*x+d)*i-d*i+e*h)/(-d*i+e*h))*ln((e*x+d)^n)-I/(f*i-g*h)*ln(
i*x+h)*Pi*a*b*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-I*n/(f*i-g*h)
*dilog((d*g-e*f+(g*x+f)*e)/(d*g-e*f))*b^2*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*cs
gn(I*c*(e*x+d)^n)-2*b*n/(f*i-g*h)*ln(i*x+h)*ln((d*i-e*h+(i*x+h)*e)/(d*i-e*h
))*a+2*b*n/(f*i-g*h)*ln(g*x+f)*ln((d*g-e*f+(g*x+f)*e)/(d*g-e*f))*a-2*n/(f*i
-g*h)*ln(i*x+h)*ln((d*i-e*h+(i*x+h)*e)/(d*i-e*h))*b^2*ln(c)+2*n/(f*i-g*h)*l
n(g*x+f)*ln((d*g-e*f+(g*x+f)*e)/(d*g-e*f))*b^2*ln(c)-1/(f*i-g*h)*ln(g*x+f)*
ln(c)^2*b^2+1/(f*i-g*h)*ln(i*x+h)*ln(c)^2*b^2+I*n/(f*i-g*h)*ln(i*x+h)*ln((d
*i-e*h+(i*x+h)*e)/(d*i-e*h))*b^2*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e
*x+d)^n)-1/(f*i-g*h)*ln(i*x+h)*Pi^2*b^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*
c*(e*x+d)^n)^4+I*ln((e*x+d)^n)/(f*i-g*h)*ln(g*x+f)*b^2*Pi*csgn(I*c*(e*x+d)^
n)^3-I/(f*i-g*h)*ln(i*x+h)*ln((e*x+d)^n)*b^2*Pi*csgn(I*c*(e*x+d)^n)^3-I*n/(
f*i-g*h)*dilog((d*g-e*f+(g*x+f)*e)/(d*g-e*f))*b^2*Pi*csgn(I*c*(e*x+d)^n)^3-
```

```
1/2/(f*i-g*h)*ln(g*x+f)*Pi^2*b^2*csgn(I*c)*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*
x+d)^n)^3+1/4/(f*i-g*h)*ln(g*x+f)*Pi^2*b^2*csgn(I*c)^2*csgn(I*(e*x+d)^n)^2*
csgn(I*c*(e*x+d)^n)^2+1/2/(f*i-g*h)*ln(i*x+h)*Pi^2*b^2*csgn(I*c)^2*csgn(I*(
e*x+d)^n)*csgn(I*c*(e*x+d)^n)^3+1/2/(f*i-g*h)*ln(i*x+h)*Pi^2*b^2*csgn(I*c)*
csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^3-2*b^2*n/(f*i-g*h)*ln(e*x+d)*ln((-
d*g+e*f+(e*x+d)*g)/(-d*g+e*f))*ln((e*x+d)^n)+1/4/(f*i-g*h)*ln(g*x+f)*Pi^2*b
^2*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^4+I*n/(f*i-g*h)*dilog((d*i-e*h+(
i*x+h)*e)/(d*i-e*h))*b^2*Pi*csgn(I*c*(e*x+d)^n)^3+I/(f*i-g*h)*ln(g*x+f)*ln(
c)*Pi*b^2*csgn(I*c*(e*x+d)^n)^3+I/(f*i-g*h)*ln(g*x+f)*Pi*a*b*csgn(I*c*(e*x+
d)^n)^3-2*b*n/(f*i-g*h)*dilog((d*i-e*h+(i*x+h)*e)/(d*i-e*h))*a+2*b*n/(f*i-g
*h)*dilog((d*g-e*f+(g*x+f)*e)/(d*g-e*f))*a-I*n/(f*i-g*h)*ln(i*x+h)*ln((d*i-
e*h+(i*x+h)*e)/(d*i-e*h))*b^2*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/
4/(f*i-g*h)*ln(i*x+h)*Pi^2*b^2*csgn(I*c)^2*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*
x+d)^n)^2-1/2/(f*i-g*h)*ln(g*x+f)*Pi^2*b^2*csgn(I*c)^2*csgn(I*(e*x+d)^n)*cs
gn(I*c*(e*x+d)^n)^3-2*b^2*n^2/(f*i-g*h)*ln(e*x+d)^2*ln(((e*x+d)*i-d*i+e*h)/
(-d*i+e*h))+2*b^2*n^2/(f*i-g*h)*dilog((-d*g+e*f+(e*x+d)*g)/(-d*g+e*f))*ln(e
*x+d)+2*b^2*n^2/(f*i-g*h)*ln(e*x+d)^2*ln((-d*g+e*f+(e*x+d)*g)/(-d*g+e*f))+1
/4/(f*i-g*h)*ln(g*x+f)*Pi^2*b^2*csgn(I*c*(e*x+d)^n)^6-I/(f*i-g*h)*ln(i*x+h)
*ln(c)*Pi*b^2*csgn(I*c*(e*x+d)^n)^3-I/(f*i-g*h)*ln(i*x+h)*Pi*a*b*csgn(I*c*(
e*x+d)^n)^3-2*n/(f*i-g*h)*dilog((d*i-e*h+(i*x+h)*e)/(d*i-e*h))*b^2*ln(c)+2/
(f*i-g*h)*ln(i*x+h)*ln(c)*a*b+2*n/(f*i-g*h)*dilog((d*g-e*f+(g*x+f)*e)/(d*g-
e*f))*b^2*ln(c)-2/(f*i-g*h)*ln(g*x+f)*ln(c)*a*b+1/(f*i-g*h)*ln(g*x+f)*Pi^2*
b^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^4-I*n/(f*i-g*h)*dilog((
d*i-e*h+(i*x+h)*e)/(d*i-e*h))*b^2*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^
2-I/(f*i-g*h)*ln(g*x+f)*ln(c)*Pi*b^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^
2-I/(f*i-g*h)*ln(g*x+f)*Pi*a*b*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I/(f*i-g*h)*
ln(i*x+h)*ln((e*x+d)^n)*b^2*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I/(f
*i-g*h)*ln(g*x+f)*ln(c)*Pi*b^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-b^2/(f*i-g*h
)*ln(-d*g+e*f+(e*x+d)*g)*ln(e*x+d)^2*n^2+b^2*n^2/(f*i-g*h)*ln(e*x+d)^2*ln(1
+i*(e*x+d)/(-d*i+e*h))+2*b^2*n^2/(f*i-g*h)*ln(e*x+d)*polylog(2,-i*(e*x+d)/(
-d*i+e*h))-b^2*n^2/(f*i-g*h)*ln(e*x+d)^2*ln(1+g*(e*x+d)/(-d*g+e*f))-2*b^2*n
^2/(f*i-g*h)*ln(e*x+d)*polylog(2,-g*(e*x+d)/(-d*g+e*f))-2*b^2*n^2/(f*i-g*h)
*dilog(((e*x+d)*i-d*i+e*h)/(-d*i+e*h))*ln(e*x+d)+2*b/(f*i-g*h)*ln(i*x+h)*ln
((e*x+d)^n)*a-I*n/(f*i-g*h)*dilog((d*i-e*h+(i*x+h)*e)/(d*i-e*h))*b^2*Pi*csg
n(I*c)*csgn(I*c*(e*x+d)^n)^2-I/(f*i-g*h)*ln(g*x+f)*Pi*a*b*csgn(I*(e*x+d)^n)
*csgn(I*c*(e*x+d)^n)^2-I*n/(f*i-g*h)*ln(g*x+f)*ln((d*g-e*f+(g*x+f)*e)/(d*g-
e*f))*b^2*Pi*csgn(I*c*(e*x+d)^n)^3-I*ln((e*x+d)^n)/(f*i-g*h)*ln(g*x+f)*b^2*
Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*n/(f*i-g*h)*ln(i*x+h)*ln((d*i-e*h+(i*x
+h)*e)/(d*i-e*h))*b^2*Pi*csgn(I*c*(e*x+d)^n)^3+I*n/(f*i-g*h)*dilog((d*g-e*f
+(g*x+f)*e)/(d*g-e*f))*b^2*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*n/(f*i-g*h)
*dilog((d*g-e*f+(g*x+f)*e)/(d*g-e*f))*b^2*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*
x+d)^n)^2+I/(f*i-g*h)*ln(i*x+h)*ln((e*x+d)^n)*b^2*Pi*csgn(I*c)*csgn(I*c*(e*
x+d)^n)^2+I/(f*i-g*h)*ln(i*x+h)*Pi*a*b*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n
)^2+I/(f*i-g*h)*ln(i*x+h)*ln(c)*Pi*b^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I/(f
*i-g*h)*ln(i*x+h)*Pi*a*b*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I/(f*i-g*h)*ln(i*x
+h)*ln(c)*Pi*b^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+b^2/(f*i-g*h)*ln((
e*x+d)*i-d*i+e*h)*ln(e*x+d)^2*n^2-I*ln((e*x+d)^n)/(f*i-g*h)*ln(g*x+f)*b^2*P
i*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/4/(f*i-g*h)*ln(i*x+h)*Pi^2*b^2*
csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^4+1/2/(f*i-g*h)*ln(i*x+h)*Pi^2*b^2*
csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^5+1/4/(f*i-g*h)*ln(g*x+f)*Pi^2*b^2*cs
gn(I*c)^2*csgn(I*c*(e*x+d)^n)^4-2*b^2/(f*i-g*h)*ln((e*x+d)*i-d*i+e*h)*ln(e*
x+d)*ln((e*x+d)^n)*n+2*b^2/(f*i-g*h)*ln(-d*g+e*f+(e*x+d)*g)*ln(e*x+d)*ln((e
*x+d)^n)*n+2*b^2*n/(f*i-g*h)*ln(e*x+d)*ln(((e*x+d)*i-d*i+e*h)/(-d*i+e*h))*l
n((e*x+d)^n)-I*n/(f*i-g*h)*ln(i*x+h)*ln((d*i-e*h+(i*x+h)*e)/(d*i-e*h))*b^2*
Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-I/(f*i-g*h)*ln(i*x+h)*ln((e*x+d)^n)*b^2*
Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-I/(f*i-g*h)*ln(i*x+h)*ln
(c)*Pi*b^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/2/(f*i-g*h)*ln
(g*x+f)*Pi^2*b^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^5-1/2/(f*i-g*h)*ln(g*x+f)*Pi
^2*b^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^5-1/4/(f*i-g*h)*ln(i*x+h)*Pi^2
```

```
*b^2*csgn(I*c)^2*csgn(I*c*(e*x+d)^n)^4+1/2/(f*i-g*h)*ln(i*x+h)*Pi^2*b^2*csg
n(I*c)*csgn(I*c*(e*x+d)^n)^5
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$a^2\left(\frac{\log\left(gx+f\right)}{gh-fi}-\frac{\log\left(ix+h\right)}{gh-fi}\right)+\int\frac{b^2\log\left(\left(ex+d\right)^n\right)^2+b^2\log(c)^2+2\,ab\log(c)+2\left(b^2\log(c)+ab\right)\log\left(\left(ex+d\right)^n\right)}{gix^2+fh+\left(gh+fi\right)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)/(i*x+h),x, algorithm="maxima")
```

```
[Out] a^2*(log(g*x + f)/(g*h - f*i) - log(i*x + h)/(g*h - f*i)) + integrate((b^2*
log((e*x + d)^n)^2 + b^2*log(c)^2 + 2*a*b*log(c) + 2*(b^2*log(c) + a*b)*log
((e*x + d)^n))/(g*i*x^2 + f*h + (g*h + f*i)*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^2}{\left(f+g\,x\right)\,\left(h+i\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^2/((f + g*x)*(h + i*x)),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))^2/((f + g*x)*(h + i*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(a+b\log\left(c\left(d+ex\right)^{n}\right)\right)^{2}}{\left(f+gx\right)\left(h+ix\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2/(g*x+f)/(i*x+h),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**2/((f + g*x)*(h + i*x)), x)
```

3.228 $\int \frac{\left(a+b\log(c(d+ex)^n)\right)^2}{(f+gx)(h+ix)^2}\,dx$

Optimal. Leaf size=427

$$\frac{2bgn\mathrm{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{(gh-fi)^2}-\frac{2bgn\mathrm{Li}_2\left(-\frac{i(d+ex)}{eh-di}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{(gh-fi)^2}+\frac{2ben\log\left(\frac{e(h+ix)}{eh-di}\right)\left(a+\right.}{(eh-di)(\right.}$$

```
[Out] -i*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^2/(-d*i+e*h)/(-f*i+g*h)/(i*x+h)+g*(a+b*ln(
c*(e*x+d)^n))^2*ln(e*(g*x+f)/(-d*g+e*f))/(-f*i+g*h)^2+2*b*e*n*(a+b*ln(c*(e*
x+d)^n))*ln(e*(i*x+h)/(-d*i+e*h))/(-d*i+e*h)/(-f*i+g*h)-g*(a+b*ln(c*(e*x+d)
^n))^2*ln(e*(i*x+h)/(-d*i+e*h))/(-f*i+g*h)^2+2*b*g*n*(a+b*ln(c*(e*x+d)^n))*
polylog(2,-g*(e*x+d)/(-d*g+e*f))/(-f*i+g*h)^2+2*b^2*e*n^2*polylog(2,-i*(e*x
+d)/(-d*i+e*h))/(-d*i+e*h)/(-f*i+g*h)-2*b*g*n*(a+b*ln(c*(e*x+d)^n))*polylog
(2,-i*(e*x+d)/(-d*i+e*h))/(-f*i+g*h)^2-2*b^2*g*n^2*polylog(3,-g*(e*x+d)/(-d
*g+e*f))/(-f*i+g*h)^2+2*b^2*g*n^2*polylog(3,-i*(e*x+d)/(-d*i+e*h))/(-f*i+g*
h)^2
```

Rubi [A] time = 0.49, antiderivative size = 427, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 9, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.290$, Rules used = {2418, 2396, 2433, 2374, 6589, 2397, 2394, 2393, 2391}

$$\frac{2bgn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{(gh-fi)^2}-\frac{2bgn\text{PolyLog}\left(2,-\frac{i(d+ex)}{eh-di}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{(gh-fi)^2}+\frac{2b^2en}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^2/((f + g*x)*(h + i*x)^2),x]
```

```
[Out] -((i*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/((e*h - d*i)*(g*h - f*i)*(h +
i*x))) + (g*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(f + g*x))/(e*f - d*g)])/(g
*h - f*i)^2 + (2*b*e*n*(a + b*Log[c*(d + e*x)^n])*Log[(e*(h + i*x))/(e*h -
d*i)])/((e*h - d*i)*(g*h - f*i)) - (g*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(
h + i*x))/(e*h - d*i)])/(g*h - f*i)^2 + (2*b*g*n*(a + b*Log[c*(d + e*x)^n])
*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/(g*h - f*i)^2 + (2*b^2*e*n^2*Pol
yLog[2, -((i*(d + e*x))/(e*h - d*i))])/((e*h - d*i)*(g*h - f*i)) - (2*b*g*n
*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((i*(d + e*x))/(e*h - d*i))])/(g*h
- f*i)^2 - (2*b^2*g*n^2*PolyLog[3, -((g*(d + e*x))/(e*f - d*g))])/(g*h - f*
i)^2 + (2*b^2*g*n^2*PolyLog[3, -((i*(d + e*x))/(e*h - d*i))])/(g*h - f*i)^2
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
```

```
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2397

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_))^2, x_Symbol] :> Simp[((d + e*x)*(a + b*Log[c*(d + e*x)^n])^p)/((e*f
 - d*g)*(f + g*x)), x] - Dist[(b*e*n*p)/(e*f - d*g), Int[(a + b*Log[c*(d +
e*x)^n])^(p - 1)/(f + g*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] &&
 NeQ[e*f - d*g, 0] && GtQ[p, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{(h+228x)^2(f+gx)}\,dx = \int \left(\frac{228\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{(228f-gh)(h+228x)^2} - \frac{228g\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{(228f-gh)^2(h+228x)} + \frac{g^2\left(a+\right.}{(228\right.}$$

$$= -\frac{(228g)\int \frac{\left(a+b\log(c(d+ex)^n)\right)^2}{h+228x}\,dx}{(228f-gh)^2} + \frac{g^2\int \frac{\left(a+b\log(c(d+ex)^n)\right)^2}{f+gx}\,dx}{(228f-gh)^2} + \frac{228\int \frac{\left(a+b\log(c(\right.}{(h+22}}{228f-}$$

$$= -\frac{228(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{(228d-eh)(228f-gh)(h+228x)} - \frac{g\log\left(-\frac{e(h+228x)}{228d-eh}\right)\left(a+b\log\left(c(d+\right.\right.}{(228f-gh)^2}$$

$$= \frac{2ben\log\left(-\frac{e(h+228x)}{228d-eh}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{(228d-eh)(228f-gh)} - \frac{228(d+ex)\left(a+b\log\left(c(d+\right.\right.}{(228d-eh)(228f-gh)(h+}$$

$$= \frac{2ben\log\left(-\frac{e(h+228x)}{228d-eh}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{(228d-eh)(228f-gh)} - \frac{228(d+ex)\left(a+b\log\left(c(d+\right.\right.}{(228d-eh)(228f-gh)(h+}$$

$$= \frac{2ben\log\left(-\frac{e(h+228x)}{228d-eh}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{(228d-eh)(228f-gh)} - \frac{228(d+ex)\left(a+b\log\left(c(d+\right.\right.}{(228d-eh)(228f-gh)(h+}$$

Mathematica [A] time = 0.73, size = 630, normalized size = 1.48

$$\frac{-2bn\left(a+b\log\left(c(d+ex)^n\right)-bn\log(d+ex)\right)\left(-g(h+ix)(eh-di)\left(\text{Li}_2\left(\frac{g(d+ex)}{dg-ef}\right)+\log(d+ex)\log\left(\frac{e(f+gx)}{ef-dg}\right)\right)+\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^2/((f + g*x)*(h + i*x)^2),x]
```

```
[Out] ((e*h - d*i)*(g*h - f*i)*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 +
g*(e*h - d*i)*(h + i*x)*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2*Log
[f + g*x] - g*(e*h - d*i)*(h + i*x)*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*
x)^n])^2*Log[h + i*x] - 2*b*n*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])
*((g*h - f*i)*(i*(d + e*x)*Log[d + e*x] - e*(h + i*x)*Log[h + i*x]) - g*(e*
h - d*i)*(h + i*x)*(Log[d + e*x]*Log[(e*(f + g*x))/(e*f - d*g)] + PolyLog[2
, (g*(d + e*x))/(-(e*f) + d*g)]) + g*(e*h - d*i)*(h + i*x)*(Log[d + e*x]*Lo
g[(e*(h + i*x))/(e*h - d*i)] + PolyLog[2, (i*(d + e*x))/(-(e*h) + d*i)])) -
 b^2*n^2*((g*h - f*i)*(Log[d + e*x]*(i*(d + e*x)*Log[d + e*x] - 2*e*(h + i*
x)*Log[(e*(h + i*x))/(e*h - d*i)]) - 2*e*(h + i*x)*PolyLog[2, (i*(d + e*x))
/(-(e*h) + d*i)]) - g*(e*h - d*i)*(h + i*x)*(Log[d + e*x]^2*Log[(e*(f + g*x
))/(e*f - d*g)] + 2*Log[d + e*x]*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] -
 2*PolyLog[3, (g*(d + e*x))/(-(e*f) + d*g)]) + g*(e*h - d*i)*(h + i*x)*(Log
[d + e*x]^2*Log[(e*(h + i*x))/(e*h - d*i)] + 2*Log[d + e*x]*PolyLog[2, (i*(
d + e*x))/(-(e*h) + d*i)] - 2*PolyLog[3, (i*(d + e*x))/(-(e*h) + d*i)])))/(
(e*h - d*i)*(g*h - f*i)^2*(h + i*x))
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b^2\log\left((ex+d)^n c\right)^2 + 2\,ab\log\left((ex+d)^n c\right) + a^2}{gi^2x^3 + fh^2 + \left(2\,ghi + fi^2\right)x^2 + \left(gh^2 + 2\,fhi\right)x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)/(i*x+h)^2,x, algorithm="fricas")
```

```
[Out] integral((b^2*log((e*x + d)^n*c)^2 + 2*a*b*log((e*x + d)^n*c) + a^2)/(g*i^2
*x^3 + f*h^2 + (2*g*h*i + f*i^2)*x^2 + (g*h^2 + 2*f*h*i)*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)^2}{\left(gx+f\right)(ix+h)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)/(i*x+h)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2/((g*x + f)*(i*x + h)^2), x)
```

maple [F] time = 1.34, size = 0, normalized size = 0.00

$$\int \frac{\left(b\ln\left(c\,(ex+d)^n\right)+a\right)^2}{\left(gx+f\right)\,(ix+h)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)^2/(g*x+f)/(i*x+h)^2,x)
```

```
[Out] int((b*ln(c*(e*x+d)^n)+a)^2/(g*x+f)/(i*x+h)^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$a^2\left(\frac{g\log\left(gx+f\right)}{g^2h^2-2\,fghi+f^2i^2}-\frac{g\log\left(ix+h\right)}{g^2h^2-2\,fghi+f^2i^2}+\frac{1}{gh^2-fhi+\left(ghi-fi^2\right)x}\right)+\int \frac{b^2\log\left((ex+d)^n\right)^2+b^2\log(c)^2}{gi^2x^3+fh^2+(}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)/(i*x+h)^2,x, algorithm="maxima")
```

```
[Out] a^2*(g*log(g*x + f)/(g^2*h^2 - 2*f*g*h*i + f^2*i^2) - g*log(i*x + h)/(g^2*h
^2 - 2*f*g*h*i + f^2*i^2) + 1/(g*h^2 - f*h*i + (g*h*i - f*i^2)*x)) + integr
ate((b^2*log((e*x + d)^n)^2 + b^2*log(c)^2 + 2*a*b*log(c) + 2*(b^2*log(c) +
 a*b)*log((e*x + d)^n))/(g*i^2*x^3 + f*h^2 + (2*g*h*i + f*i^2)*x^2 + (g*h^2
 + 2*f*h*i)*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^2}{\left(f+g\,x\right)\,{\left(h+i\,x\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^2/((f + g*x)*(h + i*x)^2),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))^2/((f + g*x)*(h + i*x)^2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\log\left(c\,(d+ex)^n\right)\right)^2}{\left(f+gx\right)(h+ix)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2/(g*x+f)/(i*x+h)**2,x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**2/((f + g*x)*(h + i*x)**2), x)
```

3.229 $\int \frac{(h+ix)^2\left(a+b\log(c(d+ex)^n)\right)^3}{f+gx}\,dx$

Optimal. Leaf size=660

$$\frac{3b^2i^2n^2(d+ex)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{4e^2g}-\frac{6b^2n^2(gh-fi)^2\text{Li}_3\left(-\frac{g(d+ex)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^3}+\frac{6ab^2in^2x(eh}{eg}$$

```
[Out] 6*a*b^2*i*(-d*i+e*h)*n^2*x/e/g+6*a*b^2*i*(-f*i+g*h)*n^2*x/g^2-6*b^3*i*(-d*i
+e*h)*n^3*x/e/g-6*b^3*i*(-f*i+g*h)*n^3*x/g^2-3/8*b^3*i^2*n^3*(e*x+d)^2/e^2/
g+6*b^3*i*(-d*i+e*h)*n^2*(e*x+d)*ln(c*(e*x+d)^n)/e^2/g+6*b^3*i*(-f*i+g*h)*n
^2*(e*x+d)*ln(c*(e*x+d)^n)/e/g^2+3/4*b^2*i^2*n^2*(e*x+d)^2*(a+b*ln(c*(e*x+d
)^n))/e^2/g-3*b*i*(-d*i+e*h)*n*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^2/e^2/g-3*b*i*
(-f*i+g*h)*n*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^2/e/g^2-3/4*b*i^2*n*(e*x+d)^2*(a
+b*ln(c*(e*x+d)^n))^2/e^2/g+i*(-d*i+e*h)*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^3/e^
2/g+i*(-f*i+g*h)*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^3/e/g^2+1/2*i^2*(e*x+d)^2*(a
+b*ln(c*(e*x+d)^n))^3/e^2/g+(-f*i+g*h)^2*(a+b*ln(c*(e*x+d)^n))^3*ln(e*(g*x+
f)/(-d*g+e*f))/g^3+3*b*(-f*i+g*h)^2*n*(a+b*ln(c*(e*x+d)^n))^2*polylog(2,-g*
(e*x+d)/(-d*g+e*f))/g^3-6*b^2*(-f*i+g*h)^2*n^2*(a+b*ln(c*(e*x+d)^n))*polylo
g(3,-g*(e*x+d)/(-d*g+e*f))/g^3+6*b^3*(-f*i+g*h)^2*n^3*polylog(4,-g*(e*x+d)/
(-d*g+e*f))/g^3
```

Rubi [A] time = 0.73, antiderivative size = 660, normalized size of antiderivative = 1.00, number of steps used = 23, number of rules used = 13, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.419, Rules used = {2418, 2389, 2296, 2295, 2396, 2433, 2374, 2383, 6589, 2401, 2390, 2305, 2304}

$$-\frac{6b^2n^2(gh-fi)^2\text{PolyLog}\left(3,-\frac{g(d+ex)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^3}+\frac{3bn(gh-fi)^2\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)\left(a+b\log\right.}{g^3}$$

Antiderivative was successfully verified.

```
[In] Int[((h + i*x)^2*(a + b*Log[c*(d + e*x)^n])^3)/(f + g*x),x]
```

```
[Out] (6*a*b^2*i*(e*h - d*i)*n^2*x)/(e*g) + (6*a*b^2*i*(g*h - f*i)*n^2*x)/g^2 - (
6*b^3*i*(e*h - d*i)*n^3*x)/(e*g) - (6*b^3*i*(g*h - f*i)*n^3*x)/g^2 - (3*b^3
*i^2*n^3*(d + e*x)^2)/(8*e^2*g) + (6*b^3*i*(e*h - d*i)*n^2*(d + e*x)*Log[c*
(d + e*x)^n])/(e^2*g) + (6*b^3*i*(g*h - f*i)*n^2*(d + e*x)*Log[c*(d + e*x)^
n])/(e*g^2) + (3*b^2*i^2*n^2*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n]))/(4*e^2
*g) - (3*b*i*(e*h - d*i)*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(e^2*g)
 - (3*b*i*(g*h - f*i)*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(e*g^2) - (3
*b*i^2*n*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n])^2)/(4*e^2*g) + (i*(e*h - d*
i)*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^3)/(e^2*g) + (i*(g*h - f*i)*(d + e*
x)*(a + b*Log[c*(d + e*x)^n])^3)/(e*g^2) + (i^2*(d + e*x)^2*(a + b*Log[c*(d
 + e*x)^n])^3)/(2*e^2*g) + ((g*h - f*i)^2*(a + b*Log[c*(d + e*x)^n])^3*Log[
(e*(f + g*x))/(e*f - d*g)])/g^3 + (3*b*(g*h - f*i)^2*n*(a + b*Log[c*(d + e*
x)^n])^2*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/g^3 - (6*b^2*(g*h - f*i)
^2*n^2*(a + b*Log[c*(d + e*x)^n])*PolyLog[3, -((g*(d + e*x))/(e*f - d*g))])
/g^3 + (6*b^3*(g*h - f*i)^2*n^3*PolyLog[4, -((g*(d + e*x))/(e*f - d*g))])/g
^3
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2383

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^p)/q
, x] - Dist[(b*n*p)/q, Int[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^(p - 1
))/x, x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
```

```
d*g, 0] && IGtQ[q, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(h+229x)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{f+gx}\,dx = \int\left(\frac{229(-229f+gh)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{g^2}+\frac{229(h+229x)\left(a\right.}{}\right.$$

$$=\frac{229\int(h+229x)\left(a+b\log\left(c(d+ex)^n\right)\right)^3dx}{g}-\frac{(229(229f-gh))\int}{}$$

$$=\frac{(229f-gh)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^3\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g^3}+\frac{229\int\left(\frac{(-229d}{}\right.}{}$$

$$=-\frac{229(229f-gh)(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{eg^2}+\frac{(229f-gh)^2\,(}{}$$

$$=\frac{687b(229f-gh)n(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{eg^2}-\frac{229(229f-g}{}$$

$$=-\frac{1374ab^2(229f-gh)n^2x}{g^2}+\frac{687b(229f-gh)n(d+ex)\left(a+b\log(c\right.}{eg^2}$$

$$=-\frac{1374ab^2(229f-gh)n^2x}{g^2}+\frac{1374b^3(229f-gh)n^3x}{g^2}-\frac{1374b^3(229f}{}$$

$$=-\frac{1374ab^2(229d-eh)n^2x}{eg}-\frac{1374ab^2(229f-gh)n^2x}{g^2}+\frac{1374b^3(229}{g^2}$$

$$=-\frac{1374ab^2(229d-eh)n^2x}{eg}-\frac{1374ab^2(229f-gh)n^2x}{g^2}+\frac{1374b^3(229d}{eg}$$

Mathematica [B] time = 1.03, size = 1521, normalized size = 2.30

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[((h + i*x)^2*(a + b*Log[c*(d + e*x)^n])^3)/(f + g*x),x]
```

```
[Out] (8*e^2*g*i*(2*g*h - f*i)*x*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^3
+ 4*e^2*g^2*i^2*x^2*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^3 + 8*e^2
*(g*h - f*i)^2*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^3*Log[f + g*x]
 + 24*b*e^2*g^2*h^2*n*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2*(Log[
d + e*x]*Log[(e*(f + g*x))/(e*f - d*g)] + PolyLog[2, (g*(d + e*x))/(-(e*f)
+ d*g)]) + 6*b*i^2*n*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2*(e*g*(
e*x*(4*f - g*x) + 2*d*(2*f + g*x)) - 2*Log[d + e*x]*(g*(d + e*x)*(2*e*f + d
*g - e*g*x) - 2*e^2*f^2*Log[(e*(f + g*x))/(e*f - d*g)]) + 4*e^2*f^2*PolyLog
[2, (g*(d + e*x))/(-(e*f) + d*g)]) - 48*b*e*g*h*i*n*(a - b*n*Log[d + e*x] +
 b*Log[c*(d + e*x)^n])^2*(-(g*(d + e*x)*(-1 + Log[d + e*x])) + e*f*(Log[d +
 e*x]*Log[(e*(f + g*x))/(e*f - d*g)] + PolyLog[2, (g*(d + e*x))/(-(e*f) + d
*g)])) + 48*b^2*e*g*h*i*n^2*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*(
g*(2*e*x - 2*(d + e*x)*Log[d + e*x] + (d + e*x)*Log[d + e*x]^2) - e*f*(Log[
d + e*x]^2*Log[(e*(f + g*x))/(e*f - d*g)] + 2*Log[d + e*x]*PolyLog[2, (g*(d
```

```
 + e*x))/(-(e*f) + d*g)] - 2*PolyLog[3, (g*(d + e*x))/(-(e*f) + d*g)])) - 6
*b^2*i^2*n^2*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*(4*e*f*g*(2*e*x
- 2*(d + e*x)*Log[d + e*x] + (d + e*x)*Log[d + e*x]^2) + g^2*(e*x*(6*d - e*
x) + (-6*d^2 - 4*d*e*x + 2*e^2*x^2)*Log[d + e*x] + 2*(d^2 - e^2*x^2)*Log[d
+ e*x]^2) - 4*e^2*f^2*(Log[d + e*x]^2*Log[(e*(f + g*x))/(e*f - d*g)] + 2*Lo
g[d + e*x]*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - 2*PolyLog[3, (g*(d +
e*x))/(-(e*f) + d*g)])) + 48*b^2*e^2*g^2*h^2*n^2*(a - b*n*Log[d + e*x] + b*
Log[c*(d + e*x)^n])*((Log[d + e*x]^2*Log[(e*(f + g*x))/(e*f - d*g)])/2 + Lo
g[d + e*x]*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - PolyLog[3, (g*(d + e*
x))/(-(e*f) + d*g)]) + 8*b^3*e^2*g^2*h^2*n^3*(Log[d + e*x]^3*Log[(e*(f + g*
x))/(e*f - d*g)] + 3*Log[d + e*x]^2*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)
] - 6*Log[d + e*x]*PolyLog[3, (g*(d + e*x))/(-(e*f) + d*g)] + 6*PolyLog[4,
(g*(d + e*x))/(-(e*f) + d*g)]) - 16*b^3*e*g*h*i*n^3*(g*(6*e*x - 6*(d + e*x)
*Log[d + e*x] + 3*(d + e*x)*Log[d + e*x]^2 - (d + e*x)*Log[d + e*x]^3) + e*
f*(Log[d + e*x]^3*Log[(e*(f + g*x))/(e*f - d*g)] + 3*Log[d + e*x]^2*PolyLog
[2, (g*(d + e*x))/(-(e*f) + d*g)] - 6*Log[d + e*x]*PolyLog[3, (g*(d + e*x))
/(-(e*f) + d*g)] + 6*PolyLog[4, (g*(d + e*x))/(-(e*f) + d*g)])) + b^3*i^2*n
^3*(8*e*f*g*(6*e*x - 6*(d + e*x)*Log[d + e*x] + 3*(d + e*x)*Log[d + e*x]^2
- (d + e*x)*Log[d + e*x]^3) - g^2*(3*e*x*(-14*d + e*x) + 6*(7*d^2 + 6*d*e*x
 - e^2*x^2)*Log[d + e*x] - 6*(3*d^2 + 2*d*e*x - e^2*x^2)*Log[d + e*x]^2 + 4
*(d^2 - e^2*x^2)*Log[d + e*x]^3) + 8*e^2*f^2*(Log[d + e*x]^3*Log[(e*(f + g*
x))/(e*f - d*g)] + 3*Log[d + e*x]^2*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)
] - 6*Log[d + e*x]*PolyLog[3, (g*(d + e*x))/(-(e*f) + d*g)] + 6*PolyLog[4,
(g*(d + e*x))/(-(e*f) + d*g)])))/(8*e^2*g^3)
```

fricas [F] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{a^3i^2x^2 + 2\,a^3hix + a^3h^2 + \left(b^3i^2x^2 + 2\,b^3hix + b^3h^2\right)\log\left(\left(ex+d\right)^nc\right)^3 + 3\,\left(ab^2i^2x^2 + 2\,ab^2hix + ab^2h}{gx+f}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2*(a+b*log(c*(e*x+d)^n))^3/(g*x+f),x, algorithm="fricas")
```

```
[Out] integral((a^3*i^2*x^2 + 2*a^3*h*i*x + a^3*h^2 + (b^3*i^2*x^2 + 2*b^3*h*i*x
+ b^3*h^2)*log((e*x + d)^n*c)^3 + 3*(a*b^2*i^2*x^2 + 2*a*b^2*h*i*x + a*b^2*
h^2)*log((e*x + d)^n*c)^2 + 3*(a^2*b*i^2*x^2 + 2*a^2*b*h*i*x + a^2*b*h^2)*l
og((e*x + d)^n*c))/(g*x + f), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(ix+h)^2\left(b\log\left((ex+d)^nc\right)+a\right)^3}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2*(a+b*log(c*(e*x+d)^n))^3/(g*x+f),x, algorithm="giac")
```

```
[Out] integrate((i*x + h)^2*(b*log((e*x + d)^n*c) + a)^3/(g*x + f), x)
```

maple [F] time = 2.81, size = 0, normalized size = 0.00

$$\int \frac{(ix+h)^2\left(b\ln\left(c\,(ex+d)^n\right)+a\right)^3}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)^2*(b*ln(c*(e*x+d)^n)+a)^3/(g*x+f),x)
```

```
[Out] int((i*x+h)^2*(b*ln(c*(e*x+d)^n)+a)^3/(g*x+f),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$2\,a^3hi\left(\frac{x}{g}-\frac{f\log\left(gx+f\right)}{g^2}\right)+\frac{1}{2}\,a^3i^2\left(\frac{2\,f^2\log\left(gx+f\right)}{g^3}+\frac{gx^2-2\,fx}{g^2}\right)+\frac{a^3h^2\log\left(gx+f\right)}{g}+\int\frac{b^3h^2\log(c)^3+3\,ab^2i}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2*(a+b*log(c*(e*x+d)^n))^3/(g*x+f),x, algorithm="maxima")
```

```
[Out] 2*a^3*h*i*(x/g - f*log(g*x + f)/g^2) + 1/2*a^3*i^2*(2*f^2*log(g*x + f)/g^3
+ (g*x^2 - 2*f*x)/g^2) + a^3*h^2*log(g*x + f)/g + integrate((b^3*h^2*log(c)
^3 + 3*a*b^2*h^2*log(c)^2 + 3*a^2*b*h^2*log(c) + (b^3*i^2*x^2 + 2*b^3*h*i*x
 + b^3*h^2)*log((e*x + d)^n)^3 + (b^3*i^2*log(c)^3 + 3*a*b^2*i^2*log(c)^2 +
 3*a^2*b*i^2*log(c))*x^2 + 3*(b^3*h^2*log(c) + a*b^2*h^2 + (b^3*i^2*log(c)
+ a*b^2*i^2)*x^2 + 2*(b^3*h*i*log(c) + a*b^2*h*i)*x)*log((e*x + d)^n)^2 + 2
*(b^3*h*i*log(c)^3 + 3*a*b^2*h*i*log(c)^2 + 3*a^2*b*h*i*log(c))*x + 3*(b^3*
h^2*log(c)^2 + 2*a*b^2*h^2*log(c) + a^2*b*h^2 + (b^3*i^2*log(c)^2 + 2*a*b^2
*i^2*log(c) + a^2*b*i^2)*x^2 + 2*(b^3*h*i*log(c)^2 + 2*a*b^2*h*i*log(c) + a
^2*b*h*i)*x)*log((e*x + d)^n))/(g*x + f), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{{\left(h+i\,x\right)}^2\,{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^3}{f+g\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((h + i*x)^2*(a + b*log(c*(d + e*x)^n))^3)/(f + g*x),x)
```

```
[Out] int(((h + i*x)^2*(a + b*log(c*(d + e*x)^n))^3)/(f + g*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(a+b\log\left(c\left(d+ex\right)^{n}\right)\right)^{3}\left(h+ix\right)^{2}}{f+gx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)**2*(a+b*ln(c*(e*x+d)**n))**3/(g*x+f),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**3*(h + i*x)**2/(f + g*x), x)
```

3.230 $\int \frac{(h+ix)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{f+gx}\,dx$

Optimal. Leaf size=308

$$-\frac{6b^2n^2(gh-fi)\text{Li}_3\left(-\frac{g(d+ex)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^2}+\frac{6ab^2in^2x}{g}+\frac{3bn(gh-fi)\text{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)\left(a+b\log\left(c(d+\right.\right.}{g^2}$$

```
[Out] 6*a*b^2*i*n^2*x/g-6*b^3*i*n^3*x/g+6*b^3*i*n^2*(e*x+d)*ln(c*(e*x+d)^n)/e/g-3
*b*i*n*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^2/e/g+i*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^
3/e/g+(-f*i+g*h)*(a+b*ln(c*(e*x+d)^n))^3*ln(e*(g*x+f)/(-d*g+e*f))/g^2+3*b*(
-f*i+g*h)*n*(a+b*ln(c*(e*x+d)^n))^2*polylog(2,-g*(e*x+d)/(-d*g+e*f))/g^2-6*
b^2*(-f*i+g*h)*n^2*(a+b*ln(c*(e*x+d)^n))*polylog(3,-g*(e*x+d)/(-d*g+e*f))/g
^2+6*b^3*(-f*i+g*h)*n^3*polylog(4,-g*(e*x+d)/(-d*g+e*f))/g^2
```

Rubi [A] time = 0.36, antiderivative size = 308, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 9, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.310, Rules used = {2418, 2389, 2296, 2295, 2396, 2433, 2374, 2383, 6589}

$$-\frac{6b^2n^2(gh-fi)\text{PolyLog}\left(3,-\frac{g(d+ex)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^2}+\frac{3bn(gh-fi)\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)\left(a+b\log\left(\right.\right.}{g^2}$$

Antiderivative was successfully verified.

```
[In] Int[((h + i*x)*(a + b*Log[c*(d + e*x)^n])^3)/(f + g*x),x]
```

```
[Out] (6*a*b^2*i*n^2*x)/g - (6*b^3*i*n^3*x)/g + (6*b^3*i*n^2*(d + e*x)*Log[c*(d +
 e*x)^n])/(e*g) - (3*b*i*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(e*g) +
(i*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^3)/(e*g) + ((g*h - f*i)*(a + b*Log[
c*(d + e*x)^n])^3*Log[(e*(f + g*x))/(e*f - d*g)])/g^2 + (3*b*(g*h - f*i)*n*
(a + b*Log[c*(d + e*x)^n])^2*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/g^2
- (6*b^2*(g*h - f*i)*n^2*(a + b*Log[c*(d + e*x)^n])*PolyLog[3, -((g*(d + e*
x))/(e*f - d*g))])/g^2 + (6*b^3*(g*h - f*i)*n^3*PolyLog[4, -((g*(d + e*x))/
(e*f - d*g))])/g^2
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2383

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^p)/q
, x] - Dist[(b*n*p)/q, Int[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^(p - 1
```

```
))/x, x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(h+230x)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{f+gx}\,dx = \int \left(\frac{230\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{g} + \frac{(-230f+gh)\left(a+b\log\left(c(d\right.\right.}{g(f+gx)}\right.$$

$$= \frac{230\int\left(a+b\log\left(c(d+ex)^n\right)\right)^3\,dx}{g} + \frac{(-230f+gh)\int\frac{\left(a+b\log(c(d+e\right.}{f+gx}}{g}$$

$$= -\frac{(230f-gh)\left(a+b\log\left(c(d+ex)^n\right)\right)^3\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g^2} + \frac{230\,\mathrm{Subst}}{}$$

$$= \frac{230(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{eg} - \frac{(230f-gh)\left(a+b\log\left(c(\right.\right.}{g^2}$$

$$= -\frac{690bn(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{eg} + \frac{230(d+ex)\left(a+b\log\right.}{eg}$$

$$= \frac{1380ab^2n^2x}{g} - \frac{690bn(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{eg} + \frac{230(d+}{}$$

$$= \frac{1380ab^2n^2x}{g} - \frac{1380b^3n^3x}{g} + \frac{1380b^3n^2(d+ex)\log\left(c(d+ex)^n\right)}{eg} -$$

Mathematica [B] time = 0.44, size = 799, normalized size = 2.59

$$\frac{b^3egh\left(\log\left(\frac{e(f+gx)}{ef-dg}\right)\log^3(d+ex)+3\mathrm{Li}_2\left(\frac{g(d+ex)}{dg-ef}\right)\log^2(d+ex)-6\mathrm{Li}_3\left(\frac{g(d+ex)}{dg-ef}\right)\log(d+ex)+6\mathrm{Li}_4\left(\frac{g(d+ex)}{dg-ef}\right)\right)n^3}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((h + i*x)*(a + b*Log[c*(d + e*x)^n])^3)/(f + g*x),x]
```

```
[Out] (e*g*i*x*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^3 + e*(g*h - f*i)*(a
 - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^3*Log[f + g*x] + 3*b*e*g*h*n*(a
 - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2*(Log[d + e*x]*Log[(e*(f + g*x
))/(e*f - d*g)] + PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)]) - 3*b*i*n*(a -
b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2*(-(g*(d + e*x)*(-1 + Log[d + e*x
])) + e*f*(Log[d + e*x]*Log[(e*(f + g*x))/(e*f - d*g)] + PolyLog[2, (g*(d +
 e*x))/(-(e*f) + d*g)])) + 3*b^2*i*n^2*(a - b*n*Log[d + e*x] + b*Log[c*(d +
 e*x)^n])*(g*(2*e*x - 2*(d + e*x)*Log[d + e*x] + (d + e*x)*Log[d + e*x]^2)
- e*f*(Log[d + e*x]^2*Log[(e*(f + g*x))/(e*f - d*g)] + 2*Log[d + e*x]*PolyL
og[2, (g*(d + e*x))/(-(e*f) + d*g)] - 2*PolyLog[3, (g*(d + e*x))/(-(e*f) +
d*g)])) + 6*b^2*e*g*h*n^2*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*((L
og[d + e*x]^2*Log[(e*(f + g*x))/(e*f - d*g)])/2 + Log[d + e*x]*PolyLog[2, (
g*(d + e*x))/(-(e*f) + d*g)] - PolyLog[3, (g*(d + e*x))/(-(e*f) + d*g)]) +
b^3*e*g*h*n^3*(Log[d + e*x]^3*Log[(e*(f + g*x))/(e*f - d*g)] + 3*Log[d + e*
x]^2*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - 6*Log[d + e*x]*PolyLog[3, (
g*(d + e*x))/(-(e*f) + d*g)] + 6*PolyLog[4, (g*(d + e*x))/(-(e*f) + d*g)])
- b^3*i*n^3*(g*(6*e*x - 6*(d + e*x)*Log[d + e*x] + 3*(d + e*x)*Log[d + e*x]
^2 - (d + e*x)*Log[d + e*x]^3) + e*f*(Log[d + e*x]^3*Log[(e*(f + g*x))/(e*f
```

```
 - d*g)] + 3*Log[d + e*x]^2*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - 6*Lo
g[d + e*x]*PolyLog[3, (g*(d + e*x))/(-(e*f) + d*g)] + 6*PolyLog[4, (g*(d +
e*x))/(-(e*f) + d*g)])))/(e*g^2)
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{a^3ix + a^3h + \left(b^3ix + b^3h\right)\log\left((ex+d)^n c\right)^3 + 3\left(ab^2ix + ab^2h\right)\log\left((ex+d)^n c\right)^2 + 3\left(a^2bix + a^2bh\right)\log}{gx+f}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*log(c*(e*x+d)^n))^3/(g*x+f),x, algorithm="fricas")
```

```
[Out] integral((a^3*i*x + a^3*h + (b^3*i*x + b^3*h)*log((e*x + d)^n*c)^3 + 3*(a*b
^2*i*x + a*b^2*h)*log((e*x + d)^n*c)^2 + 3*(a^2*b*i*x + a^2*b*h)*log((e*x +
 d)^n*c))/(g*x + f), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(ix+h)\left(b\log\left((ex+d)^n c\right)+a\right)^3}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*log(c*(e*x+d)^n))^3/(g*x+f),x, algorithm="giac")
```

```
[Out] integrate((i*x + h)*(b*log((e*x + d)^n*c) + a)^3/(g*x + f), x)
```

maple [F] time = 2.21, size = 0, normalized size = 0.00

$$\int \frac{(ix+h)\left(b\ln\left(c\,(ex+d)^n\right)+a\right)^3}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)*(b*ln(c*(e*x+d)^n)+a)^3/(g*x+f),x)
```

```
[Out] int((i*x+h)*(b*ln(c*(e*x+d)^n)+a)^3/(g*x+f),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$a^3i\left(\frac{x}{g}-\frac{f\log\left(gx+f\right)}{g^2}\right)+\frac{a^3h\log\left(gx+f\right)}{g}+\int\frac{b^3h\log(c)^3+3\,ab^2h\log(c)^2+3\,a^2bh\log(c)+\left(b^3ix+b^3h\right)\log\left((e\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*log(c*(e*x+d)^n))^3/(g*x+f),x, algorithm="maxima")
```

```
[Out] a^3*i*(x/g - f*log(g*x + f)/g^2) + a^3*h*log(g*x + f)/g + integrate((b^3*h*
log(c)^3 + 3*a*b^2*h*log(c)^2 + 3*a^2*b*h*log(c) + (b^3*i*x + b^3*h)*log((e
*x + d)^n)^3 + 3*(b^3*h*log(c) + a*b^2*h + (b^3*i*log(c) + a*b^2*i)*x)*log(
(e*x + d)^n)^2 + (b^3*i*log(c)^3 + 3*a*b^2*i*log(c)^2 + 3*a^2*b*i*log(c))*x
 + 3*(b^3*h*log(c)^2 + 2*a*b^2*h*log(c) + a^2*b*h + (b^3*i*log(c)^2 + 2*a*b
^2*i*log(c) + a^2*b*i)*x)*log((e*x + d)^n))/(g*x + f), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(h+i\,x)\,\left(a+b\,\ln\left(c\,(d+e\,x)^n\right)\right)^3}{f+g\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((h + i*x)*(a + b*log(c*(d + e*x)^n))^3)/(f + g*x),x)
[Out] int(((h + i*x)*(a + b*log(c*(d + e*x)^n))^3)/(f + g*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a + b\log\left(c\left(d + ex\right)^{n}\right)\right)^{3}\left(h + ix\right)}{f + gx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*ln(c*(e*x+d)**n))**3/(g*x+f),x)
[Out] Integral((a + b*log(c*(d + e*x)**n))**3*(h + i*x)/(f + g*x), x)
```

3.231 $\int \frac{(a+b\log(c(d+ex)^n))^3}{f+gx}\,dx$

Optimal. Leaf size=158

$$-\frac{6b^2n^2\text{Li}_3\left(-\frac{g(d+ex)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g}+\frac{3bn\text{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{g}+\frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\right.}{g}$$

```
[Out] (a+b*ln(c*(e*x+d)^n))^3*ln(e*(g*x+f)/(-d*g+e*f))/g+3*b*n*(a+b*ln(c*(e*x+d)^
n))^2*polylog(2,-g*(e*x+d)/(-d*g+e*f))/g-6*b^2*n^2*(a+b*ln(c*(e*x+d)^n))*po
lylog(3,-g*(e*x+d)/(-d*g+e*f))/g+6*b^3*n^3*polylog(4,-g*(e*x+d)/(-d*g+e*f))
/g
```

Rubi [A] time = 0.18, antiderivative size = 158, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {2396, 2433, 2374, 2383, 6589}

$$-\frac{6b^2n^2\text{PolyLog}\left(3,-\frac{g(d+ex)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g}+\frac{3bn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{g}+\frac{6b^3n^3}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^3/(f + g*x),x]
```

```
[Out] ((a + b*Log[c*(d + e*x)^n])^3*Log[(e*(f + g*x))/(e*f - d*g)])/g + (3*b*n*(a
 + b*Log[c*(d + e*x)^n])^2*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/g - (6
*b^2*n^2*(a + b*Log[c*(d + e*x)^n])*PolyLog[3, -((g*(d + e*x))/(e*f - d*g))
])/g + (6*b^3*n^3*PolyLog[4, -((g*(d + e*x))/(e*f - d*g))])/g
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2383

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^p)/q
, x] - Dist[(b*n*p)/q, Int[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^(p - 1
))/x, x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
```

```
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{f+gx}\,dx = \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^3\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} - \frac{(3ben)\int \frac{\left(a+b\log(c(d+ex)^n)\right)^2\log\left(\frac{e(f+gx)}{ef-dg}\right)}{d+ex}}{g}$$

$$= \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^3\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} - \frac{(3bn)\,\mathrm{Subst}\left(\int \frac{\left(a+b\log(cx^n)\right)^2\log\left(\frac{e\left(\frac{ef-d}{e}\right.}{ef}\right)}{x}\right.}{g}$$

$$= \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^3\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} + \frac{3bn\left(a+b\log\left(c(d+ex)^n\right)\right)^2\mathrm{Li}_2\left(-\right.}{g}$$

$$= \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^3\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} + \frac{3bn\left(a+b\log\left(c(d+ex)^n\right)\right)^2\mathrm{Li}_2\left(-\right.}{g}$$

$$= \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^3\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} + \frac{3bn\left(a+b\log\left(c(d+ex)^n\right)\right)^2\mathrm{Li}_2\left(-\right.}{g}$$

Mathematica [B] time = 0.22, size = 457, normalized size = 2.89

$$3a^2bn\left(\mathrm{Li}_2\left(\frac{g(d+ex)}{dg-ef}\right)+\log(d+ex)\log\left(\frac{e(f+gx)}{ef-dg}\right)\right)+6b^2n^2\left(-\mathrm{Li}_3\left(\frac{g(d+ex)}{dg-ef}\right)+\log(d+ex)\mathrm{Li}_2\left(\frac{g(d+ex)}{dg-ef}\right)+\frac{1}{2}\log^2(d\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^3/(f + g*x),x]
```

```
[Out] ((a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^3*Log[f + g*x] + 3*a^2*b*n*(
Log[d + e*x]*Log[(e*(f + g*x))/(e*f - d*g)] + PolyLog[2, (g*(d + e*x))/(-(e
*f) + d*g)]) + 6*a*b^2*n*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n])*(Log[d +
e*x]*Log[(e*(f + g*x))/(e*f - d*g)] + PolyLog[2, (g*(d + e*x))/(-(e*f) + d*
g)]) + 3*b^3*n*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n])^2*(Log[d + e*x]*Log
[(e*(f + g*x))/(e*f - d*g)] + PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)]) + 6
*b^2*n^2*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*((Log[d + e*x]^2*Log
[(e*(f + g*x))/(e*f - d*g)])/2 + Log[d + e*x]*PolyLog[2, (g*(d + e*x))/(-(e
*f) + d*g)] - PolyLog[3, (g*(d + e*x))/(-(e*f) + d*g)]) + b^3*n^3*(Log[d +
e*x]^3*Log[(e*(f + g*x))/(e*f - d*g)] + 3*Log[d + e*x]^2*PolyLog[2, (g*(d +
 e*x))/(-(e*f) + d*g)] - 6*Log[d + e*x]*PolyLog[3, (g*(d + e*x))/(-(e*f) +
d*g)] + 6*PolyLog[4, (g*(d + e*x))/(-(e*f) + d*g)]))/g
```

fricas [F] time = 0.43, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{b^3\log\left((ex+d)^nc\right)^3+3\,ab^2\log\left((ex+d)^nc\right)^2+3\,a^2b\log\left((ex+d)^nc\right)+a^3}{gx+f},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3/(g*x+f),x, algorithm="fricas")
```

```
[Out] integral((b^3*log((e*x + d)^n*c)^3 + 3*a*b^2*log((e*x + d)^n*c)^2 + 3*a^2*b
*log((e*x + d)^n*c) + a^3)/(g*x + f), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b \log \left((ex+d)^n c\right)+a\right)^3}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3/(g*x+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^3/(g*x + f), x)
```

maple [C] time = 0.15, size = 9538, normalized size = 60.37

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)^3/(g*x+f),x)
```

```
[Out] result too large to display
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{a^3 \log \left(gx+f\right)}{g}+\int \frac{b^3 \log \left((ex+d)^n\right)^3+b^3 \log(c)^3+3\,ab^2 \log(c)^2+3\,a^2b \log(c)+3\left(b^3 \log(c)+ab^2\right)\log \left((ex+\right.}{gx+f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3/(g*x+f),x, algorithm="maxima")
```

```
[Out] a^3*log(g*x + f)/g + integrate((b^3*log((e*x + d)^n)^3 + b^3*log(c)^3 + 3*a
*b^2*log(c)^2 + 3*a^2*b*log(c) + 3*(b^3*log(c) + a*b^2)*log((e*x + d)^n)^2
+ 3*(b^3*log(c)^2 + 2*a*b^2*log(c) + a^2*b)*log((e*x + d)^n))/(g*x + f), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)^3}{f+g\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^3/(f + g*x),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))^3/(f + g*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b \log \left(c \left(d+ex\right)^{n}\right)\right)^{3}}{f+gx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**3/(g*x+f),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**3/(f + g*x), x)
```

3.232 $\int \frac{(a+b\log(c(d+ex)^n))^3}{(f+gx)(h+ix)} dx$

Optimal. Leaf size=372

$$-\frac{6b^2n^2\text{Li}_3\left(-\frac{g(d+ex)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{gh-fi}+\frac{6b^2n^2\text{Li}_3\left(-\frac{i(d+ex)}{eh-di}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{gh-fi}+\frac{3bn\text{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)}{g}$$

```
[Out] (a+b*ln(c*(e*x+d)^n))^3*ln(e*(g*x+f)/(-d*g+e*f))/(-f*i+g*h)-(a+b*ln(c*(e*x+
d)^n))^3*ln(e*(i*x+h)/(-d*i+e*h))/(-f*i+g*h)+3*b*n*(a+b*ln(c*(e*x+d)^n))^2*
polylog(2,-g*(e*x+d)/(-d*g+e*f))/(-f*i+g*h)-3*b*n*(a+b*ln(c*(e*x+d)^n))^2*p
olylog(2,-i*(e*x+d)/(-d*i+e*h))/(-f*i+g*h)-6*b^2*n^2*(a+b*ln(c*(e*x+d)^n))*
polylog(3,-g*(e*x+d)/(-d*g+e*f))/(-f*i+g*h)+6*b^2*n^2*(a+b*ln(c*(e*x+d)^n))
*polylog(3,-i*(e*x+d)/(-d*i+e*h))/(-f*i+g*h)+6*b^3*n^3*polylog(4,-g*(e*x+d)
/(-d*g+e*f))/(-f*i+g*h)-6*b^3*n^3*polylog(4,-i*(e*x+d)/(-d*i+e*h))/(-f*i+g*
h)
```

Rubi [A] time = 0.52, antiderivative size = 372, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 6, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.194, Rules used = {2418, 2396, 2433, 2374, 2383, 6589}

$$-\frac{6b^2n^2\text{PolyLog}\left(3,-\frac{g(d+ex)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{gh-fi}+\frac{6b^2n^2\text{PolyLog}\left(3,-\frac{i(d+ex)}{eh-di}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{gh-fi}+\frac{3b}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^3/((f + g*x)*(h + i*x)),x]
```

```
[Out] ((a + b*Log[c*(d + e*x)^n])^3*Log[(e*(f + g*x))/(e*f - d*g)])/(g*h - f*i) -
 ((a + b*Log[c*(d + e*x)^n])^3*Log[(e*(h + i*x))/(e*h - d*i)])/(g*h - f*i)
+ (3*b*n*(a + b*Log[c*(d + e*x)^n])^2*PolyLog[2, -((g*(d + e*x))/(e*f - d*g
))])/(g*h - f*i) - (3*b*n*(a + b*Log[c*(d + e*x)^n])^2*PolyLog[2, -((i*(d +
 e*x))/(e*h - d*i))])/(g*h - f*i) - (6*b^2*n^2*(a + b*Log[c*(d + e*x)^n])*P
olyLog[3, -((g*(d + e*x))/(e*f - d*g))])/(g*h - f*i) + (6*b^2*n^2*(a + b*Lo
g[c*(d + e*x)^n])*PolyLog[3, -((i*(d + e*x))/(e*h - d*i))])/(g*h - f*i) + (
6*b^3*n^3*PolyLog[4, -((g*(d + e*x))/(e*f - d*g))])/(g*h - f*i) - (6*b^3*n^
3*PolyLog[4, -((i*(d + e*x))/(e*h - d*i))])/(g*h - f*i)
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2383

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^p)/q
, x] - Dist[(b*n*p)/q, Int[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^(p - 1
))/x, x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
```

```
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^3}{(h+232x)(f+gx)}\,dx = \int \left(\frac{232(a+b\log(c(d+ex)^n))^3}{(232f-gh)(h+232x)} - \frac{g(a+b\log(c(d+ex)^n))^3}{(232f-gh)(f+gx)}\right)dx$$

$$= \frac{232\int \frac{(a+b\log(c(d+ex)^n))^3}{h+232x}\,dx}{232f-gh} - \frac{g\int \frac{(a+b\log(c(d+ex)^n))^3}{f+gx}\,dx}{232f-gh}$$

$$= \frac{\log\left(-\frac{e(h+232x)}{232d-eh}\right)(a+b\log(c(d+ex)^n))^3}{232f-gh} - \frac{(a+b\log(c(d+ex)^n))^3\log\left(\frac{e(f+gx)}{ef-dg}\right.}{232f-gh}$$

$$= \frac{\log\left(-\frac{e(h+232x)}{232d-eh}\right)(a+b\log(c(d+ex)^n))^3}{232f-gh} - \frac{(a+b\log(c(d+ex)^n))^3\log\left(\frac{e(f+gx)}{ef-dg}\right.}{232f-gh}$$

$$= \frac{\log\left(-\frac{e(h+232x)}{232d-eh}\right)(a+b\log(c(d+ex)^n))^3}{232f-gh} - \frac{(a+b\log(c(d+ex)^n))^3\log\left(\frac{e(f+gx)}{ef-dg}\right.}{232f-gh}$$

$$= \frac{\log\left(-\frac{e(h+232x)}{232d-eh}\right)(a+b\log(c(d+ex)^n))^3}{232f-gh} - \frac{(a+b\log(c(d+ex)^n))^3\log\left(\frac{e(f+gx)}{ef-dg}\right.}{232f-gh}$$

$$= \frac{\log\left(-\frac{e(h+232x)}{232d-eh}\right)(a+b\log(c(d+ex)^n))^3}{232f-gh} - \frac{(a+b\log(c(d+ex)^n))^3\log\left(\frac{e(f+gx)}{ef-dg}\right.}{232f-gh}$$

Mathematica [A] time = 0.55, size = 599, normalized size = 1.61

$$\frac{6b^2n^2\left(a+b\log\left(c(d+ex)^n\right)-bn\log(d+ex)\right)\left(-\text{Li}_3\left(\frac{g(d+ex)}{dg-ef}\right)+\log(d+ex)\text{Li}_2\left(\frac{g(d+ex)}{dg-ef}\right)+\frac{1}{2}\log^2(d+ex)\log\left(\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^3/((f + g*x)*(h + i*x)),x]
```

```
[Out] ((a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^3*Log[f + g*x] - (a - b*n*Lo
g[d + e*x] + b*Log[c*(d + e*x)^n])^3*Log[h + i*x] + 3*b*n*(a - b*n*Log[d +
e*x] + b*Log[c*(d + e*x)^n])^2*(Log[d + e*x]*(Log[(e*(f + g*x))/(e*f - d*g)
] - Log[(e*(h + i*x))/(e*h - d*i)]) + PolyLog[2, (g*(d + e*x))/(-(e*f) + d*
g)] - PolyLog[2, (i*(d + e*x))/(-(e*h) + d*i)]) + 6*b^2*n^2*(a - b*n*Log[d
+ e*x] + b*Log[c*(d + e*x)^n])*((Log[d + e*x]^2*Log[(e*(f + g*x))/(e*f - d*
g)])/2 - (Log[d + e*x]^2*Log[(e*(h + i*x))/(e*h - d*i)])/2 + Log[d + e*x]*P
olyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - Log[d + e*x]*PolyLog[2, (i*(d + e
*x))/(-(e*h) + d*i)] - PolyLog[3, (g*(d + e*x))/(-(e*f) + d*g)] + PolyLog[3
, (i*(d + e*x))/(-(e*h) + d*i)]) + b^3*n^3*(Log[d + e*x]^3*Log[(e*(f + g*x)
)/(e*f - d*g)] - Log[d + e*x]^3*Log[(e*(h + i*x))/(e*h - d*i)] + 3*Log[d +
e*x]^2*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - 3*Log[d + e*x]^2*PolyLog[
2, (i*(d + e*x))/(-(e*h) + d*i)] - 6*Log[d + e*x]*PolyLog[3, (g*(d + e*x))/
(-(e*f) + d*g)] + 6*Log[d + e*x]*PolyLog[3, (i*(d + e*x))/(-(e*h) + d*i)] +
 6*PolyLog[4, (g*(d + e*x))/(-(e*f) + d*g)] - 6*PolyLog[4, (i*(d + e*x))/(-
(e*h) + d*i)]))/(g*h - f*i)
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b^3\log\left((ex+d)^nc\right)^3+3\,ab^2\log\left((ex+d)^nc\right)^2+3\,a^2b\log\left((ex+d)^nc\right)+a^3}{gix^2+fh+\left(gh+fi\right)x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3/(g*x+f)/(i*x+h),x, algorithm="fricas")
```

```
[Out] integral((b^3*log((e*x + d)^n*c)^3 + 3*a*b^2*log((e*x + d)^n*c)^2 + 3*a^2*b
*log((e*x + d)^n*c) + a^3)/(g*i*x^2 + f*h + (g*h + f*i)*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(b\log\left((ex+d)^nc\right)+a\right)^3}{\left(gx+f\right)(ix+h)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3/(g*x+f)/(i*x+h),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^3/((g*x + f)*(i*x + h)), x)
```

maple [C] time = 1.12, size = 21696, normalized size = 58.32

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)^3/(g*x+f)/(i*x+h),x)
```

```
[Out] result too large to display
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$a^3\left(\frac{\log\left(gx+f\right)}{gh-fi}-\frac{\log\left(ix+h\right)}{gh-fi}\right)+\int\frac{b^3\log\left(\left(ex+d\right)^n\right)^3+b^3\log(c)^3+3\,ab^2\log(c)^2+3\,a^2b\log(c)+3\left(b^3\log(c)\right.}{gix^2+fh+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3/(g*x+f)/(i*x+h),x, algorithm="maxima")
```

```
[Out] a^3*(log(g*x + f)/(g*h - f*i) - log(i*x + h)/(g*h - f*i)) + integrate((b^3*
log((e*x + d)^n)^3 + b^3*log(c)^3 + 3*a*b^2*log(c)^2 + 3*a^2*b*log(c) + 3*(
b^3*log(c) + a*b^2)*log((e*x + d)^n)^2 + 3*(b^3*log(c)^2 + 2*a*b^2*log(c) +
 a^2*b)*log((e*x + d)^n))/(g*i*x^2 + f*h + (g*h + f*i)*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)^3}{\left(f+g\,x\right)\,\left(h+i\,x\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^3/((f + g*x)*(h + i*x)),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))^3/((f + g*x)*(h + i*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\log\left(c\left(d+ex\right)^{n}\right)\right)^{3}}{\left(f+gx\right)\left(h+ix\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**3/(g*x+f)/(i*x+h),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**3/((f + g*x)*(h + i*x)), x)
```

3.233 $\int \frac{\left(a+b\log(c(d+ex)^n)\right)^3}{(f+gx)(h+ix)^2}\,dx$

Optimal. Leaf size=602

$$\frac{6b^2en^2\text{Li}_2\left(-\frac{i(d+ex)}{eh-di}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{(eh-di)(gh-fi)}-\frac{6b^2gn^2\text{Li}_3\left(-\frac{g(d+ex)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{(gh-fi)^2}+\frac{6b^2gn^2\text{Li}_3\left(-\frac{i(d+e}{eh-d}\right.}{(}$$

```
[Out] -i*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^3/(-d*i+e*h)/(-f*i+g*h)/(i*x+h)+g*(a+b*ln(
c*(e*x+d)^n))^3*ln(e*(g*x+f)/(-d*g+e*f))/(-f*i+g*h)^2+3*b*e*n*(a+b*ln(c*(e*
x+d)^n))^2*ln(e*(i*x+h)/(-d*i+e*h))/(-d*i+e*h)/(-f*i+g*h)-g*(a+b*ln(c*(e*x+
d)^n))^3*ln(e*(i*x+h)/(-d*i+e*h))/(-f*i+g*h)^2+3*b*g*n*(a+b*ln(c*(e*x+d)^n)
)^2*polylog(2,-g*(e*x+d)/(-d*g+e*f))/(-f*i+g*h)^2+6*b^2*e*n^2*(a+b*ln(c*(e*
x+d)^n))*polylog(2,-i*(e*x+d)/(-d*i+e*h))/(-d*i+e*h)/(-f*i+g*h)-3*b*g*n*(a+
b*ln(c*(e*x+d)^n))^2*polylog(2,-i*(e*x+d)/(-d*i+e*h))/(-f*i+g*h)^2-6*b^2*g*
n^2*(a+b*ln(c*(e*x+d)^n))*polylog(3,-g*(e*x+d)/(-d*g+e*f))/(-f*i+g*h)^2-6*b
^3*e*n^3*polylog(3,-i*(e*x+d)/(-d*i+e*h))/(-d*i+e*h)/(-f*i+g*h)+6*b^2*g*n^2
*(a+b*ln(c*(e*x+d)^n))*polylog(3,-i*(e*x+d)/(-d*i+e*h))/(-f*i+g*h)^2+6*b^3*
g*n^3*polylog(4,-g*(e*x+d)/(-d*g+e*f))/(-f*i+g*h)^2-6*b^3*g*n^3*polylog(4,-
i*(e*x+d)/(-d*i+e*h))/(-f*i+g*h)^2
```

Rubi [A] time = 0.73, antiderivative size = 602, normalized size of antiderivative = 1.00, number of steps used = 17, number of rules used = 7, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.226, Rules used = {2418, 2396, 2433, 2374, 2383, 6589, 2397}

$$\frac{6b^2en^2\text{PolyLog}\left(2,-\frac{i(d+ex)}{eh-di}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{(eh-di)(gh-fi)}-\frac{6b^2gn^2\text{PolyLog}\left(3,-\frac{g(d+ex)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{(gh-fi)^2}+\frac{6}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^3/((f + g*x)*(h + i*x)^2),x]
```

```
[Out] -((i*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^3)/((e*h - d*i)*(g*h - f*i)*(h +
i*x))) + (g*(a + b*Log[c*(d + e*x)^n])^3*Log[(e*(f + g*x))/(e*f - d*g)])/(g
*h - f*i)^2 + (3*b*e*n*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(h + i*x))/(e*h
- d*i)])/((e*h - d*i)*(g*h - f*i)) - (g*(a + b*Log[c*(d + e*x)^n])^3*Log[(e
*(h + i*x))/(e*h - d*i)])/(g*h - f*i)^2 + (3*b*g*n*(a + b*Log[c*(d + e*x)^n
])^2*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/(g*h - f*i)^2 + (6*b^2*e*n^2
*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((i*(d + e*x))/(e*h - d*i))])/((e*h
 - d*i)*(g*h - f*i)) - (3*b*g*n*(a + b*Log[c*(d + e*x)^n])^2*PolyLog[2, -((
i*(d + e*x))/(e*h - d*i))])/(g*h - f*i)^2 - (6*b^2*g*n^2*(a + b*Log[c*(d +
e*x)^n])*PolyLog[3, -((g*(d + e*x))/(e*f - d*g))])/(g*h - f*i)^2 - (6*b^3*e
*n^3*PolyLog[3, -((i*(d + e*x))/(e*h - d*i))])/((e*h - d*i)*(g*h - f*i)) +
(6*b^2*g*n^2*(a + b*Log[c*(d + e*x)^n])*PolyLog[3, -((i*(d + e*x))/(e*h - d
*i))])/(g*h - f*i)^2 + (6*b^3*g*n^3*PolyLog[4, -((g*(d + e*x))/(e*f - d*g))
])/(g*h - f*i)^2 - (6*b^3*g*n^3*PolyLog[4, -((i*(d + e*x))/(e*h - d*i))])/(
g*h - f*i)^2
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2383

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^p)/q
, x] - Dist[(b*n*p)/q, Int[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^(p - 1
))/x, x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2397

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_))^2, x_Symbol] :> Simp[((d + e*x)*(a + b*Log[c*(d + e*x)^n])^p)/((e*f
 - d*g)*(f + g*x)), x] - Dist[(b*e*n*p)/(e*f - d*g), Int[(a + b*Log[c*(d +
e*x)^n])^(p - 1)/(f + g*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] &&
 NeQ[e*f - d*g, 0] && GtQ[p, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{(h+233x)^2(f+gx)}\,dx = \int \left(\frac{233\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{(233f-gh)(h+233x)^2} - \frac{233g\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{(233f-gh)^2(h+233x)} + \frac{g^2\left(a+\right.}{(233}\right.$$

$$= -\frac{(233g)\int \frac{\left(a+b\log(c(d+ex)^n)\right)^3}{h+233x}dx}{(233f-gh)^2} + \frac{g^2\int \frac{\left(a+b\log(c(d+ex)^n)\right)^3}{f+gx}dx}{(233f-gh)^2} + \frac{233\int \frac{\left(a+b\log(c(\right.}{(h+233}}{233f-}$$

$$= -\frac{233(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{(233d-eh)(233f-gh)(h+233x)} - \frac{g\log\left(-\frac{e(h+233x)}{233d-eh}\right)\left(a+b\log(c(d+\right.}{(233f-gh)^2}$$

$$= \frac{3ben\log\left(-\frac{e(h+233x)}{233d-eh}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{(233d-eh)(233f-gh)} - \frac{233(d+ex)\left(a+b\log(c(d\right.}{(233d-eh)(233f-gh)(h}$$

$$= \frac{3ben\log\left(-\frac{e(h+233x)}{233d-eh}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{(233d-eh)(233f-gh)} - \frac{233(d+ex)\left(a+b\log(c(d\right.}{(233d-eh)(233f-gh)(h}$$

$$= \frac{3ben\log\left(-\frac{e(h+233x)}{233d-eh}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{(233d-eh)(233f-gh)} - \frac{233(d+ex)\left(a+b\log(c(d\right.}{(233d-eh)(233f-gh)(h}$$

$$= \frac{3ben\log\left(-\frac{e(h+233x)}{233d-eh}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{(233d-eh)(233f-gh)} - \frac{233(d+ex)\left(a+b\log(c(d\right.}{(233d-eh)(233f-gh)(h}$$

Mathematica [A] time = 1.33, size = 1025, normalized size = 1.70

$$\frac{-b^3\left((gh-fi)\left(\left(i(d+ex)\log(d+ex)-3e(h+ix)\log\left(\frac{e(h+ix)}{eh-di}\right)\right)\log^2(d+ex)-6e(h+ix)\mathrm{Li}_2\left(\frac{i(d+ex)}{di-eh}\right)\log(d+e\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^3/((f + g*x)*(h + i*x)^2),x]
```

```
[Out] ((e*h - d*i)*(g*h - f*i)*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^3 +
g*(e*h - d*i)*(h + i*x)*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^3*Log
[f + g*x] - g*(e*h - d*i)*(h + i*x)*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*
x)^n])^3*Log[h + i*x] - 3*b*n*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])
^2*((g*h - f*i)*(i*(d + e*x)*Log[d + e*x] - e*(h + i*x)*Log[h + i*x]) - g*(
e*h - d*i)*(h + i*x)*(Log[d + e*x]*Log[(e*(f + g*x))/(e*f - d*g)] + PolyLog
[2, (g*(d + e*x))/(-(e*f) + d*g)]) + g*(e*h - d*i)*(h + i*x)*(Log[d + e*x]*
Log[(e*(h + i*x))/(e*h - d*i)] + PolyLog[2, (i*(d + e*x))/(-(e*h) + d*i)]))
 - 3*b^2*n^2*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*((g*h - f*i)*(Lo
g[d + e*x]*(i*(d + e*x)*Log[d + e*x] - 2*e*(h + i*x)*Log[(e*(h + i*x))/(e*h
 - d*i)]) - 2*e*(h + i*x)*PolyLog[2, (i*(d + e*x))/(-(e*h) + d*i)]) - g*(e*
h - d*i)*(h + i*x)*(Log[d + e*x]^2*Log[(e*(f + g*x))/(e*f - d*g)] + 2*Log[d
 + e*x]*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - 2*PolyLog[3, (g*(d + e*x
))/(-(e*f) + d*g)]) + g*(e*h - d*i)*(h + i*x)*(Log[d + e*x]^2*Log[(e*(h + i
*x))/(e*h - d*i)] + 2*Log[d + e*x]*PolyLog[2, (i*(d + e*x))/(-(e*h) + d*i)]
 - 2*PolyLog[3, (i*(d + e*x))/(-(e*h) + d*i)])) - b^3*n^3*((g*h - f*i)*(Log
```

```
[d + e*x]^2*(i*(d + e*x)*Log[d + e*x] - 3*e*(h + i*x)*Log[(e*(h + i*x))/(e*
h - d*i)]) - 6*e*(h + i*x)*Log[d + e*x]*PolyLog[2, (i*(d + e*x))/(-(e*h) +
d*i)] + 6*e*(h + i*x)*PolyLog[3, (i*(d + e*x))/(-(e*h) + d*i)]) - g*(e*h -
d*i)*(h + i*x)*(Log[d + e*x]^3*Log[(e*(f + g*x))/(e*f - d*g)] + 3*Log[d + e
*x]^2*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - 6*Log[d + e*x]*PolyLog[3,
(g*(d + e*x))/(-(e*f) + d*g)] + 6*PolyLog[4, (g*(d + e*x))/(-(e*f) + d*g)])
 + g*(e*h - d*i)*(h + i*x)*(Log[d + e*x]^3*Log[(e*(h + i*x))/(e*h - d*i)] +
 3*Log[d + e*x]^2*PolyLog[2, (i*(d + e*x))/(-(e*h) + d*i)] - 6*Log[d + e*x]
*PolyLog[3, (i*(d + e*x))/(-(e*h) + d*i)] + 6*PolyLog[4, (i*(d + e*x))/(-(e
*h) + d*i)])))/((e*h - d*i)*(g*h - f*i)^2*(h + i*x))
```

fricas [F] time = 0.49, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{b^3\log\left((ex+d)^n c\right)^3 + 3\,ab^2\log\left((ex+d)^n c\right)^2 + 3\,a^2b\log\left((ex+d)^n c\right) + a^3}{gi^2x^3 + fh^2 + \left(2\,ghi + fi^2\right)x^2 + \left(gh^2 + 2\,fhi\right)x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3/(g*x+f)/(i*x+h)^2,x, algorithm="fricas")
```

```
[Out] integral((b^3*log((e*x + d)^n*c)^3 + 3*a*b^2*log((e*x + d)^n*c)^2 + 3*a^2*b
*log((e*x + d)^n*c) + a^3)/(g*i^2*x^3 + f*h^2 + (2*g*h*i + f*i^2)*x^2 + (g*
h^2 + 2*f*h*i)*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\log\left((ex+d)^n c\right) + a\right)^3}{\left(gx+f\right)(ix+h)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3/(g*x+f)/(i*x+h)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^3/((g*x + f)*(i*x + h)^2), x)
```

maple [F] time = 1.53, size = 0, normalized size = 0.00

$$\int \frac{\left(b\ln\left(c\,(ex+d)^n\right) + a\right)^3}{\left(gx+f\right)\,(ix+h)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)^3/(g*x+f)/(i*x+h)^2,x)
```

```
[Out] int((b*ln(c*(e*x+d)^n)+a)^3/(g*x+f)/(i*x+h)^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$a^3\left(\frac{g\log\left(gx+f\right)}{g^2h^2 - 2\,fghi + f^2i^2} - \frac{g\log\left(ix+h\right)}{g^2h^2 - 2\,fghi + f^2i^2} + \frac{1}{gh^2 - fhi + \left(ghi - fi^2\right)x}\right) + \int \frac{b^3\log\left((ex+d)^n\right)^3 + b^3\log(c)^3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3/(g*x+f)/(i*x+h)^2,x, algorithm="maxima")
```

```
[Out] a^3*(g*log(g*x + f)/(g^2*h^2 - 2*f*g*h*i + f^2*i^2) - g*log(i*x + h)/(g^2*h
^2 - 2*f*g*h*i + f^2*i^2) + 1/(g*h^2 - f*h*i + (g*h*i - f*i^2)*x)) + integr
ate((b^3*log((e*x + d)^n)^3 + b^3*log(c)^3 + 3*a*b^2*log(c)^2 + 3*a^2*b*log
(c) + 3*(b^3*log(c) + a*b^2)*log((e*x + d)^n)^2 + 3*(b^3*log(c)^2 + 2*a*b^2
```

```
*log(c) + a^2*b)*log((e*x + d)^n))/(g*i^2*x^3 + f*h^2 + (2*g*h*i + f*i^2)*x
^2 + (g*h^2 + 2*f*h*i)*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)^3}{\left(f+g\,x\right)\,{\left(h+i\,x\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^3/((f + g*x)*(h + i*x)^2),x)
[Out] int((a + b*log(c*(d + e*x)^n))^3/((f + g*x)*(h + i*x)^2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a + b\log\left(c\left(d + ex\right)^{n}\right)\right)^{3}}{\left(f + gx\right)\left(h + ix\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**3/(g*x+f)/(i*x+h)**2,x)
[Out] Integral((a + b*log(c*(d + e*x)**n))**3/((f + g*x)*(h + i*x)**2), x)
```

3.234 $\int \frac{h+ix}{(f+gx)\left(a+b\log(c(d+ex)^n)\right)}\,dx$

Optimal. Leaf size=107

$$\frac{(gh-fi)\text{Int}\left(\frac{1}{(f+gx)\left(a+b\log(c(d+ex)^n)\right)},x\right)}{g}+\frac{ie^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{begn}$$

```
[Out] i*(e*x+d)*Ei((a+b*ln(c*(e*x+d)^n))/b/n)/b/e/exp(a/b/n)/g/n/((c*(e*x+d)^n)^(
1/n))+(-f*i+g*h)*Unintegrable(1/(g*x+f)/(a+b*ln(c*(e*x+d)^n)),x)/g
```

Rubi [A] time = 0.18, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{h+ix}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(h + i*x)/((f + g*x)*(a + b*Log[c*(d + e*x)^n])),x]
```

```
[Out] (i*(d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(b*e*E^(a/(b*
n))*g*n*(c*(d + e*x)^n)^n^(-1)) + ((g*h - f*i)*Defer[Int][1/((f + g*x)*(a +
 b*Log[c*(d + e*x)^n])), x])/g
```

Rubi steps

$$\int \frac{h+234x}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)}\,dx=\int \left(\frac{234}{g\left(a+b\log\left(c(d+ex)^n\right)\right)}+\frac{-234f+gh}{g(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)}\right)dx$$

$$=\frac{234\int \frac{1}{a+b\log(c(d+ex)^n)}\,dx}{g}+\frac{(-234f+gh)\int \frac{1}{(f+gx)\left(a+b\log(c(d+ex)^n)\right)}\,dx}{g}$$

$$=\frac{234\,\text{Subst}\left(\int \frac{1}{a+b\log(cx^n)}\,dx,x,d+ex\right)}{eg}+\frac{(-234f+gh)\int \frac{1}{(f+gx)\left(a+b\log(c(\cdots\right.}}{g}$$

$$=\frac{(-234f+gh)\int \frac{1}{(f+gx)\left(a+b\log(c(d+ex)^n)\right)}\,dx}{g}+\frac{\left(234(d+ex)\left(c(d+ex)^n\right)^{-1/n}\cdots\right.}{\cdots}$$

$$=\frac{234e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{begn}+\frac{(-234f+gh)\int \cdots}{\cdots}$$

Mathematica [A] time = 0.31, size = 0, normalized size = 0.00

$$\int \frac{h+ix}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(h + i*x)/((f + g*x)*(a + b*Log[c*(d + e*x)^n])),x]
```

```
[Out] Integrate[(h + i*x)/((f + g*x)*(a + b*Log[c*(d + e*x)^n])), x]
```

fricas [**A**] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{ix+h}{agx+af+\left(bgx+bf\right)\log\left(\left(ex+d\right)^{n}c\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)/(g*x+f)/(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
[Out] integral((i*x + h)/(a*g*x + a*f + (b*g*x + b*f)*log((e*x + d)^n*c)), x)
```

giac [**A**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{ix+h}{\left(gx+f\right)\left(b\log\left(\left(ex+d\right)^{n}c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)/(g*x+f)/(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
[Out] integrate((i*x + h)/((g*x + f)*(b*log((e*x + d)^n*c) + a)), x)
```

maple [**A**] time = 0.69, size = 0, normalized size = 0.00

$$\int \frac{ix+h}{\left(gx+f\right)\left(b\ln\left(c\left(ex+d\right)^{n}\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)/(g*x+f)/(b*ln(c*(e*x+d)^n)+a),x)
[Out] int((i*x+h)/(g*x+f)/(b*ln(c*(e*x+d)^n)+a),x)
```

maxima [**A**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{ix+h}{\left(gx+f\right)\left(b\log\left(\left(ex+d\right)^{n}c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)/(g*x+f)/(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
[Out] integrate((i*x + h)/((g*x + f)*(b*log((e*x + d)^n*c) + a)), x)
```

mupad [**A**] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{h+i\,x}{\left(f+g\,x\right)\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h + i*x)/((f + g*x)*(a + b*log(c*(d + e*x)^n))),x)
[Out] int((h + i*x)/((f + g*x)*(a + b*log(c*(d + e*x)^n))), x)
```

sympy [**A**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{h+ix}{\left(a+b\log\left(c\left(d+ex\right)^{n}\right)\right)\left(f+gx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)/(g*x+f)/(a+b*ln(c*(e*x+d)**n)),x)
[Out] Integral((h + i*x)/((a + b*log(c*(d + e*x)**n))*(f + g*x)), x)
```

3.235 $\int \frac{1}{(f+gx)(a+b\log(c(d+ex)^n))} dx$

Optimal. Leaf size=27

$$\text{Int}\left(\frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)},x\right)$$

```
[Out] Unintegrable(1/(g*x+f)/(a+b*ln(c*(e*x+d)^n)),x)
```

Rubi [A] time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)} dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])),x]
[Out] Defer[Int][1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])), x]
```

Rubi steps

$$\int \frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)} dx = \int \frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)} dx$$

Mathematica [A] time = 0.03, size = 0, normalized size = 0.00

$$\int \frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)} dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])),x]
[Out] Integrate[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])), x]
```

fricas [A] time = 0.49, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{1}{agx+af+\left(bgx+bf\right)\log\left((ex+d)^n c\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
[Out] integral(1/(a*g*x + a*f + (b*g*x + b*f)*log((e*x + d)^n*c)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(gx+f\right)\left(b\log\left((ex+d)^n c\right)+a\right)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
[Out] integrate(1/((g*x + f)*(b*log((e*x + d)^n*c) + a)), x)
```

maple [A] time = 0.04, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(gx+f\right)\left(b\ln\left(c\left(ex+d\right)^{n}\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(g*x+f)/(b*ln(c*(e*x+d)^n)+a),x)
[Out] int(1/(g*x+f)/(b*ln(c*(e*x+d)^n)+a),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(gx+f\right)\left(b\log\left(\left(ex+d\right)^{n}c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
[Out] integrate(1/((g*x + f)*(b*log((e*x + d)^n*c) + a)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{\left(f+g\,x\right)\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((f + g*x)*(a + b*log(c*(d + e*x)^n))),x)
[Out] int(1/((f + g*x)*(a + b*log(c*(d + e*x)^n))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\log\left(c\left(d+ex\right)^{n}\right)\right)\left(f+gx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*ln(c*(e*x+d)**n)),x)
[Out] Integral(1/((a + b*log(c*(d + e*x)**n))*(f + g*x)), x)
```

3.236 $\int \frac{1}{(f+gx)(h+ix)\left(a+b\log\left(c(d+ex)^n\right)\right)}\,dx$

Optimal. Leaf size=80

$$\frac{g\text{Int}\left(\frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)},x\right)}{gh-fi}-\frac{i\text{Int}\left(\frac{1}{(h+ix)\left(a+b\log\left(c(d+ex)^n\right)\right)},x\right)}{gh-fi}$$

```
[Out] g*Unintegrable(1/(g*x+f)/(a+b*ln(c*(e*x+d)^n)),x)/(-f*i+g*h)-i*Unintegrable
(1/(i*x+h)/(a+b*ln(c*(e*x+d)^n)),x)/(-f*i+g*h)
```

Rubi [A] time = 0.19, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(f+gx)(h+ix)\left(a+b\log\left(c(d+ex)^n\right)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((f + g*x)*(h + i*x)*(a + b*Log[c*(d + e*x)^n])),x]
```

```
[Out] (g*Defer[Int][1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])), x])/(g*h - f*i) - (
i*Defer[Int][1/((h + i*x)*(a + b*Log[c*(d + e*x)^n])), x])/(g*h - f*i)
```

Rubi steps

$$\int \frac{1}{(h+236x)(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)}\,dx=\int\left(\frac{236}{(236f-gh)(h+236x)\left(a+b\log\left(c(d+ex)^n\right)\right)}-\frac{}{(236f-}\right.$$

$$=\frac{236\int\frac{1}{(h+236x)\left(a+b\log\left(c(d+ex)^n\right)\right)}\,dx}{236f-gh}-\frac{g\int\frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)}\,d}{236f-gh}$$

Mathematica [A] time = 0.98, size = 0, normalized size = 0.00

$$\int \frac{1}{(f+gx)(h+ix)\left(a+b\log\left(c(d+ex)^n\right)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((f + g*x)*(h + i*x)*(a + b*Log[c*(d + e*x)^n])),x]
```

```
[Out] Integrate[1/((f + g*x)*(h + i*x)*(a + b*Log[c*(d + e*x)^n])), x]
```

fricas [A] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{1}{agix^2+afh+\left(agh+afi\right)x+\left(bgix^2+bfh+\left(bgh+bfi\right)x\right)\log\left(\left(ex+d\right)^n c\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(i*x+h)/(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
```

```
[Out] integral(1/(a*g*i*x^2 + a*f*h + (a*g*h + a*f*i)*x + (b*g*i*x^2 + b*f*h + (b
*g*h + b*f*i)*x)*log((e*x + d)^n*c)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(gx+f\right)\left(ix+h\right)\left(b\log\left(\left(ex+d\right)^{n}c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(i*x+h)/(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
[Out] integrate(1/((g*x + f)*(i*x + h)*(b*log((e*x + d)^n*c) + a)), x)
```

maple [A] time = 1.17, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(gx+f\right)\left(ix+h\right)\left(b\ln\left(c\left(ex+d\right)^{n}\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(g*x+f)/(i*x+h)/(b*ln(c*(e*x+d)^n)+a),x)
[Out] int(1/(g*x+f)/(i*x+h)/(b*ln(c*(e*x+d)^n)+a),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(gx+f\right)\left(ix+h\right)\left(b\log\left(\left(ex+d\right)^{n}c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(i*x+h)/(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
[Out] integrate(1/((g*x + f)*(i*x + h)*(b*log((e*x + d)^n*c) + a)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{\left(f+g\,x\right)\,\left(h+i\,x\right)\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((f + g*x)*(h + i*x)*(a + b*log(c*(d + e*x)^n))),x)
[Out] int(1/((f + g*x)*(h + i*x)*(a + b*log(c*(d + e*x)^n))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\log\left(c\left(d+ex\right)^{n}\right)\right)\left(f+gx\right)\left(h+ix\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(i*x+h)/(a+b*ln(c*(e*x+d)**n)),x)
[Out] Integral(1/((a + b*log(c*(d + e*x)**n))*(f + g*x)*(h + i*x)), x)
```

3.237 $\int \frac{1}{(f+gx)(h+ix)^2\left(a+b\log(c(d+ex)^n)\right)}\,dx$

Optimal. Leaf size=123

$$\frac{g^2\mathrm{Int}\left(\frac{1}{(f+gx)\left(a+b\log(c(d+ex)^n)\right)},x\right)}{(gh-fi)^2}-\frac{gi\mathrm{Int}\left(\frac{1}{(h+ix)\left(a+b\log(c(d+ex)^n)\right)},x\right)}{(gh-fi)^2}-\frac{i\mathrm{Int}\left(\frac{1}{(h+ix)^2\left(a+b\log(c(d+ex)^n)\right)},x\right)}{gh-fi}$$

```
[Out] g^2*Unintegrable(1/(g*x+f)/(a+b*ln(c*(e*x+d)^n)),x)/(-f*i+g*h)^2-i*Unintegr
able(1/(i*x+h)^2/(a+b*ln(c*(e*x+d)^n)),x)/(-f*i+g*h)-g*i*Unintegrable(1/(i*
x+h)/(a+b*ln(c*(e*x+d)^n)),x)/(-f*i+g*h)^2
```

Rubi [A] time = 0.23, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(f+gx)(h+ix)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((f + g*x)*(h + i*x)^2*(a + b*Log[c*(d + e*x)^n])),x]
```

```
[Out] (g^2*Defer[Int][1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])), x])/(g*h - f*i)^2
 - (i*Defer[Int][1/((h + i*x)^2*(a + b*Log[c*(d + e*x)^n])), x])/(g*h - f*i
) - (g*i*Defer[Int][1/((h + i*x)*(a + b*Log[c*(d + e*x)^n])), x])/(g*h - f*
i)^2
```

Rubi steps

$$\int \frac{1}{(h+237x)^2(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)}\,dx=\int \left(\frac{237}{(237f-gh)(h+237x)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}-\frac{}{(237f}\right.$$

$$=-\frac{(237g)\int \frac{1}{(h+237x)\left(a+b\log(c(d+ex)^n)\right)}\,dx}{(237f-gh)^2}+\frac{g^2\int \frac{1}{(f+gx)\left(a+b\log(c(d-\right.}}{(237f-gh)^2}$$

Mathematica [A] time = 3.28, size = 0, normalized size = 0.00

$$\int \frac{1}{(f+gx)(h+ix)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((f + g*x)*(h + i*x)^2*(a + b*Log[c*(d + e*x)^n])),x]
```

```
[Out] Integrate[1/((f + g*x)*(h + i*x)^2*(a + b*Log[c*(d + e*x)^n])), x]
```

fricas [A] time = 0.43, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{1}{agi^2x^3+afh^2+\left(2\,aghi+afi^2\right)x^2+\left(agh^2+2\,afhi\right)x+\left(bgi^2x^3+bfh^2+\left(2\,bghi+bfi^2\right)x^2+\left(bgh^2+\right.\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(i*x+h)^2/(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
```

```
[Out] integral(1/(a*g*i^2*x^3 + a*f*h^2 + (2*a*g*h*i + a*f*i^2)*x^2 + (a*g*h^2 +
2*a*f*h*i)*x + (b*g*i^2*x^3 + b*f*h^2 + (2*b*g*h*i + b*f*i^2)*x^2 + (b*g*h^
2 + 2*b*f*h*i)*x)*log((e*x + d)^n*c)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(gx+f)(ix+h)^2\left(b\log\left((ex+d)^n c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(i*x+h)^2/(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
```

```
[Out] integrate(1/((g*x + f)*(i*x + h)^2*(b*log((e*x + d)^n*c) + a)), x)
```

maple [A] time = 1.58, size = 0, normalized size = 0.00

$$\int \frac{1}{(gx+f)(ix+h)^2\left(b\ln\left(c(ex+d)^n\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(g*x+f)/(i*x+h)^2/(b*ln(c*(e*x+d)^n)+a),x)
```

```
[Out] int(1/(g*x+f)/(i*x+h)^2/(b*ln(c*(e*x+d)^n)+a),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(gx+f)(ix+h)^2\left(b\log\left((ex+d)^n c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(i*x+h)^2/(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
```

```
[Out] integrate(1/((g*x + f)*(i*x + h)^2*(b*log((e*x + d)^n*c) + a)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{(f+g\,x)\,(h+i\,x)^2\,\left(a+b\,\ln\left(c\,(d+e\,x)^n\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((f + g*x)*(h + i*x)^2*(a + b*log(c*(d + e*x)^n))),x)
```

```
[Out] int(1/((f + g*x)*(h + i*x)^2*(a + b*log(c*(d + e*x)^n))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\log\left(c(d+ex)^n\right)\right)(f+gx)(h+ix)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(i*x+h)**2/(a+b*ln(c*(e*x+d)**n)),x)
```

```
[Out] Integral(1/((a + b*log(c*(d + e*x)**n))*(f + g*x)*(h + i*x)**2), x)
```

3.238 $\int \frac{h+ix}{(f+gx)\left(a+b\log(c(d+ex)^n)\right)^2} dx$

Optimal. Leaf size=143

$$\frac{(gh-fi)\text{Int}\left(\frac{1}{(f+gx)\left(a+b\log(c(d+ex)^n)\right)^2},x\right)}{g}+\frac{ie^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{b^2egn^2}-\frac{i(d+ex)}{begn\left(a+b\log(c(d+\right.}$$

```
[Out] i*(e*x+d)*Ei((a+b*ln(c*(e*x+d)^n))/b/n)/b^2/e/exp(a/b/n)/g/n^2/((c*(e*x+d)^
n)^(1/n))-i*(e*x+d)/b/e/g/n/(a+b*ln(c*(e*x+d)^n))+(-f*i+g*h)*Unintegrable(1
/(g*x+f)/(a+b*ln(c*(e*x+d)^n))^2,x)/g
```

Rubi [A] time = 0.20, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{h+ix}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^2} dx$$

Verification is Not applicable to the result.

```
[In] Int[(h + i*x)/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^2),x]
```

```
[Out] (i*(d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(b^2*e*E^(a/(
b*n))*g*n^2*(c*(d + e*x)^n)^n^(-1)) - (i*(d + e*x))/(b*e*g*n*(a + b*Log[c*(
d + e*x)^n])) + ((g*h - f*i)*Defer[Int][1/((f + g*x)*(a + b*Log[c*(d + e*x)
^n])^2), x])/g
```

Rubi steps

$$\begin{aligned}
\int \frac{h+238x}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^2} dx &= \int \left(\frac{238}{g\left(a+b\log\left(c(d+ex)^n\right)\right)^2}+\frac{-238f+gh}{g(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}\right) d\\
&= \frac{238\int \frac{1}{\left(a+b\log(c(d+ex)^n)\right)^2} dx}{g}+\frac{(-238f+gh)\int \frac{1}{(f+gx)\left(a+b\log(c(d+ex)^n)\right)^2} dx}{g}\\
&= \frac{238\,\text{Subst}\left(\int \frac{1}{\left(a+b\log(cx^n)\right)^2} dx, x, d+ex\right)}{eg}+\frac{(-238f+gh)\int \frac{1}{(f+gx)\left(a+b\log\right.}}{g}\\
&= -\frac{238(d+ex)}{begn\left(a+b\log\left(c(d+ex)^n\right)\right)}+\frac{(-238f+gh)\int \frac{1}{(f+gx)\left(a+b\log(c(d+ex)^n)\right)^2}}{g}\\
&= -\frac{238(d+ex)}{begn\left(a+b\log\left(c(d+ex)^n\right)\right)}+\frac{(-238f+gh)\int \frac{1}{(f+gx)\left(a+b\log(c(d+ex)^n)\right)^2}}{g}\\
&= \frac{238e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{b^2egn^2}-\frac{238(d+}{begn\left(a+b\log\right.}
\end{aligned}$$

Mathematica [A] time = 1.42, size = 0, normalized size = 0.00

$$\int \frac{h+ix}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^2} dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(h + i*x)/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^2),x]
```

```
[Out] Integrate[(h + i*x)/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^2), x]
```

fricas [A] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{ix+h}{a^2gx+a^2f+\left(b^2gx+b^2f\right)\log\left((ex+d)^nc\right)^2+2\left(abgx+abf\right)\log\left((ex+d)^nc\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)/(g*x+f)/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="fricas")
```

```
[Out] integral((i*x + h)/(a^2*g*x + a^2*f + (b^2*g*x + b^2*f)*log((e*x + d)^n*c)^
2 + 2*(a*b*g*x + a*b*f)*log((e*x + d)^n*c)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{ix+h}{\left(gx+f\right)\left(b\log\left((ex+d)^nc\right)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)/(g*x+f)/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="giac")
```

```
[Out] integrate((i*x + h)/((g*x + f)*(b*log((e*x + d)^n*c) + a)^2), x)
```

maple [A] time = 3.08, size = 0, normalized size = 0.00

$$\int \frac{ix+h}{\left(gx+f\right)\left(b\ln\left(c\,(ex+d)^n\right)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)/(g*x+f)/(b*ln(c*(e*x+d)^n)+a)^2,x)
```

```
[Out] int((i*x+h)/(g*x+f)/(b*ln(c*(e*x+d)^n)+a)^2,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{eix^2+dh+(eh+di)x}{b^2efn\log(c)+abefn+\left(b^2egn\log(c)+abegn\right)x+\left(b^2egnx+b^2efn\right)\log\left((ex+d)^n\right)}+\int \frac{}{b^2ef^2n\log(c)+ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)/(g*x+f)/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="maxima")
```

```
[Out] -(e*i*x^2 + d*h + (e*h + d*i)*x)/(b^2*e*f*n*log(c) + a*b*e*f*n + (b^2*e*g*n
*log(c) + a*b*e*g*n)*x + (b^2*e*g*n*x + b^2*e*f*n)*log((e*x + d)^n)) + inte
grate((e*g*i*x^2 + 2*e*f*i*x + e*f*h - (g*h - f*i)*d)/(b^2*e*f^2*n*log(c) +
 a*b*e*f^2*n + (b^2*e*g^2*n*log(c) + a*b*e*g^2*n)*x^2 + 2*(b^2*e*f*g*n*log(
c) + a*b*e*f*g*n)*x + (b^2*e*g^2*n*x^2 + 2*b^2*e*f*g*n*x + b^2*e*f^2*n)*log
((e*x + d)^n)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{h+i\,x}{\left(f+g\,x\right)\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h + i*x)/((f + g*x)*(a + b*log(c*(d + e*x)^n))^2),x)
```

```
[Out] int((h + i*x)/((f + g*x)*(a + b*log(c*(d + e*x)^n))^2), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{h + ix}{\left(a + b\log\left(c\left(d + ex\right)^{n}\right)\right)^{2}\left(f + gx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)/(g*x+f)/(a+b*ln(c*(e*x+d)**n))**2,x)
```

```
[Out] Integral((h + i*x)/((a + b*log(c*(d + e*x)**n))**2*(f + g*x)), x)
```

3.239 $\int \frac{1}{(f+gx)\left(a+b\log(c(d+ex)^n)\right)^2}\,dx$

Optimal. Leaf size=27

$$\operatorname{Int}\left(\frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^2},x\right)$$

```
[Out] Unintegrable(1/(g*x+f)/(a+b*ln(c*(e*x+d)^n))^2,x)
```

Rubi [A] time = 0.03, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^2),x]
[Out] Defer[Int][1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^2), x]
```

Rubi steps

$$\int \frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}\,dx=\int \frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}\,dx$$

Mathematica [A] time = 0.14, size = 0, normalized size = 0.00

$$\int \frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^2),x]
[Out] Integrate[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^2), x]
```

fricas [A] time = 0.46, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(\frac{1}{a^2gx+a^2f+\left(b^2gx+b^2f\right)\log\left((ex+d)^nc\right)^2+2\left(abgx+abf\right)\log\left((ex+d)^nc\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="fricas")
[Out] integral(1/(a^2*g*x + a^2*f + (b^2*g*x + b^2*f)*log((e*x + d)^n*c)^2 + 2*(a
*b*g*x + a*b*f)*log((e*x + d)^n*c)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(gx+f)\left(b\log\left((ex+d)^nc\right)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="giac")
[Out] integrate(1/((g*x + f)*(b*log((e*x + d)^n*c) + a)^2), x)
```

maple [A] time = 0.04, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(gx+f\right)\left(b\ln\left(c\left(ex+d\right)^{n}\right)+a\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(g*x+f)/(b*ln(c*(e*x+d)^n)+a)^2,x)
[Out] int(1/(g*x+f)/(b*ln(c*(e*x+d)^n)+a)^2,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\left(ef-dg\right)\int \frac{1}{b^{2}ef^{2}n\log(c)+abef^{2}n+\left(b^{2}eg^{2}n\log(c)+abeg^{2}n\right)x^{2}+2\left(b^{2}efgn\log(c)+abefgn\right)x+\left(b^{2}eg^{2}nx^{2}+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="maxima")
[Out] (e*f - d*g)*integrate(1/(b^2*e*f^2*n*log(c) + a*b*e*f^2*n + (b^2*e*g^2*n*lo
g(c) + a*b*e*g^2*n)*x^2 + 2*(b^2*e*f*g*n*log(c) + a*b*e*f*g*n)*x + (b^2*e*g
^2*n*x^2 + 2*b^2*e*f*g*n*x + b^2*e*f^2*n)*log((e*x + d)^n)), x) - (e*x + d)
/(b^2*e*f*n*log(c) + a*b*e*f*n + (b^2*e*g*n*log(c) + a*b*e*g*n)*x + (b^2*e*
g*n*x + b^2*e*f*n)*log((e*x + d)^n))
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{\left(f+g\,x\right)\,{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((f + g*x)*(a + b*log(c*(d + e*x)^n))^2),x)
[Out] int(1/((f + g*x)*(a + b*log(c*(d + e*x)^n))^2), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\log\left(c\left(d+ex\right)^{n}\right)\right)^{2}\left(f+gx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*ln(c*(e*x+d)**n))**2,x)
[Out] Integral(1/((a + b*log(c*(d + e*x)**n))**2*(f + g*x)), x)
```

3.240 $\int \frac{1}{(f+gx)(h+ix)\left(a+b\log(c(d+ex)^n)\right)^2} dx$

Optimal. Leaf size=80

$$\frac{g\text{Int}\left(\frac{1}{(f+gx)\left(a+b\log(c(d+ex)^n)\right)^2},x\right)}{gh-fi}-\frac{i\text{Int}\left(\frac{1}{(h+ix)\left(a+b\log(c(d+ex)^n)\right)^2},x\right)}{gh-fi}$$

```
[Out] g*Unintegrable(1/(g*x+f)/(a+b*ln(c*(e*x+d)^n))^2,x)/(-f*i+g*h)-i*Unintegrab
le(1/(i*x+h)/(a+b*ln(c*(e*x+d)^n))^2,x)/(-f*i+g*h)
```

Rubi [A] time = 0.18, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(f+gx)(h+ix)\left(a+b\log\left(c(d+ex)^n\right)\right)^2} dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((f + g*x)*(h + i*x)*(a + b*Log[c*(d + e*x)^n])^2),x]
```

```
[Out] (g*Defer[Int][1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^2), x])/(g*h - f*i) -
 (i*Defer[Int][1/((h + i*x)*(a + b*Log[c*(d + e*x)^n])^2), x])/(g*h - f*i)
```

Rubi steps

$$\int \frac{1}{(h+240x)(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^2} dx = \int \left(\frac{240}{(240f-gh)(h+240x)\left(a+b\log\left(c(d+ex)^n\right)\right)^2} - \frac{}{(24}\right.$$
$$= \frac{240\int \frac{1}{(h+240x)\left(a+b\log(c(d+ex)^n)\right)^2} dx}{240f-gh} - \frac{g\int \frac{1}{(f+gx)\left(a+b\log(c(d+e\right.}}{240f-gh}$$

Mathematica [A] time = 13.25, size = 0, normalized size = 0.00

$$\int \frac{1}{(f+gx)(h+ix)\left(a+b\log\left(c(d+ex)^n\right)\right)^2} dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((f + g*x)*(h + i*x)*(a + b*Log[c*(d + e*x)^n])^2),x]
```

```
[Out] Integrate[1/((f + g*x)*(h + i*x)*(a + b*Log[c*(d + e*x)^n])^2), x]
```

fricas [A] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{1}{a^2gix^2+a^2fh+\left(b^2gix^2+b^2fh+\left(b^2gh+b^2fi\right)x\right)\log\left((ex+d)^nc\right)^2+\left(a^2gh+a^2fi\right)x+2\left(abgix^2+\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(i*x+h)/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="fricas")
```

```
[Out] integral(1/(a^2*g*i*x^2 + a^2*f*h + (b^2*g*i*x^2 + b^2*f*h + (b^2*g*h + b^2
*f*i)*x)*log((e*x + d)^n*c)^2 + (a^2*g*h + a^2*f*i)*x + 2*(a*b*g*i*x^2 + a*
b*f*h + (a*b*g*h + a*b*f*i)*x)*log((e*x + d)^n*c)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(gx+f\right)(ix+h)\left(b\log\left((ex+d)^nc\right)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(i*x+h)/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="giac")
[Out] integrate(1/((g*x + f)*(i*x + h)*(b*log((e*x + d)^n*c) + a)^2), x)
```

maple [A] time = 17.41, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(gx+f\right)(ix+h)\left(b\ln\left(c\,(ex+d)^n\right)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(g*x+f)/(i*x+h)/(b*ln(c*(e*x+d)^n)+a)^2,x)
[Out] int(1/(g*x+f)/(i*x+h)/(b*ln(c*(e*x+d)^n)+a)^2,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{ex+d}{b^2efhn\log(c)+abefhn+\left(b^2egin\log(c)+abegin\right)x^2+\left(\left(ghn+fin\right)b^2e\log(c)+\left(ghn+fin\right)abe\right)x+\left(b^2eginx\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(i*x+h)/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="maxima")
[Out] -(e*x + d)/(b^2*e*f*h*n*log(c) + a*b*e*f*h*n + (b^2*e*g*i*n*log(c) + a*b*e*
g*i*n)*x^2 + ((g*h*n + f*i*n)*b^2*e*log(c) + (g*h*n + f*i*n)*a*b*e)*x + (b^
2*e*g*i*n*x^2 + b^2*e*f*h*n + (g*h*n + f*i*n)*b^2*e*x)*log((e*x + d)^n)) -
integrate((e*g*i*x^2 + 2*d*g*i*x - e*f*h + (g*h + f*i)*d)/(b^2*e*f^2*h^2*n*
log(c) + a*b*e*f^2*h^2*n + (b^2*e*g^2*i^2*n*log(c) + a*b*e*g^2*i^2*n)*x^4 +
 2*((g^2*h*i*n + f*g*i^2*n)*b^2*e*log(c) + (g^2*h*i*n + f*g*i^2*n)*a*b*e)*x
^3 + ((g^2*h^2*n + 4*f*g*h*i*n + f^2*i^2*n)*b^2*e*log(c) + (g^2*h^2*n + 4*f
*g*h*i*n + f^2*i^2*n)*a*b*e)*x^2 + 2*((f*g*h^2*n + f^2*h*i*n)*b^2*e*log(c)
+ (f*g*h^2*n + f^2*h*i*n)*a*b*e)*x + (b^2*e*g^2*i^2*n*x^4 + b^2*e*f^2*h^2*n
 + 2*(g^2*h*i*n + f*g*i^2*n)*b^2*e*x^3 + (g^2*h^2*n + 4*f*g*h*i*n + f^2*i^2
*n)*b^2*e*x^2 + 2*(f*g*h^2*n + f^2*h*i*n)*b^2*e*x)*log((e*x + d)^n)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{\left(f+g\,x\right)\,\left(h+i\,x\right)\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((f + g*x)*(h + i*x)*(a + b*log(c*(d + e*x)^n))^2),x)
[Out] int(1/((f + g*x)*(h + i*x)*(a + b*log(c*(d + e*x)^n))^2), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\log\left(c\left(d+ex\right)^n\right)\right)^2\left(f+gx\right)(h+ix)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(i*x+h)/(a+b*ln(c*(e*x+d)**n))**2,x)
```

```
[Out] Integral(1/((a + b*log(c*(d + e*x)**n))**2*(f + g*x)*(h + i*x)), x)
```

3.241 $\int \frac{1}{(f+gx)(h+ix)^2\left(a+b\log(c(d+ex)^n)\right)^2}\,dx$

Optimal. Leaf size=123

$$\frac{g^2\text{Int}\left(\frac{1}{(f+gx)\left(a+b\log(c(d+ex)^n)\right)^2},x\right)}{(gh-fi)^2}-\frac{gi\text{Int}\left(\frac{1}{(h+ix)\left(a+b\log(c(d+ex)^n)\right)^2},x\right)}{(gh-fi)^2}-\frac{i\text{Int}\left(\frac{1}{(h+ix)^2\left(a+b\log(c(d+ex)^n)\right)^2},x\right)}{gh-fi}$$

```
[Out] g^2*Unintegrable(1/(g*x+f)/(a+b*ln(c*(e*x+d)^n))^2,x)/(-f*i+g*h)^2-i*Uninte
grable(1/(i*x+h)^2/(a+b*ln(c*(e*x+d)^n))^2,x)/(-f*i+g*h)-g*i*Unintegrable(1
/(i*x+h)/(a+b*ln(c*(e*x+d)^n))^2,x)/(-f*i+g*h)^2
```

Rubi [A] time = 0.22, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(f+gx)(h+ix)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((f + g*x)*(h + i*x)^2*(a + b*Log[c*(d + e*x)^n])^2),x]
```

```
[Out] (g^2*Defer[Int][1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^2), x])/(g*h - f*i)
^2 - (i*Defer[Int][1/((h + i*x)^2*(a + b*Log[c*(d + e*x)^n])^2), x])/(g*h -
 f*i) - (g*i*Defer[Int][1/((h + i*x)*(a + b*Log[c*(d + e*x)^n])^2), x])/(g*
h - f*i)^2
```

Rubi steps

$$\int \frac{1}{(h+241x)^2(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}\,dx = \int \left(\frac{241}{(241f-gh)(h+241x)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^2}-\frac{}{(241}\right.$$

$$= -\frac{(241g)\int \frac{1}{(h+241x)\left(a+b\log(c(d+ex)^n)\right)^2}\,dx}{(241f-gh)^2}+\frac{g^2\int \frac{1}{(f+gx)\left(a+b\log(c(\right.}}{(241f-g}$$

Mathematica [A] time = 26.94, size = 0, normalized size = 0.00

$$\int \frac{1}{(f+gx)(h+ix)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((f + g*x)*(h + i*x)^2*(a + b*Log[c*(d + e*x)^n])^2),x]
```

```
[Out] Integrate[1/((f + g*x)*(h + i*x)^2*(a + b*Log[c*(d + e*x)^n])^2), x]
```

fricas [A] time = 0.47, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{}{a^2gi^2x^3+a^2fh^2+\left(2a^2ghi+a^2fi^2\right)x^2+\left(b^2gi^2x^3+b^2fh^2+\left(2b^2ghi+b^2fi^2\right)x^2+\left(b^2gh^2+2b^2fhi\right)x\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(i*x+h)^2/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="fricas
")
```

```
[Out] integral(1/(a^2*g*i^2*x^3 + a^2*f*h^2 + (2*a^2*g*h*i + a^2*f*i^2)*x^2 + (b^
2*g*i^2*x^3 + b^2*f*h^2 + (2*b^2*g*h*i + b^2*f*i^2)*x^2 + (b^2*g*h^2 + 2*b^
2*f*h*i)*x)*log((e*x + d)^n*c)^2 + (a^2*g*h^2 + 2*a^2*f*h*i)*x + 2*(a*b*g*i
^2*x^3 + a*b*f*h^2 + (2*a*b*g*h*i + a*b*f*i^2)*x^2 + (a*b*g*h^2 + 2*a*b*f*h
*i)*x)*log((e*x + d)^n*c)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(gx+f)(ix+h)^2\left(b\log\left((ex+d)^n c\right)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(i*x+h)^2/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="giac")
```

```
[Out] integrate(1/((g*x + f)*(i*x + h)^2*(b*log((e*x + d)^n*c) + a)^2), x)
```

maple [A] time = 26.78, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(gx+f\right)\left(ix+h\right)^2\left(b\ln\left(c\left(ex+d\right)^n\right)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(g*x+f)/(i*x+h)^2/(b*ln(c*(e*x+d)^n)+a)^2,x)
```

```
[Out] int(1/(g*x+f)/(i*x+h)^2/(b*ln(c*(e*x+d)^n)+a)^2,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{}{b^2efh^2n\log(c)+abefh^2n+\left(b^2egi^2n\log(c)+abegi^2n\right)x^3+\left(\left(2ghin+fi^2n\right)b^2e\log(c)+\left(2ghin+fi^2n\right)abe\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(i*x+h)^2/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="maxima
")
```

```
[Out] -(e*x + d)/(b^2*e*f*h^2*n*log(c) + a*b*e*f*h^2*n + (b^2*e*g*i^2*n*log(c) +
a*b*e*g*i^2*n)*x^3 + ((2*g*h*i*n + f*i^2*n)*b^2*e*log(c) + (2*g*h*i*n + f*i
^2*n)*a*b*e)*x^2 + ((g*h^2*n + 2*f*h*i*n)*b^2*e*log(c) + (g*h^2*n + 2*f*h*i
*n)*a*b*e)*x + (b^2*e*g*i^2*n*x^3 + b^2*e*f*h^2*n + (2*g*h*i*n + f*i^2*n)*b
^2*e*x^2 + (g*h^2*n + 2*f*h*i*n)*b^2*e*x)*log((e*x + d)^n)) - integrate((2*
e*g*i*x^2 - e*f*h + (g*h + 2*f*i)*d + (e*f*i + 3*d*g*i)*x)/(b^2*e*f^2*h^3*n
*log(c) + a*b*e*f^2*h^3*n + (b^2*e*g^2*i^3*n*log(c) + a*b*e*g^2*i^3*n)*x^5
+ ((3*g^2*h*i^2*n + 2*f*g*i^3*n)*b^2*e*log(c) + (3*g^2*h*i^2*n + 2*f*g*i^3*
n)*a*b*e)*x^4 + ((3*g^2*h^2*i*n + 6*f*g*h*i^2*n + f^2*i^3*n)*b^2*e*log(c) +
 (3*g^2*h^2*i*n + 6*f*g*h*i^2*n + f^2*i^3*n)*a*b*e)*x^3 + ((g^2*h^3*n + 6*f
*g*h^2*i*n + 3*f^2*h*i^2*n)*b^2*e*log(c) + (g^2*h^3*n + 6*f*g*h^2*i*n + 3*f
^2*h*i^2*n)*a*b*e)*x^2 + ((2*f*g*h^3*n + 3*f^2*h^2*i*n)*b^2*e*log(c) + (2*f
*g*h^3*n + 3*f^2*h^2*i*n)*a*b*e)*x + (b^2*e*g^2*i^3*n*x^5 + b^2*e*f^2*h^3*n
 + (3*g^2*h*i^2*n + 2*f*g*i^3*n)*b^2*e*x^4 + (3*g^2*h^2*i*n + 6*f*g*h*i^2*n
 + f^2*i^3*n)*b^2*e*x^3 + (g^2*h^3*n + 6*f*g*h^2*i*n + 3*f^2*h*i^2*n)*b^2*e
*x^2 + (2*f*g*h^3*n + 3*f^2*h^2*i*n)*b^2*e*x)*log((e*x + d)^n)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{\left(f+g\,x\right)\,{\left(h+i\,x\right)}^2\,{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((f + g*x)*(h + i*x)^2*(a + b*log(c*(d + e*x)^n))^2),x)
```

```
[Out] int(1/((f + g*x)*(h + i*x)^2*(a + b*log(c*(d + e*x)^n))^2), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a + b\log\left(c\left(d + ex\right)^{n}\right)\right)^{2}\left(f + gx\right)\left(h + ix\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(i*x+h)**2/(a+b*ln(c*(e*x+d)**n))**2,x)
```

```
[Out] Integral(1/((a + b*log(c*(d + e*x)**n))**2*(f + g*x)*(h + i*x)**2), x)
```

3.242 $\int \frac{x^3(a+b\log(c(d+ex)^n))}{f+gx}\,dx$

Optimal. Leaf size=281

$$-\frac{f^3\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^4}-\frac{fx^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g^2}+\frac{x^3\left(a+b\log\left(c(d+ex)^n\right)\right)}{3g}+\frac{af^2x}{g^3}+\frac{bf}{}$$

```
[Out] a*f^2*x/g^3-b*f^2*n*x/g^3-1/2*b*d*f*n*x/e/g^2-1/3*b*d^2*n*x/e^2/g+1/4*b*f*n
*x^2/g^2+1/6*b*d*n*x^2/e/g-1/9*b*n*x^3/g+1/2*b*d^2*f*n*ln(e*x+d)/e^2/g^2+1/
3*b*d^3*n*ln(e*x+d)/e^3/g+b*f^2*(e*x+d)*ln(c*(e*x+d)^n)/e/g^3-1/2*f*x^2*(a+
b*ln(c*(e*x+d)^n))/g^2+1/3*x^3*(a+b*ln(c*(e*x+d)^n))/g-f^3*(a+b*ln(c*(e*x+d
)^n))*ln(e*(g*x+f)/(-d*g+e*f))/g^4-b*f^3*n*polylog(2,-g*(e*x+d)/(-d*g+e*f))
/g^4
```

Rubi [A] time = 0.28, antiderivative size = 281, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 8, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.320$, Rules used = {43, 2416, 2389, 2295, 2395, 2394, 2393, 2391}

$$-\frac{bf^3n\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g^4}-\frac{f^3\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^4}-\frac{fx^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g^2}+\frac{x^3\left(a+b\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(a + b*Log[c*(d + e*x)^n]))/(f + g*x),x]
```

```
[Out] (a*f^2*x)/g^3 - (b*f^2*n*x)/g^3 - (b*d*f*n*x)/(2*e*g^2) - (b*d^2*n*x)/(3*e^
2*g) + (b*f*n*x^2)/(4*g^2) + (b*d*n*x^2)/(6*e*g) - (b*n*x^3)/(9*g) + (b*d^2
*f*n*Log[d + e*x])/(2*e^2*g^2) + (b*d^3*n*Log[d + e*x])/(3*e^3*g) + (b*f^2*
(d + e*x)*Log[c*(d + e*x)^n])/(e*g^3) - (f*x^2*(a + b*Log[c*(d + e*x)^n]))/
(2*g^2) + (x^3*(a + b*Log[c*(d + e*x)^n]))/(3*g) - (f^3*(a + b*Log[c*(d + e
*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/g^4 - (b*f^3*n*PolyLog[2, -((g*(d +
 e*x))/(e*f - d*g))])/g^4
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{x^3 \left(a+b\log\left(c(d+ex)^n\right)\right)}{f+gx}\,dx = \int \left(\frac{f^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^3} - \frac{fx\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^2} + \frac{x^2\left(a+b\log\left(c\right.\right.}{g}\right.$$

$$= \frac{f^2\int\left(a+b\log\left(c(d+ex)^n\right)\right)dx}{g^3} - \frac{f^3\int\frac{a+b\log\left(c(d+ex)^n\right)}{f+gx}dx}{g^3} - \frac{f\int x\left(a+b\log\left(c\right.\right.}{g^2}$$

$$= \frac{af^2x}{g^3} - \frac{fx^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g^2} + \frac{x^3\left(a+b\log\left(c(d+ex)^n\right)\right)}{3g} - \frac{f^3\left(a+b\,\mathrm{l}\right.}{}$$

$$= \frac{af^2x}{g^3} - \frac{fx^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g^2} + \frac{x^3\left(a+b\log\left(c(d+ex)^n\right)\right)}{3g} - \frac{f^3\left(a+b\,\mathrm{l}\right.}{}$$

$$= \frac{af^2x}{g^3} - \frac{bf^2nx}{g^3} - \frac{bdfnx}{2eg^2} - \frac{bd^2nx}{3e^2g} + \frac{bfnx^2}{4g^2} + \frac{bdnx^2}{6eg} - \frac{bnx^3}{9g} + \frac{bd^2fn\log(d+}{2e^2g^2}$$

Mathematica [A] time = 0.29, size = 241, normalized size = 0.86

$$\frac{e\left(gx\left(6ae^2\left(6f^2-3fgx+2g^2x^2\right)-bn\left(12d^2g^2-6deg(gx-3f)+e^2\left(36f^2-9fgx+4g^2x^2\right)\right)\right)-36ae^2f^3\log\left(\frac{e(f}{ef}\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(a + b*Log[c*(d + e*x)^n]))/(f + g*x),x]
```

```
[Out] (6*b*d^2*g^2*(3*e*f + 2*d*g)*n*Log[d + e*x] + e*(g*x*(6*a*e^2*(6*f^2 - 3*f*
g*x + 2*g^2*x^2) - b*n*(12*d^2*g^2 - 6*d*e*g*(-3*f + g*x) + e^2*(36*f^2 - 9
```

```
*f*g*x + 4*g^2*x^2))) - 36*a*e^2*f^3*Log[(e*(f + g*x))/(e*f - d*g)] + 6*b*e
*Log[c*(d + e*x)^n]*(6*d*f^2*g + e*g*x*(6*f^2 - 3*f*g*x + 2*g^2*x^2) - 6*e*
f^3*Log[(e*(f + g*x))/(e*f - d*g)])) - 36*b*e^3*f^3*n*PolyLog[2, (g*(d + e*
x))/(-(e*f) + d*g)])/(36*e^3*g^4)
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{bx^3\log\left((ex+d)^n c\right)+ax^3}{gx+f},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="fricas")
```

```
[Out] integral((b*x^3*log((e*x + d)^n*c) + a*x^3)/(g*x + f), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)x^3}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*x^3/(g*x + f), x)
```

maple [C] time = 0.28, size = 1000, normalized size = 3.56

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(b*ln(c*(e*x+d)^n)+a)/(g*x+f),x)
```

```
[Out] b*ln((e*x+d)^n)/g^3*x*f^2-b*ln((e*x+d)^n)*f^3/g^4*ln(g*x+f)-1/2*b*ln((e*x+d
)^n)/g^2*f*x^2+1/6*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/g*x^3+b*l
n(c)/g^3*x*f^2-b*ln(c)*f^3/g^4*ln(g*x+f)-1/2*b*ln(c)/g^2*f*x^2+1/2*b/e^2*n/
g^2*d^2*ln(d*g-e*f+(g*x+f)*e)*f+b/e*n/g^3*d*ln(d*g-e*f+(g*x+f)*e)*f^2+b*n/g
^4*f^3*dilog((d*g-e*f+(g*x+f)*e)/(d*g-e*f))-1/6*I*b*Pi*csgn(I*c*(e*x+d)^n)^
3/g*x^3+1/6*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/g*x^3+1/2*I*b*Pi*csgn(I*
(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/g^3*x*f^2-1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csg
n(I*c*(e*x+d)^n)^2/g^2*f*x^2+1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/g^3
*x*f^2-1/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/g^2*f*x^2+1/3*b*ln((e*x+d
)^n)/g*x^3+1/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/g^2*f*x^2+1/3*b/e^3*n/g*d^3*ln(
d*g-e*f+(g*x+f)*e)-1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*f^3/g^4*ln(g*
x+f)+1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*f^3/g^4*ln(g*x+f)-49/36*b*n/g^4*f^3-1
/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/g^3*x*f^2-1/2*I*b
*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*f^3/g^4*ln(g*x+f)-1/2*I*b*Pi*cs
gn(I*c*(e*x+d)^n)^3/g^3*x*f^2-1/2*a/g^2*f*x^2-a*f^3/g^4*ln(g*x+f)+1/3*b*ln(
c)/g*x^3+1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/g^2*f*x
^2+1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*f^3/g^4*ln(g*
x+f)-1/6*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/g*x^3+b*n/g
^4*f^3*ln(g*x+f)*ln((d*g-e*f+(g*x+f)*e)/(d*g-e*f))-2/3*b/e*n/g^3*d*f^2-1/3*
b/e^2*n/g^2*d^2*f+1/3*a/g*x^3+1/4*b*f*n*x^2/g^2-1/2*b*d*f*n*x/e/g^2-b*f^2*n
*x/g^3-1/9*b*n*x^3/g-1/3*b*d^2*n*x/e^2/g+1/6*b*d*n*x^2/e/g+a*f^2*x/g^3
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{6}a\left(\frac{6f^3\log\left(gx+f\right)}{g^4}-\frac{2g^2x^3-3fgx^2+6f^2x}{g^3}\right)+b\int\frac{x^3\log\left((ex+d)^n\right)+x^3\log(c)}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="maxima")
```

```
[Out] -1/6*a*(6*f^3*log(g*x + f)/g^4 - (2*g^2*x^3 - 3*f*g*x^2 + 6*f^2*x)/g^3) + b
*integrate((x^3*log((e*x + d)^n) + x^3*log(c))/(g*x + f), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^3 \left(a + b \ln\left(c (d + e x)^n\right)\right)}{f + g x} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(a + b*log(c*(d + e*x)^n)))/(f + g*x),x)
```

```
[Out] int((x^3*(a + b*log(c*(d + e*x)^n)))/(f + g*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^3 \left(a + b \log\left(c (d + ex)^n\right)\right)}{f + gx} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(a+b*ln(c*(e*x+d)**n))/(g*x+f),x)
```

```
[Out] Integral(x**3*(a + b*log(c*(d + e*x)**n))/(f + g*x), x)
```

3.243 $\int \frac{x^2(a+b\log(c(d+ex)^n))}{f+gx}\,dx$

Optimal. Leaf size=181

$$\frac{f^2\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^3}+\frac{x^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g}-\frac{afx}{g^2}-\frac{bf(d+ex)\log\left(c(d+ex)^n\right)}{eg^2}-\frac{bd^2n\,\mathrm{l}}{}$$

```
[Out] -a*f*x/g^2+b*f*n*x/g^2+1/2*b*d*n*x/e/g-1/4*b*n*x^2/g-1/2*b*d^2*n*ln(e*x+d)/
e^2/g-b*f*(e*x+d)*ln(c*(e*x+d)^n)/e/g^2+1/2*x^2*(a+b*ln(c*(e*x+d)^n))/g+f^2
*(a+b*ln(c*(e*x+d)^n))*ln(e*(g*x+f)/(-d*g+e*f))/g^3+b*f^2*n*polylog(2,-g*(e
*x+d)/(-d*g+e*f))/g^3
```

Rubi [A] time = 0.19, antiderivative size = 181, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 8, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.320, Rules used = {43, 2416, 2389, 2295, 2395, 2394, 2393, 2391}

$$\frac{bf^2n\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g^3}+\frac{f^2\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^3}+\frac{x^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g}-\frac{afx}{g^2}-\frac{bf(d}{}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(a + b*Log[c*(d + e*x)^n]))/(f + g*x),x]
```

```
[Out] -((a*f*x)/g^2) + (b*f*n*x)/g^2 + (b*d*n*x)/(2*e*g) - (b*n*x^2)/(4*g) - (b*d
^2*n*Log[d + e*x])/(2*e^2*g) - (b*f*(d + e*x)*Log[c*(d + e*x)^n])/(e*g^2) +
 (x^2*(a + b*Log[c*(d + e*x)^n]))/(2*g) + (f^2*(a + b*Log[c*(d + e*x)^n])*L
og[(e*(f + g*x))/(e*f - d*g)])/g^3 + (b*f^2*n*PolyLog[2, -((g*(d + e*x))/(e
*f - d*g))])/g^3
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
```

```
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{x^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{f+gx}\,dx = \int\left(-\frac{f\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^2}+\frac{x\left(a+b\log\left(c(d+ex)^n\right)\right)}{g}+\frac{f^2\left(a+b\log\left(c(\right.\right.}{g^2(f+g}\right.$$

$$= -\frac{f\int\left(a+b\log\left(c(d+ex)^n\right)\right)dx}{g^2}+\frac{f^2\int\frac{a+b\log(c(d+ex)^n)}{f+gx}dx}{g^2}+\frac{\int x\left(a+b\log\left(c(\right.\right.}{g}$$

$$= -\frac{afx}{g^2}+\frac{x^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g}+\frac{f^2\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g^3}$$

$$= -\frac{afx}{g^2}+\frac{x^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g}+\frac{f^2\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g^3}$$

$$= -\frac{afx}{g^2}+\frac{bfnx}{g^2}+\frac{bdnx}{2eg}-\frac{bnx^2}{4g}-\frac{bd^2n\log(d+ex)}{2e^2g}-\frac{bf(d+ex)\log\left(c(d+ex)\right.}{eg^2}$$

Mathematica [A] time = 0.16, size = 170, normalized size = 0.94

$$\frac{f^2\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^3}+\frac{x^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g}-\frac{afx}{g^2}-\frac{bf(d+ex)\log\left(c(d+ex)^n\right)}{eg^2}+\frac{bn\left(-\frac{2d^2\mathrm{l}}{}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(a + b*Log[c*(d + e*x)^n]))/(f + g*x),x]
```

```
[Out] -((a*f*x)/g^2) + (b*f*n*x)/g^2 + (b*n*((2*d*x)/e - x^2 - (2*d^2*Log[d + e*x
])/e^2))/(4*g) - (b*f*(d + e*x)*Log[c*(d + e*x)^n])/(e*g^2) + (x^2*(a + b*L
og[c*(d + e*x)^n]))/(2*g) + (f^2*(a + b*Log[c*(d + e*x)^n])*Log[(e*(f + g*x
```

```
))/(e*f - d*g)])/g^3 + (b*f^2*n*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/g
^3
```

fricas [F] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{bx^2\log\left((ex+d)^n c\right)+ax^2}{gx+f},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="fricas")
[Out] integral((b*x^2*log((e*x + d)^n*c) + a*x^2)/(g*x + f), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)x^2}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="giac")
[Out] integrate((b*log((e*x + d)^n*c) + a)*x^2/(g*x + f), x)
```

maple [C] time = 0.27, size = 724, normalized size = 4.00

$$-\frac{bfx\ln\left((ex+d)^n\right)}{g^2}+\frac{bf^2\ln\left((ex+d)^n\right)\ln\left(gx+f\right)}{g^3}-\frac{bdfn\ln\left(dg-ef+\left(gx+f\right)e\right)}{e\,g^2}-\frac{bf^2n\,\text{dilog}\left(\frac{dg-ef+(gx+f}{dg-ef}\right.}{g^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(b*ln(c*(e*x+d)^n)+a)/(g*x+f),x)
[Out] -b*ln((e*x+d)^n)/g^2*x*f+b*ln((e*x+d)^n)*f^2/g^3*ln(g*x+f)-b/e*n/g^2*d*ln(d
*g-e*f+(g*x+f)*e)*f-b*ln(c)/g^2*x*f+b*ln(c)*f^2/g^3*ln(g*x+f)-b*n/g^3*f^2*d
ilog((d*g-e*f+(g*x+f)*e)/(d*g-e*f))-1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(
e*x+d)^n)^2/g^2*x*f-1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)
^n)/g*x^2-1/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/g*x^2+1/2*I*b*Pi*csgn(I*c)*csgn(
I*c*(e*x+d)^n)^2*f^2/g^3*ln(g*x+f)+a*f^2/g^3*ln(g*x+f)+1/2*b*ln(c)/g*x^2+1/
4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/g*x^2-1/2*I*b*Pi*csgn(I*c*(e*x+d)^
n)^3*f^2/g^3*ln(g*x+f)+1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/g^2*x*f+1/4*I*b*Pi*
csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/g*x^2+1/2*b/e*n/g^2*d*f-b*n/g^3*f^2
*ln(g*x+f)*ln((d*g-e*f+(g*x+f)*e)/(d*g-e*f))+1/2*I*b*Pi*csgn(I*(e*x+d)^n)*c
sgn(I*c*(e*x+d)^n)^2*f^2/g^3*ln(g*x+f)+1/2*b*ln((e*x+d)^n)/g*x^2-1/2*b/e^2*
n/g*d^2*ln(d*g-e*f+(g*x+f)*e)+1/2*a/g*x^2+5/4*b*n/g^3*f^2-1/2*I*b*Pi*csgn(I
*c)*csgn(I*c*(e*x+d)^n)^2/g^2*x*f+1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*cs
gn(I*c*(e*x+d)^n)/g^2*x*f-1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(
e*x+d)^n)*f^2/g^3*ln(g*x+f)+b*f*n*x/g^2-1/4*b*n*x^2/g+1/2*b*d*n*x/e/g-a*f*x
/g^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{2}a\left(\frac{2f^2\log\left(gx+f\right)}{g^3}+\frac{gx^2-2fx}{g^2}\right)+b\int\frac{x^2\log\left((ex+d)^n\right)+x^2\log(c)}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="maxima")
```

```
[Out] 1/2*a*(2*f^2*log(g*x + f)/g^3 + (g*x^2 - 2*f*x)/g^2) + b*integrate((x^2*log
((e*x + d)^n) + x^2*log(c))/(g*x + f), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^2\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}{f+g\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(a + b*log(c*(d + e*x)^n)))/(f + g*x),x)
[Out] int((x^2*(a + b*log(c*(d + e*x)^n)))/(f + g*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{2} \left(a + b \log{\left(c \left(d + e x\right)^{n} \right)}\right)}{f + g x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(a+b*ln(c*(e*x+d)**n))/(g*x+f),x)
[Out] Integral(x**2*(a + b*log(c*(d + e*x)**n))/(f + g*x), x)
```

3.244 $\int \frac{x\left(a+b\log(c(d+ex)^n)\right)}{f+gx}\,dx$

Optimal. Leaf size=104

$$-\frac{f\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^2}+\frac{ax}{g}+\frac{b(d+ex)\log\left(c(d+ex)^n\right)}{eg}-\frac{bfn\text{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)}{g^2}-\frac{bnx}{g}$$

```
[Out] a*x/g-b*n*x/g+b*(e*x+d)*ln(c*(e*x+d)^n)/e/g-f*(a+b*ln(c*(e*x+d)^n))*ln(e*(g
*x+f)/(-d*g+e*f))/g^2-b*f*n*polylog(2,-g*(e*x+d)/(-d*g+e*f))/g^2
```

Rubi [A] time = 0.13, antiderivative size = 104, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.304, Rules used = {43, 2416, 2389, 2295, 2394, 2393, 2391}

$$-\frac{bfn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g^2}-\frac{f\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^2}+\frac{ax}{g}+\frac{b(d+ex)\log\left(c(d+ex)^n\right)}{eg}-\frac{bnx}{g}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(a + b*Log[c*(d + e*x)^n]))/(f + g*x),x]
```

```
[Out] (a*x)/g - (b*n*x)/g + (b*(d + e*x)*Log[c*(d + e*x)^n])/(e*g) - (f*(a + b*Lo
g[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/g^2 - (b*f*n*PolyLog[2, -
((g*(d + e*x))/(e*f - d*g))])/g^2
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{x\left(a+b\log\left(c(d+ex)^n\right)\right)}{f+gx}\,dx = \int\left(\frac{a+b\log\left(c(d+ex)^n\right)}{g}-\frac{f\left(a+b\log\left(c(d+ex)^n\right)\right)}{g(f+gx)}\right)dx$$

$$= \frac{\int\left(a+b\log\left(c(d+ex)^n\right)\right)dx}{g}-\frac{f\int\frac{a+b\log(c(d+ex)^n)}{f+gx}\,dx}{g}$$

$$= \frac{ax}{g}-\frac{f\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g^2}+\frac{b\int\log\left(c(d+ex)^n\right)dx}{g}+\frac{(befn$$

$$= \frac{ax}{g}-\frac{f\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g^2}+\frac{b\,\mathrm{Subst}\left(\int\log\left(cx^n\right)dx,x,d+e$$

$$= \frac{ax}{g}-\frac{bnx}{g}+\frac{b(d+ex)\log\left(c(d+ex)^n\right)}{eg}-\frac{f\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g^2}$$

Mathematica [A] time = 0.08, size = 95, normalized size = 0.91

$$\frac{-f\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)+agx+\frac{bg(d+ex)\log(c(d+ex)^n)}{e}-bfn\mathrm{Li}_2\left(\frac{g(d+ex)}{dg-ef}\right)-bgnx}{g^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(a + b*Log[c*(d + e*x)^n]))/(f + g*x),x]
```

```
[Out] (a*g*x - b*g*n*x + (b*g*(d + e*x)*Log[c*(d + e*x)^n])/e - f*(a + b*Log[c*(d
 + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)] - b*f*n*PolyLog[2, (g*(d + e*x))
/(-(e*f) + d*g)])/g^2
```

fricas [F] time = 0.43, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{bx\log\left((ex+d)^n c\right)+ax}{gx+f},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="fricas")
```

```
[Out] integral((b*x*log((e*x + d)^n*c) + a*x)/(g*x + f), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(b\log\left((ex+d)^n c\right)+a\right)x}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*x/(g*x + f), x)
```

maple [C] time = 0.31, size = 463, normalized size = 4.45

$$\frac{i\pi bf \operatorname{csgn}(ic)\operatorname{csgn}\left(i(ex+d)^{n}\right)\operatorname{csgn}\left(ic(ex+d)^{n}\right)\ln\left(gx+f\right)}{2g^{2}}-\frac{i\pi bf \operatorname{csgn}(ic)\operatorname{csgn}\left(ic(ex+d)^{n}\right)^{2}\ln\left(gx+f\right)}{2g^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(b*ln(c*(e*x+d)^n)+a)/(g*x+f),x)
```

```
[Out] b*ln((e*x+d)^n)/g*x-b*ln((e*x+d)^n)*f/g^2*ln(g*x+f)-b*n*x/g-b*n/g^2*f+b/e*n
/g*d*ln(d*g-e*f+(g*x+f)*e)+b*n/g^2*f*dilog((d*g-e*f+(g*x+f)*e)/(d*g-e*f))+b
*n/g^2*f*ln(g*x+f)*ln((d*g-e*f+(g*x+f)*e)/(d*g-e*f))-1/2*I*b*Pi*csgn(I*c*(e
*x+d)^n)^3/g*x-1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/g
*x-1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*f/g^2*ln(g*x+f)+1/2*I
*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/g*x-1/2*I*b*Pi*csgn(I*c)*csgn
(I*c*(e*x+d)^n)^2*f/g^2*ln(g*x+f)+1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^
2/g*x+1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*f/g^2*ln(g
*x+f)+1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*f/g^2*ln(g*x+f)+b*ln(c)/g*x-b*ln(c)*
f/g^2*ln(g*x+f)+a*x/g-a*f/g^2*ln(g*x+f)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$a\left(\frac{x}{g}-\frac{f\log\left(gx+f\right)}{g^{2}}\right)+b\int\frac{x\log\left((ex+d)^{n}\right)+x\log(c)}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="maxima")
```

```
[Out] a*(x/g - f*log(g*x + f)/g^2) + b*integrate((x*log((e*x + d)^n) + x*log(c))/
(g*x + f), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int\frac{x\left(a+b\,\ln\left(c\,(d+e\,x)^{n}\right)\right)}{f+g\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(a + b*log(c*(d + e*x)^n)))/(f + g*x),x)
```

```
[Out] int((x*(a + b*log(c*(d + e*x)^n)))/(f + g*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{x\left(a+b\log\left(c\,(d+ex)^{n}\right)\right)}{f+gx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*ln(c*(e*x+d)**n))/(g*x+f),x)
```

```
[Out] Integral(x*(a + b*log(c*(d + e*x)**n))/(f + g*x), x)
```

3.245 $\int \frac{a+b\log(c(d+ex)^n)}{f+gx}\,dx$

Optimal. Leaf size=63

$$\frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g}+\frac{bn\text{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)}{g}$$

```
[Out] (a+b*ln(c*(e*x+d)^n))*ln(e*(g*x+f)/(-d*g+e*f))/g+b*n*polylog(2,-g*(e*x+d)/(
-d*g+e*f))/g
```

Rubi [A] time = 0.05, antiderivative size = 63, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {2394, 2393, 2391}

$$\frac{bn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g}+\frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(f + g*x),x]
```

```
[Out] ((a + b*Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/g + (b*n*PolyLo
g[2, -((g*(d + e*x))/(e*f - d*g))])/g
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{a+b\log\left(c(d+ex)^n\right)}{f+gx}\,dx &= \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g}-\frac{(ben)\int \frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)}{d+ex}\,dx}{g}\\
&= \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g}-\frac{(bn)\,\text{Subst}\left(\int \frac{\log\left(1+\frac{gx}{ef-dg}\right)}{x}\,dx,x,d+ex\right)}{g}\\
&= \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g}+\frac{bn\text{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)}{g}
\end{aligned}$$

Mathematica [A] time = 0.02, size = 62, normalized size = 0.98

$$\frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g}+\frac{bn\text{Li}_2\left(\frac{g(d+ex)}{dg-ef}\right)}{g}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(f + g*x),x]
```

```
[Out] ((a + b*Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/g + (b*n*PolyLo
g[2, (g*(d + e*x))/(-(e*f) + d*g)])/g
```

fricas [F] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b\log\left((ex+d)^n c\right)+a}{gx+f},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="fricas")
```

```
[Out] integral((b*log((e*x + d)^n*c) + a)/(g*x + f), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{b\log\left((ex+d)^n c\right)+a}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)/(g*x + f), x)
```

maple [C] time = 0.11, size = 261, normalized size = 4.14

$$-\frac{i\pi b\,\text{csgn}(ic)\,\text{csgn}\left(i(ex+d)^n\right)\text{csgn}\left(ic(ex+d)^n\right)\ln\left(gx+f\right)}{2g}+\frac{i\pi b\,\text{csgn}(ic)\,\text{csgn}\left(ic(ex+d)^n\right)^2\ln\left(gx+f\right)}{2g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)/(g*x+f),x)
```

```
[Out] b/g*ln((e*x+d)^n)*ln(g*x+f)-b/g*n*dilog((d*g-e*f+(g*x+f)*e)/(d*g-e*f))-b/g*
n*ln((d*g-e*f+(g*x+f)*e)/(d*g-e*f))*ln(g*x+f)-1/2*I*ln(g*x+f)/g*b*Pi*csgn(I
*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/2*I*ln(g*x+f)/g*b*Pi*csgn(I*c)*
csgn(I*c*(e*x+d)^n)^2+1/2*I*ln(g*x+f)/g*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*
x+d)^n)^2-1/2*I*ln(g*x+f)/g*b*Pi*csgn(I*c*(e*x+d)^n)^3+b/g*ln(c)*ln(g*x+f)+
a/g*ln(g*x+f)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$b\int\frac{\log\left((ex+d)^n\right)+\log(c)}{gx+f}\,dx+\frac{a\log\left(gx+f\right)}{g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="maxima")
```

```
[Out] b*integrate((log((e*x + d)^n) + log(c))/(g*x + f), x) + a*log(g*x + f)/g
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}{f+g\,x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/(f + g*x),x)
[Out] int((a + b*log(c*(d + e*x)^n))/(f + g*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a+b\log\left(c\left(d+ex\right)^{n}\right)}{f+gx}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(g*x+f),x)
[Out] Integral((a + b*log(c*(d + e*x)**n))/(f + g*x), x)
```

3.246 $\int \frac{a+b\log(c(d+ex)^n)}{x(f+gx)}\,dx$

Optimal. Leaf size=107

$$-\frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f}+\frac{\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f}-\frac{bn\mathrm{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)}{f}+\frac{bn\mathrm{Li}_2\left(\frac{ex}{d}+1\right)}{f}$$

```
[Out] ln(-e*x/d)*(a+b*ln(c*(e*x+d)^n))/f-(a+b*ln(c*(e*x+d)^n))*ln(e*(g*x+f)/(-d*g
+e*f))/f-b*n*polylog(2,-g*(e*x+d)/(-d*g+e*f))/f+b*n*polylog(2,1+e*x/d)/f
```

Rubi [A] time = 0.14, antiderivative size = 107, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 8, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.320, Rules used = {36, 29, 31, 2416, 2394, 2315, 2393, 2391}

$$-\frac{bn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{f}+\frac{bn\text{PolyLog}\left(2,\frac{ex}{d}+1\right)}{f}-\frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f}+\frac{\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(x*(f + g*x)),x]
```

```
[Out] (Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]))/f - ((a + b*Log[c*(d + e*x)^n]
)*Log[(e*(f + g*x))/(e*f - d*g)])/f - (b*n*PolyLog[2, -((g*(d + e*x))/(e*f
- d*g))])/f + (b*n*PolyLog[2, 1 + (e*x)/d])/f
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{a+b\log\left(c(d+ex)^n\right)}{x(f+gx)}\,dx = \int \left(\frac{a+b\log\left(c(d+ex)^n\right)}{fx} - \frac{g\left(a+b\log\left(c(d+ex)^n\right)\right)}{f(f+gx)}\right)dx$$

$$= \frac{\int \frac{a+b\log(c(d+ex)^n)}{x}\,dx}{f} - \frac{g\int \frac{a+b\log(c(d+ex)^n)}{f+gx}\,dx}{f}$$

$$= \frac{\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f} - \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e(f+gx)}{ef-dg}\right)}{f} - \frac{(ben)\int$$

$$= \frac{\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f} - \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e(f+gx)}{ef-dg}\right)}{f} + \frac{bn\text{Li}_2(}{}$$

$$= \frac{\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f} - \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e(f+gx)}{ef-dg}\right)}{f} - \frac{bn\text{Li}_2(}{}$$

Mathematica [A] time = 0.04, size = 85, normalized size = 0.79

$$\frac{\left(\log\left(-\frac{ex}{d}\right)-\log\left(\frac{e(f+gx)}{ef-dg}\right)\right)\left(a+b\log\left(c(d+ex)^n\right)\right)-bn\text{Li}_2\left(\frac{g(d+ex)}{dg-ef}\right)+bn\text{Li}_2\left(\frac{ex}{d}+1\right)}{f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(x*(f + g*x)),x]
```

```
[Out] ((a + b*Log[c*(d + e*x)^n])*(Log[-((e*x)/d)] - Log[(e*(f + g*x))/(e*f - d*g
)]) - b*n*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] + b*n*PolyLog[2, 1 + (e*
x)/d])/f
```

fricas [F] time = 0.47, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b\log\left((ex+d)^n c\right)+a}{gx^2+fx}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x/(g*x+f),x, algorithm="fricas")
```

```
[Out] integral((b*log((e*x + d)^n*c) + a)/(g*x^2 + f*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b \log\left((ex+d)^n c\right) + a}{\left(gx+f\right)x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x/(g*x+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)/((g*x + f)*x), x)
```

maple [C] time = 0.25, size = 455, normalized size = 4.25

$$-\frac{i\pi b \,\mathrm{csgn}\left(ic\right) \mathrm{csgn}\left(i\left(ex+d\right)^{n}\right) \mathrm{csgn}\left(ic\left(ex+d\right)^{n}\right) \ln(x)}{2f}+\frac{i\pi b \,\mathrm{csgn}\left(ic\right) \mathrm{csgn}\left(i\left(ex+d\right)^{n}\right) \mathrm{csgn}\left(ic\left(ex+d\right)^{n}\right) \mathrm{l}}{2f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)/x/(g*x+f),x)
```

```
[Out] -b*ln((e*x+d)^n)/f*ln(g*x+f)+b*ln((e*x+d)^n)/f*ln(x)-b*n/f*dilog((e*x+d)/d)
-b*n/f*ln(x)*ln((e*x+d)/d)+b*n/f*dilog((d*g-e*f+(g*x+f)*e)/(d*g-e*f))+b*n/f
*ln(g*x+f)*ln((d*g-e*f+(g*x+f)*e)/(d*g-e*f))+1/2*I*b*Pi*csgn(I*c)*csgn(I*c*
(e*x+d)^n)^2/f*ln(x)-1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f*ln(g*x+f)
-1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f*ln(g*x+f)+1/2*I*b*Pi*
csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f*ln(g*x+f)+1/2*I*b*Pi*csgn
(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f*ln(x)+1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^
3/f*ln(g*x+f)-1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f*
ln(x)-1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f*ln(x)-b*ln(c)/f*ln(g*x+f)+b*ln(c)/
f*ln(x)-a/f*ln(g*x+f)+a/f*ln(x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-a\left(\frac{\log\left(gx+f\right)}{f} - \frac{\log(x)}{f}\right) + b\int \frac{\log\left((ex+d)^n\right) + \log(c)}{gx^2+fx}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x/(g*x+f),x, algorithm="maxima")
```

```
[Out] -a*(log(g*x + f)/f - log(x)/f) + b*integrate((log((e*x + d)^n) + log(c))/(g
*x^2 + f*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a + b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}{x\,\left(f+g\,x\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/(x*(f + g*x)),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))/(x*(f + g*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a + b\log\left(c\left(d+ex\right)^n\right)}{x\left(f+gx\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/x/(g*x+f),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))/(x*(f + g*x)), x)
```

3.247 $\int \frac{a+b\log(c(d+ex)^n)}{x^2(f+gx)}\,dx$

Optimal. Leaf size=162

$$-\frac{g\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2}+\frac{g\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2}-\frac{a+b\log\left(c(d+ex)^n\right)}{fx}+\frac{bgn\text{Li}_2\left(\right.}{}$$

```
[Out] b*e*n*ln(x)/d/f-b*e*n*ln(e*x+d)/d/f+(-a-b*ln(c*(e*x+d)^n))/f/x-g*ln(-e*x/d)
*(a+b*ln(c*(e*x+d)^n))/f^2+g*(a+b*ln(c*(e*x+d)^n))*ln(e*(g*x+f)/(-d*g+e*f))
/f^2+b*g*n*polylog(2,-g*(e*x+d)/(-d*g+e*f))/f^2-b*g*n*polylog(2,1+e*x/d)/f^
2
```

Rubi [A] time = 0.19, antiderivative size = 162, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 10, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {44, 2416, 2395, 36, 29, 31, 2394, 2315, 2393, 2391}

$$\frac{bgn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{f^2}-\frac{bgn\text{PolyLog}\left(2,\frac{ex}{d}+1\right)}{f^2}-\frac{g\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2}+\frac{g\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+\right.}{f^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(x^2*(f + g*x)),x]
```

```
[Out] (b*e*n*Log[x])/(d*f) - (b*e*n*Log[d + e*x])/(d*f) - (a + b*Log[c*(d + e*x)^
n])/(f*x) - (g*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]))/f^2 + (g*(a + b*
Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/f^2 + (b*g*n*PolyLog[2,
 -((g*(d + e*x))/(e*f - d*g))])/f^2 - (b*g*n*PolyLog[2, 1 + (e*x)/d])/f^2
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{a+b\log(c(d+ex)^n)}{x^2(f+gx)}\,dx = \int \left(\frac{a+b\log(c(d+ex)^n)}{fx^2} - \frac{g\left(a+b\log(c(d+ex)^n)\right)}{f^2x} + \frac{g^2\left(a+b\log(c(d+ex)^n)\right)}{f^2(f+gx)}\right.$$

$$= \frac{\int \frac{a+b\log(c(d+ex)^n)}{x^2}\,dx}{f} - \frac{g\int \frac{a+b\log(c(d+ex)^n)}{x}\,dx}{f^2} + \frac{g^2\int \frac{a+b\log(c(d+ex)^n)}{f+gx}\,dx}{f^2}$$

$$= -\frac{a+b\log(c(d+ex)^n)}{fx} - \frac{g\log\left(-\frac{ex}{d}\right)\left(a+b\log(c(d+ex)^n)\right)}{f^2} + \frac{g\left(a+b\log(c(d+\right.}{}$$

$$= -\frac{a+b\log(c(d+ex)^n)}{fx} - \frac{g\log\left(-\frac{ex}{d}\right)\left(a+b\log(c(d+ex)^n)\right)}{f^2} + \frac{g\left(a+b\log(c(d+\right.}{}$$

$$= \frac{ben\log(x)}{df} - \frac{ben\log(d+ex)}{df} - \frac{a+b\log(c(d+ex)^n)}{fx} - \frac{g\log\left(-\frac{ex}{d}\right)\left(a+b\log(c(d\right.}{f^2}$$

Mathematica [A] time = 0.10, size = 141, normalized size = 0.87

$$\frac{g\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log(c(d+ex)^n)\right) - \frac{f\left(a+b\log(c(d+ex)^n)\right)}{x} - g\log\left(-\frac{ex}{d}\right)\left(a+b\log(c(d+ex)^n)\right) + bgn\text{Li}_2\left(\frac{g(d+ex)}{dg-ef}\right)}{f^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(x^2*(f + g*x)),x]
```

```
[Out] ((b*e*f*n*(Log[x] - Log[d + e*x]))/d - (f*(a + b*Log[c*(d + e*x)^n]))/x - g
*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]) + g*(a + b*Log[c*(d + e*x)^n])*
Log[(e*(f + g*x))/(e*f - d*g)] + b*g*n*PolyLog[2, (g*(d + e*x))/(-(e*f) + d
*g)] - b*g*n*PolyLog[2, 1 + (e*x)/d])/f^2
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b\log\left((ex+d)^n c\right)+a}{gx^3+fx^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^2/(g*x+f),x, algorithm="fricas")
```

```
[Out] integral((b*log((e*x + d)^n*c) + a)/(g*x^3 + f*x^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b\log\left((ex+d)^n c\right)+a}{\left(gx+f\right)x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^2/(g*x+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)/((g*x + f)*x^2), x)
```

maple [C] time = 0.26, size = 669, normalized size = 4.13

$$-\frac{i\pi bg\,\mathrm{csgn}\left(ic\right)\mathrm{csgn}\left(ic\left(ex+d\right)^n\right)^2\ln(x)}{2f^2}+\frac{i\pi bg\,\mathrm{csgn}\left(ic\right)\mathrm{csgn}\left(ic\left(ex+d\right)^n\right)^2\ln\left(gx+f\right)}{2f^2}-\frac{i\pi bg\,\mathrm{csgn}\left(i\left(ex+\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)/x^2/(g*x+f),x)
```

```
[Out] -1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f^2*g*ln(g*x+f)
+1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f^2*g*ln(x)-1/2
*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f^2*g*ln(x)-1/2*I*b*Pi*csgn
(I*c)*csgn(I*c*(e*x+d)^n)^2/f^2*g*ln(x)+1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f/
x-b*ln((e*x+d)^n)/f/x+1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f^
2*g*ln(g*x+f)-b*n/f^2*g*ln(g*x+f)*ln((d*g-e*f+(g*x+f)*e)/(d*g-e*f))+b*n/f^2
*g*ln(x)*ln((e*x+d)/d)-a/f/x+1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*
c*(e*x+d)^n)/f/x+a/f^2*g*ln(g*x+f)-a/f^2*g*ln(x)-b*ln(c)/f/x+1/2*I*b*Pi*csg
n(I*c)*csgn(I*c*(e*x+d)^n)^2/f^2*g*ln(g*x+f)+b*ln((e*x+d)^n)/f^2*g*ln(g*x+f
)-b*ln((e*x+d)^n)/f^2*g*ln(x)-1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)
^n)^2/f/x-1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f/x-b*ln(c)/f^2*g*ln(x
)+b*ln(c)/f^2*g*ln(g*x+f)-b*n/f^2*g*dilog((d*g-e*f+(g*x+f)*e)/(d*g-e*f))+b*
n/f^2*g*dilog((e*x+d)/d)+1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f^2*g*ln(x)-1/2*I
*b*Pi*csgn(I*c*(e*x+d)^n)^3/f^2*g*ln(g*x+f)+b*e*n*ln(x)/d/f-b*e*n*ln(e*x+d)
/d/f
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$a\left(\frac{g\log\left(gx+f\right)}{f^2}-\frac{g\log(x)}{f^2}-\frac{1}{fx}\right)+b\int\frac{\log\left((ex+d)^n\right)+\log(c)}{gx^3+fx^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^2/(g*x+f),x, algorithm="maxima")
```

```
[Out] a*(g*log(g*x + f)/f^2 - g*log(x)/f^2 - 1/(f*x)) + b*integrate((log((e*x + d
)^n) + log(c))/(g*x^3 + f*x^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}{x^2\,\left(f+g\,x\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/(x^2*(f + g*x)),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))/(x^2*(f + g*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/x**2/(g*x+f),x)
```

```
[Out] Timed out
```

3.248 $\int \frac{a+b\log(c(d+ex)^n)}{x^3(f+gx)}\,dx$

Optimal. Leaf size=250

$$\frac{g^2\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^3}-\frac{g^2\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^3}+\frac{g\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2x}-\frac{a+}{}$$

```
[Out] -1/2*b*e*n/d/f/x-1/2*b*e^2*n*ln(x)/d^2/f-b*e*g*n*ln(x)/d/f^2+1/2*b*e^2*n*ln
(e*x+d)/d^2/f+b*e*g*n*ln(e*x+d)/d/f^2+1/2*(-a-b*ln(c*(e*x+d)^n))/f/x^2+g*(a
+b*ln(c*(e*x+d)^n))/f^2/x+g^2*ln(-e*x/d)*(a+b*ln(c*(e*x+d)^n))/f^3-g^2*(a+b
*ln(c*(e*x+d)^n))*ln(e*(g*x+f)/(-d*g+e*f))/f^3-b*g^2*n*polylog(2,-g*(e*x+d)
/(-d*g+e*f))/f^3+b*g^2*n*polylog(2,1+e*x/d)/f^3
```

Rubi [A] time = 0.25, antiderivative size = 250, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 10, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {44, 2416, 2395, 36, 29, 31, 2394, 2315, 2393, 2391}

$$-\frac{bg^2n\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{f^3}+\frac{bg^2n\text{PolyLog}\left(2,\frac{ex}{d}+1\right)}{f^3}+\frac{g^2\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^3}-\frac{g^2\log\left(\frac{e(f+gx)}{ef-dg}\right)}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(x^3*(f + g*x)),x]
```

```
[Out] -(b*e*n)/(2*d*f*x) - (b*e^2*n*Log[x])/(2*d^2*f) - (b*e*g*n*Log[x])/(d*f^2)
+ (b*e^2*n*Log[d + e*x])/(2*d^2*f) + (b*e*g*n*Log[d + e*x])/(d*f^2) - (a +
b*Log[c*(d + e*x)^n])/(2*f*x^2) + (g*(a + b*Log[c*(d + e*x)^n]))/(f^2*x) +
(g^2*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]))/f^3 - (g^2*(a + b*Log[c*(d
 + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/f^3 - (b*g^2*n*PolyLog[2, -((g*
(d + e*x))/(e*f - d*g))])/f^3 + (b*g^2*n*PolyLog[2, 1 + (e*x)/d])/f^3
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{a+b\log\left(c(d+ex)^n\right)}{x^3(f+gx)}\,dx = \int \left(\frac{a+b\log\left(c(d+ex)^n\right)}{fx^3} - \frac{g\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2x^2} + \frac{g^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^3x}\right.$$

$$= \frac{\int \frac{a+b\log(c(d+ex)^n)}{x^3}\,dx}{f} - \frac{g\int \frac{a+b\log(c(d+ex)^n)}{x^2}\,dx}{f^2} + \frac{g^2\int \frac{a+b\log(c(d+ex)^n)}{x}\,dx}{f^3} - \frac{g^3\int \frac{a+b\log}{f}}{f}$$

$$= -\frac{a+b\log\left(c(d+ex)^n\right)}{2fx^2} + \frac{g\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2x} + \frac{g^2\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d\right.\right.}{f^3}$$

$$= -\frac{a+b\log\left(c(d+ex)^n\right)}{2fx^2} + \frac{g\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2x} + \frac{g^2\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d\right.\right.}{f^3}$$

$$= -\frac{ben}{2dfx} - \frac{be^2n\log(x)}{2d^2f} - \frac{begn\log(x)}{df^2} + \frac{be^2n\log(d+ex)}{2d^2f} + \frac{begn\log(d+ex)}{df^2} - \frac{a+}{}$$

Mathematica [A] time = 0.24, size = 208, normalized size = 0.83

$$-\frac{\frac{f^2\left(a+b\log(c(d+ex)^n)\right)}{x^2} + 2g^2\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right) - \frac{2fg\left(a+b\log(c(d+ex)^n)\right)}{x} - 2g^2\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(\right.\right.}{2f^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(x^3*(f + g*x)),x]
```

```
[Out] -1/2*((2*b*e*f*g*n*(Log[x] - Log[d + e*x]))/d + (b*e*f^2*n*(d + e*x*Log[x]
- e*x*Log[d + e*x]))/(d^2*x) + (f^2*(a + b*Log[c*(d + e*x)^n]))/x^2 - (2*f*
g*(a + b*Log[c*(d + e*x)^n]))/x - 2*g^2*Log[-((e*x)/d)]*(a + b*Log[c*(d + e
*x)^n]) + 2*g^2*(a + b*Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)] +
 2*b*g^2*n*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - 2*b*g^2*n*PolyLog[2,
1 + (e*x)/d])/f^3
```

fricas [F] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b\log\left((ex+d)^{n}c\right)+a}{gx^{4}+fx^{3}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^3/(g*x+f),x, algorithm="fricas")
```

```
[Out] integral((b*log((e*x + d)^n*c) + a)/(g*x^4 + f*x^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b\log\left((ex+d)^{n}c\right)+a}{(gx+f)x^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^3/(g*x+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)/((g*x + f)*x^3), x)
```

maple [C] time = 0.25, size = 926, normalized size = 3.70

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)/x^3/(g*x+f),x)
```

```
[Out] -1/2*b*ln((e*x+d)^n)/f/x^2+1/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f/x^2-1/2*I*b*P
i*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f^3*g^2*ln(g*x+f)+1/4*I*b*Pi*csgn(I*c)*cs
gn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f/x^2+1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn
(I*c*(e*x+d)^n)^2/f^3*g^2*ln(x)+1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/
f^2*g/x-1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f^2*g/x-
b*n/f^3*g^2*ln(x)*ln((e*x+d)/d)+b*n/f^3*g^2*ln(g*x+f)*ln((d*g-e*f+(g*x+f)*e
)/(d*g-e*f))-1/2*a/f/x^2+1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f^3*g^2
*ln(x)-1/2*b*ln(c)/f/x^2-a/f^3*g^2*ln(g*x+f)+a/f^3*g^2*ln(x)+a/f^2*g/x+1/2*
I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f^2*g/x-1/2*I*b*Pi*csgn(I*(e
*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f^3*g^2*ln(g*x+f)-1/2*I*b*Pi*csgn(I*c)*csgn(
I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f^3*g^2*ln(x)+b*ln(c)/f^3*g^2*ln(x)+b*ln(c
)/f^2*g/x-b*ln(c)/f^3*g^2*ln(g*x+f)+1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*
csgn(I*c*(e*x+d)^n)/f^3*g^2*ln(g*x+f)-b*e*g*n*ln(x)/d/f^2+b*e*g*n*ln(e*x+d)
/d/f^2-b*ln((e*x+d)^n)/f^3*g^2*ln(g*x+f)+b*ln((e*x+d)^n)/f^3*g^2*ln(x)+b*ln
((e*x+d)^n)/f^2*g/x-b*n/f^3*g^2*dilog((e*x+d)/d)+b*n/f^3*g^2*dilog((d*g-e*f
+(g*x+f)*e)/(d*g-e*f))-1/2*b*e^2*n*ln(x)/d^2/f+1/2*b*e^2*n*ln(e*x+d)/d^2/f+
1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f^3*g^2*ln(g*x+f)-1/4*I*b*Pi*csgn(I*c)*csg
n(I*c*(e*x+d)^n)^2/f/x^2-1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2
/f/x^2-1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f^3*g^2*ln(x)-1/2*b*e*n/d/f/x-1/2*I
*b*Pi*csgn(I*c*(e*x+d)^n)^3/f^2*g/x
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{2}\,a\left(\frac{2\,g^{2}\log\left(gx+f\right)}{f^{3}}-\frac{2\,g^{2}\log(x)}{f^{3}}-\frac{2\,gx-f}{f^{2}x^{2}}\right)+b\int\frac{\log\left((ex+d)^{n}\right)+\log(c)}{gx^{4}+fx^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^3/(g*x+f),x, algorithm="maxima")
```

```
[Out] -1/2*a*(2*g^2*log(g*x + f)/f^3 - 2*g^2*log(x)/f^3 - (2*g*x - f)/(f^2*x^2))
+ b*integrate((log((e*x + d)^n) + log(c))/(g*x^4 + f*x^3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{a+b\,\ln\left(c\,(d+e\,x)^{n}\right)}{x^{3}\,\left(f+g\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/(x^3*(f + g*x)),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))/(x^3*(f + g*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/x**3/(g*x+f),x)
```

```
[Out] Timed out
```

3.249 $\int \frac{x^3(a+b\log(c(d+ex)^n))}{(f+gx)^2}\,dx$

Optimal. Leaf size=265

$$\frac{f^3\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^4(f+gx)}+\frac{3f^2\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^4}+\frac{x^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g^2}-\frac{2afx}{g^3}-\frac{2bf(\cdots}{\cdots}$$

```
[Out] -2*a*f*x/g^3+2*b*f*n*x/g^3+1/2*b*d*n*x/e/g^2-1/4*b*n*x^2/g^2-1/2*b*d^2*n*ln
(e*x+d)/e^2/g^2-b*e*f^3*n*ln(e*x+d)/g^4/(-d*g+e*f)-2*b*f*(e*x+d)*ln(c*(e*x+
d)^n)/e/g^3+1/2*x^2*(a+b*ln(c*(e*x+d)^n))/g^2+f^3*(a+b*ln(c*(e*x+d)^n))/g^4
/(g*x+f)+b*e*f^3*n*ln(g*x+f)/g^4/(-d*g+e*f)+3*f^2*(a+b*ln(c*(e*x+d)^n))*ln(
e*(g*x+f)/(-d*g+e*f))/g^4+3*b*f^2*n*polylog(2,-g*(e*x+d)/(-d*g+e*f))/g^4
```

Rubi [A] time = 0.26, antiderivative size = 265, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 10, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {43, 2416, 2389, 2295, 2395, 36, 31, 2394, 2393, 2391}

$$\frac{3bf^2n\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g^4}+\frac{f^3\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^4(f+gx)}+\frac{3f^2\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^4}+\frac{x^2\left(a+b\cdots\right.}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(a + b*Log[c*(d + e*x)^n]))/(f + g*x)^2,x]
```

```
[Out] (-2*a*f*x)/g^3 + (2*b*f*n*x)/g^3 + (b*d*n*x)/(2*e*g^2) - (b*n*x^2)/(4*g^2)
- (b*d^2*n*Log[d + e*x])/(2*e^2*g^2) - (b*e*f^3*n*Log[d + e*x])/(g^4*(e*f -
 d*g)) - (2*b*f*(d + e*x)*Log[c*(d + e*x)^n])/(e*g^3) + (x^2*(a + b*Log[c*(
d + e*x)^n]))/(2*g^2) + (f^3*(a + b*Log[c*(d + e*x)^n]))/(g^4*(f + g*x)) +
(b*e*f^3*n*Log[f + g*x])/(g^4*(e*f - d*g)) + (3*f^2*(a + b*Log[c*(d + e*x)^
n])*Log[(e*(f + g*x))/(e*f - d*g)])/g^4 + (3*b*f^2*n*PolyLog[2, -((g*(d + e
*x))/(e*f - d*g))])/g^4
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
```

```
, b, c, d, e, n, p}, x]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{x^3 \left(a+b\log\left(c(d+ex)^n\right)\right)}{(f+gx)^2}\,dx = \int \left(-\frac{2f\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^3} + \frac{x\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^2} - \frac{f^3\left(a+b\log\left(c\right.\right.}{g^3(f+\ldots}\right.$$

$$= -\frac{(2f)\int\left(a+b\log\left(c(d+ex)^n\right)\right)dx}{g^3} + \frac{\left(3f^2\right)\int\frac{a+b\log(c(d+ex)^n)}{f+gx}\,dx}{g^3} - \frac{f^3\int\frac{a+b\log\ldots}{(f\ldots}}{g\ldots}$$

$$= -\frac{2afx}{g^3} + \frac{x^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g^2} + \frac{f^3\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^4(f+gx)} + \frac{3f^2\left(a+\ldots\right.}{\ldots}$$

$$= -\frac{2afx}{g^3} + \frac{x^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g^2} + \frac{f^3\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^4(f+gx)} + \frac{3f^2\left(a+\ldots\right.}{\ldots}$$

$$= -\frac{2afx}{g^3} + \frac{2bfnx}{g^3} + \frac{bdnx}{2eg^2} - \frac{bnx^2}{4g^2} - \frac{bd^2n\log(d+ex)}{2e^2g^2} - \frac{bef^3n\log(d+ex)}{g^4(ef-dg)} - 2\ldots$$

Mathematica [A] time = 0.33, size = 220, normalized size = 0.83

$$\frac{\frac{4f^3\left(a+b\log(c(d+ex)^n)\right)}{f+gx}+12f^2\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)+2g^2x^2\left(a+b\log\left(c(d+ex)^n\right)\right)-8afgx-\frac{8bfg}{}}{4g^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(a + b*Log[c*(d + e*x)^n]))/(f + g*x)^2,x]
```

```
[Out] (-8*a*f*g*x + 8*b*f*g*n*x - (b*g^2*n*(e*x*(-2*d + e*x) + 2*d^2*Log[d + e*x]
))/e^2 - (8*b*f*g*(d + e*x)*Log[c*(d + e*x)^n])/e + 2*g^2*x^2*(a + b*Log[c*
(d + e*x)^n]) + (4*f^3*(a + b*Log[c*(d + e*x)^n]))/(f + g*x) - (4*b*e*f^3*n
*(Log[d + e*x] - Log[f + g*x]))/(e*f - d*g) + 12*f^2*(a + b*Log[c*(d + e*x)
^n])*Log[(e*(f + g*x))/(e*f - d*g)] + 12*b*f^2*n*PolyLog[2, (g*(d + e*x))/(
-(e*f) + d*g)])/(4*g^4)
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{bx^3\log\left((ex+d)^nc\right)+ax^3}{g^2x^2+2\,fgx+f^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))/(g*x+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b*x^3*log((e*x + d)^n*c) + a*x^3)/(g^2*x^2 + 2*f*g*x + f^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(b\log\left((ex+d)^nc\right)+a\right)x^3}{\left(gx+f\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))/(g*x+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*x^3/(g*x + f)^2, x)
```

maple [C] time = 0.28, size = 1063, normalized size = 4.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(b*ln(c*(e*x+d)^n)+a)/(g*x+f)^2,x)
```

```
[Out] 3/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/g^4*f^2*ln(g*x+f)+1/2*I*
b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*f^3/g^4/(g*x+f)-1/4*I*b*Pi*csg
n(I*c*(e*x+d)^n)^3/g^2*x^2-3/2*b/e*n/g^2/(d*g-e*f)*ln(d*g-e*f+(g*x+f)*e)*d^
2*f+1/2*b/e*n/g^3*d*f-3*b*n/g^4*f^2*ln(g*x+f)*ln((d*g-e*f+(g*x+f)*e)/(d*g-e
*f))-1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/g^2*x^2+3/2
*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/g^4*f^2*ln(g*x+f)+1/2*I*b*Pi*csgn(I
*c)*csgn(I*c*(e*x+d)^n)^2*f^3/g^4/(g*x+f)-I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)
^n)^2/g^3*x*f-I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/g^3*x*f+1/2*b*
ln((e*x+d)^n)/g^2*x^2+9/4*b*n/g^4*f^2+a*f^3/g^4/(g*x+f)+3*a/g^4*f^2*ln(g*x+
f)+1/2*b*ln(c)/g^2*x^2-1/2*b/e^2*n/g/(d*g-e*f)*ln(d*g-e*f+(g*x+f)*e)*d^3+2*
b*n/g^3/(d*g-e*f)*ln(d*g-e*f+(g*x+f)*e)*d*f^2+b*e*n/g^4/(d*g-e*f)*ln(d*g-e*
f+(g*x+f)*e)*f^3-b*e*n/g^4*f^3/(d*g-e*f)*ln(g*x+f)-1/2*I*b*Pi*csgn(I*c)*csg
n(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*f^3/g^4/(g*x+f)+I*b*Pi*csgn(I*c)*csgn(I*
(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/g^3*x*f+1/2*a/g^2*x^2+2*b*f*n*x/g^3+1/4*I*b*
```

```
Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/g^2*x^2+b*ln(c)*f^3/g^4/(g*x+f)+3*b*ln(c
)/g^4*f^2*ln(g*x+f)-2*b*ln(c)/g^3*x*f-3*b*n/g^4*f^2*dilog((d*g-e*f+(g*x+f)*
e)/(d*g-e*f))-3/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/g^
4*f^2*ln(g*x+f)-3/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/g^4*f^2*ln(g*x+f)-2*b*ln((
e*x+d)^n)/g^3*x*f+b*ln((e*x+d)^n)*f^3/g^4/(g*x+f)+3*b*ln((e*x+d)^n)/g^4*f^2
*ln(g*x+f)-1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*f^3/g^4/(g*x+f)-2*a*f*x/g^3-1/4
*b*n*x^2/g^2+1/2*b*d*n*x/e/g^2+1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d
)^n)^2/g^2*x^2+I*b*Pi*csgn(I*c*(e*x+d)^n)^3/g^3*x*f
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{2}\left(\frac{2 f^3}{g^5 x + f g^4} + \frac{6 f^2 \log\left(g x + f\right)}{g^4} + \frac{g x^2 - 4 f x}{g^3}\right) a + b \int \frac{x^3 \log\left((e x + d)^n\right) + x^3 \log(c)}{g^2 x^2 + 2 f g x + f^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))/(g*x+f)^2,x, algorithm="maxima")
```

```
[Out] 1/2*(2*f^3/(g^5*x + f*g^4) + 6*f^2*log(g*x + f)/g^4 + (g*x^2 - 4*f*x)/g^3)*
a + b*integrate((x^3*log((e*x + d)^n) + x^3*log(c))/(g^2*x^2 + 2*f*g*x + f^
2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^3 \left(a + b \ln\left(c \left(d + e x\right)^n\right)\right)}{\left(f + g x\right)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(a + b*log(c*(d + e*x)^n)))/(f + g*x)^2,x)
```

```
[Out] int((x^3*(a + b*log(c*(d + e*x)^n)))/(f + g*x)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^3 \left(a + b \log\left(c \left(d + e x\right)^n\right)\right)}{\left(f + g x\right)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(a+b*ln(c*(e*x+d)**n))/(g*x+f)**2,x)
```

```
[Out] Integral(x**3*(a + b*log(c*(d + e*x)**n))/(f + g*x)**2, x)
```

3.250 $\int \frac{x^2(a+b\log(c(d+ex)^n))}{(f+gx)^2} dx$

Optimal. Leaf size=186

$$-\frac{f^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^3(f+gx)}-\frac{2f\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^3}+\frac{ax}{g^2}+\frac{b(d+ex)\log\left(c(d+ex)^n\right)}{eg^2}+\frac{bef^2n\,\mathrm{l}}{g^3(e}$$

```
[Out] a*x/g^2-b*n*x/g^2+b*e*f^2*n*ln(e*x+d)/g^3/(-d*g+e*f)+b*(e*x+d)*ln(c*(e*x+d)
^n)/e/g^2-f^2*(a+b*ln(c*(e*x+d)^n))/g^3/(g*x+f)-b*e*f^2*n*ln(g*x+f)/g^3/(-d
*g+e*f)-2*f*(a+b*ln(c*(e*x+d)^n))*ln(e*(g*x+f)/(-d*g+e*f))/g^3-2*b*f*n*poly
log(2,-g*(e*x+d)/(-d*g+e*f))/g^3
```

Rubi [A] time = 0.20, antiderivative size = 186, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 10, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {43, 2416, 2389, 2295, 2395, 36, 31, 2394, 2393, 2391}

$$-\frac{2bfn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g^3}-\frac{f^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^3(f+gx)}-\frac{2f\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^3}+\frac{ax}{g^2}+\frac{b(d+}{}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(a + b*Log[c*(d + e*x)^n]))/(f + g*x)^2,x]
```

```
[Out] (a*x)/g^2 - (b*n*x)/g^2 + (b*e*f^2*n*Log[d + e*x])/(g^3*(e*f - d*g)) + (b*(
d + e*x)*Log[c*(d + e*x)^n])/(e*g^2) - (f^2*(a + b*Log[c*(d + e*x)^n]))/(g^
3*(f + g*x)) - (b*e*f^2*n*Log[f + g*x])/(g^3*(e*f - d*g)) - (2*f*(a + b*Log
[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/g^3 - (2*b*f*n*PolyLog[2,
-((g*(d + e*x))/(e*f - d*g))])/g^3
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{x^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{(f+gx)^2}\,dx=\int\left(\frac{a+b\log\left(c(d+ex)^n\right)}{g^2}+\frac{f^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^2(f+gx)^2}-\frac{2f\left(a+b\log\left(c(d+\right.\right.}{g^2(f+gx)}\right.$$

$$=\frac{\int\left(a+b\log\left(c(d+ex)^n\right)\right)dx}{g^2}-\frac{(2f)\int\frac{a+b\log(c(d+ex)^n)}{f+gx}\,dx}{g^2}+\frac{f^2\int\frac{a+b\log(c(d+ex)^n)}{(f+gx)^2}}{g^2}$$

$$=\frac{ax}{g^2}-\frac{f^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^3(f+gx)}-\frac{2f\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g^3}+$$

$$=\frac{ax}{g^2}-\frac{f^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^3(f+gx)}-\frac{2f\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g^3}+$$

$$=\frac{ax}{g^2}-\frac{bnx}{g^2}+\frac{bef^2n\log(d+ex)}{g^3(ef-dg)}+\frac{b(d+ex)\log\left(c(d+ex)^n\right)}{eg^2}-\frac{f^2\left(a+b\log\left(c\right.\right.}{g^3(f+g}$$

Mathematica [A] time = 0.18, size = 153, normalized size = 0.82

$$\frac{-\frac{f^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{f+gx}-2f\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)+agx+\frac{bg(d+ex)\log\left(c(d+ex)^n\right)}{e}+\frac{bef^2n(\log(d+ex)-\log(f+gx))}{ef-dg}}{g^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(a + b*Log[c*(d + e*x)^n]))/(f + g*x)^2,x]
```

```
[Out] (a*g*x - b*g*n*x + (b*g*(d + e*x)*Log[c*(d + e*x)^n])/e - (f^2*(a + b*Log[c
*(d + e*x)^n]))/(f + g*x) + (b*e*f^2*n*(Log[d + e*x] - Log[f + g*x]))/(e*f
- d*g) - 2*f*(a + b*Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)] - 2*
b*f*n*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)])/g^3
```

fricas [F] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{bx^2\log\left((ex+d)^n c\right)+ax^2}{g^2x^2+2\,fgx+f^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))/(g*x+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b*x^2*log((e*x + d)^n*c) + a*x^2)/(g^2*x^2 + 2*f*g*x + f^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(b\log\left((ex+d)^n c\right)+a\right)x^2}{\left(gx+f\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))/(g*x+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*x^2/(g*x + f)^2, x)
```

maple [C] time = 0.27, size = 791, normalized size = 4.25

$$\frac{bx\ln\left((ex+d)^n\right)}{g^2}-\frac{a\,f^2}{\left(gx+f\right)g^3}-\frac{2af\ln\left(gx+f\right)}{g^3}+\frac{bx\ln(c)}{g^2}+\frac{2bfn\ln\left(\frac{dg-ef+\left(gx+f\right)e}{dg-ef}\right)\ln\left(gx+f\right)}{g^3}-\frac{be\,f^2n\ln\left(dg\right.}{\left(dg\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(b*ln(c*(e*x+d)^n)+a)/(g*x+f)^2,x)
```

```
[Out] -1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*f^2/g^3/(g*x+f)-I*b*Pi*csgn(I*(
e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/g^3*f*ln(g*x+f)-1/2*I*b*Pi*csgn(I*c*(e*x+d)
^n)^3/g^2*x-1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*f^2/g^3/(g*x
+f)-I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/g^3*f*ln(g*x+f)-1/2*I*b*Pi*csgn(
I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/g^2*x+b*ln((e*x+d)^n)/g^2*x-a*f^
2/g^3/(g*x+f)-2*a/g^3*f*ln(g*x+f)+b*ln(c)/g^2*x+2*b*n/g^3*f*ln(g*x+f)*ln((d
*g-e*f+(g*x+f)*e)/(d*g-e*f))-b*e*n/g^3/(d*g-e*f)*ln(d*g-e*f+(g*x+f)*e)*f^2+
b*e*n/g^3*f^2/(d*g-e*f)*ln(g*x+f)+b/e*n/g/(d*g-e*f)*ln(d*g-e*f+(g*x+f)*e)*d
^2-b*n/g^2/(d*g-e*f)*ln(d*g-e*f+(g*x+f)*e)*d*f+1/2*I*b*Pi*csgn(I*c)*csgn(I*
(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*f^2/g^3/(g*x+f)-b*n/g^3*f+2*b*n/g^3*f*dilog(
(d*g-e*f+(g*x+f)*e)/(d*g-e*f))-b*ln(c)*f^2/g^3/(g*x+f)-2*b*ln(c)/g^3*f*ln(g
*x+f)+I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/g^3*f*ln(g*x+f
)+I*b*Pi*csgn(I*c*(e*x+d)^n)^3/g^3*f*ln(g*x+f)+1/2*I*b*Pi*csgn(I*c)*csgn(I*
c*(e*x+d)^n)^2/g^2*x+1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/g^2
*x-2*b*ln((e*x+d)^n)/g^3*f*ln(g*x+f)-b*ln((e*x+d)^n)*f^2/g^3/(g*x+f)+1/2*I*
b*Pi*csgn(I*c*(e*x+d)^n)^3*f^2/g^3/(g*x+f)+a*x/g^2-b*n*x/g^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-a\left(\frac{f^2}{g^4x+fg^3}-\frac{x}{g^2}+\frac{2\,f\log\left(gx+f\right)}{g^3}\right)+b\int\frac{x^2\log\left((ex+d)^n\right)+x^2\log(c)}{g^2x^2+2\,fgx+f^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))/(g*x+f)^2,x, algorithm="maxima")
```

```
[Out] -a*(f^2/(g^4*x + f*g^3) - x/g^2 + 2*f*log(g*x + f)/g^3) + b*integrate((x^2*
log((e*x + d)^n) + x^2*log(c))/(g^2*x^2 + 2*f*g*x + f^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^2 \left(a + b \ln\left(c \left(d + e x\right)^n\right)\right)}{\left(f + g x\right)^2} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(a + b*log(c*(d + e*x)^n)))/(f + g*x)^2,x)
```

```
[Out] int((x^2*(a + b*log(c*(d + e*x)^n)))/(f + g*x)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2 \left(a + b \log\left(c \left(d + ex\right)^n\right)\right)}{\left(f + gx\right)^2} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(a+b*ln(c*(e*x+d)**n))/(g*x+f)**2,x)
```

```
[Out] Integral(x**2*(a + b*log(c*(d + e*x)**n))/(f + g*x)**2, x)
```

3.251 $\int \frac{x\left(a+b\log(c(d+ex)^n)\right)}{(f+gx)^2}\,dx$

Optimal. Leaf size=138

$$\frac{f\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^2(f+gx)}+\frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^2}+\frac{bn\text{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)}{g^2}-\frac{befn\log(d+ex)}{g^2(ef-dg)}+\frac{befn\log(f+gx)}{g^2(ef-dg)}$$

```
[Out] -b*e*f*n*ln(e*x+d)/g^2/(-d*g+e*f)+f*(a+b*ln(c*(e*x+d)^n))/g^2/(g*x+f)+b*e*f
*n*ln(g*x+f)/g^2/(-d*g+e*f)+(a+b*ln(c*(e*x+d)^n))*ln(e*(g*x+f)/(-d*g+e*f))/
g^2+b*n*polylog(2,-g*(e*x+d)/(-d*g+e*f))/g^2
```

Rubi [A] time = 0.15, antiderivative size = 138, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 8, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.348, Rules used = {43, 2416, 2395, 36, 31, 2394, 2393, 2391}

$$\frac{bn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g^2}+\frac{f\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^2(f+gx)}+\frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^2}-\frac{befn\log(d+ex)}{g^2(ef-dg)}+$$

Antiderivative was successfully verified.

```
[In] Int[(x*(a + b*Log[c*(d + e*x)^n]))/(f + g*x)^2,x]
```

```
[Out] -((b*e*f*n*Log[d + e*x])/(g^2*(e*f - d*g))) + (f*(a + b*Log[c*(d + e*x)^n])
)/(g^2*(f + g*x)) + (b*e*f*n*Log[f + g*x])/(g^2*(e*f - d*g)) + ((a + b*Log[
c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/g^2 + (b*n*PolyLog[2, -((g*
(d + e*x))/(e*f - d*g))])/g^2
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{x\left(a+b\log\left(c(d+ex)^n\right)\right)}{(f+gx)^2}\,dx = \int\left(-\frac{f\left(a+b\log\left(c(d+ex)^n\right)\right)}{g(f+gx)^2}+\frac{a+b\log\left(c(d+ex)^n\right)}{g(f+gx)}\right)dx$$

$$= \frac{\int\frac{a+b\log(c(d+ex)^n)}{f+gx}\,dx}{g} - \frac{f\int\frac{a+b\log(c(d+ex)^n)}{(f+gx)^2}\,dx}{g}$$

$$= \frac{f\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^2(f+gx)} + \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g^2} - \frac{(ben)\int\frac{\log(}{}}{g^2}$$

$$= \frac{f\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^2(f+gx)} + \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g^2} - \frac{(bn)\operatorname{Subst}}{}$$

$$= -\frac{befn\log(d+ex)}{g^2(ef-dg)} + \frac{f\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^2(f+gx)} + \frac{befn\log(f+gx)}{g^2(ef-dg)} + \frac{(a+b\,\mathrm{lo}}{}$$

Mathematica [A] time = 0.11, size = 114, normalized size = 0.83

$$\frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)+\frac{f\left(a+b\log\left(c(d+ex)^n\right)\right)}{f+gx}+bn\mathrm{Li}_2\left(\frac{g(d+ex)}{dg-ef}\right)-\frac{befn(\log(d+ex)-\log(f+gx))}{ef-dg}}{g^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(a + b*Log[c*(d + e*x)^n]))/(f + g*x)^2,x]
```

```
[Out] ((f*(a + b*Log[c*(d + e*x)^n]))/(f + g*x) - (b*e*f*n*(Log[d + e*x] - Log[f
+ g*x]))/(e*f - d*g) + (a + b*Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f -
d*g)] + b*n*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)])/g^2
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(\frac{bx\log\left((ex+d)^n c\right)+ax}{g^2x^2+2\,fgx+f^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))/(g*x+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b*x*log((e*x + d)^n*c) + a*x)/(g^2*x^2 + 2*f*g*x + f^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b \log \left((ex+d)^n c\right)+a\right)x}{\left(gx+f\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))/(g*x+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*x/(g*x + f)^2, x)
```

maple [C] time = 0.23, size = 519, normalized size = 3.76

$$\frac{befn\ln\left(dg-ef+\left(gx+f\right)e\right)}{\left(dg-ef\right)g^2}-\frac{befn\ln\left(gx+f\right)}{\left(dg-ef\right)g^2}-\frac{i\pi bf\,\mathrm{csgn}\left(ic\right)\mathrm{csgn}\left(i\left(ex+d\right)^n\right)\mathrm{csgn}\left(ic\left(ex+d\right)^n\right)}{2\left(gx+f\right)g^2}+\frac{i\pi bf}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(b*ln(c*(e*x+d)^n)+a)/(g*x+f)^2,x)
```

```
[Out] b*ln((e*x+d)^n)*f/g^2/(g*x+f)+b*ln((e*x+d)^n)/g^2*ln(g*x+f)-b*n/g^2*dilog((
d*g-e*f+(g*x+f)*e)/(d*g-e*f))-b*n/g^2*ln(g*x+f)*ln((d*g-e*f+(g*x+f)*e)/(d*g
-e*f))+b*e*n/g^2*f/(d*g-e*f)*ln(d*g-e*f+(g*x+f)*e)-b*e*n/g^2*f/(d*g-e*f)*ln
(g*x+f)+1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/g^2*ln(g*x+f)-1/
2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*f/g^2/(g*x+f)+1/2*
I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*f/g^2/(g*x+f)-1/2*I*b*Pi*csgn(I*c*(e
*x+d)^n)^3*f/g^2/(g*x+f)-1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/g^2*ln(g*x+f)+1/2
*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*f/g^2/(g*x+f)+1/2*I*b*Pi*cs
gn(I*c)*csgn(I*c*(e*x+d)^n)^2/g^2*ln(g*x+f)-1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*
x+d)^n)*csgn(I*c*(e*x+d)^n)/g^2*ln(g*x+f)+b*ln(c)*f/g^2/(g*x+f)+b*ln(c)/g^2
*ln(g*x+f)+a*f/g^2/(g*x+f)+a/g^2*ln(g*x+f)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$a\left(\frac{f}{g^3x+fg^2}+\frac{\log\left(gx+f\right)}{g^2}\right)+b\int \frac{x\log\left((ex+d)^n\right)+x\log(c)}{g^2x^2+2\,fgx+f^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))/(g*x+f)^2,x, algorithm="maxima")
```

```
[Out] a*(f/(g^3*x + f*g^2) + log(g*x + f)/g^2) + b*integrate((x*log((e*x + d)^n)
+ x*log(c))/(g^2*x^2 + 2*f*g*x + f^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}{{\left(f+g\,x\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(a + b*log(c*(d + e*x)^n)))/(f + g*x)^2,x)
```

```
[Out] int((x*(a + b*log(c*(d + e*x)^n)))/(f + g*x)^2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*ln(c*(e*x+d)**n))/(g*x+f)**2,x)
```

```
[Out] Timed out
```

3.252 $\int \frac{a+b\log(c(d+ex)^n)}{(f+gx)^2}\,dx$

Optimal. Leaf size=74

$$-\frac{a+b\log\left(c(d+ex)^n\right)}{g(f+gx)}+\frac{ben\log(d+ex)}{g(ef-dg)}-\frac{ben\log(f+gx)}{g(ef-dg)}$$

```
[Out] b*e*n*ln(e*x+d)/g/(-d*g+e*f)+(-a-b*ln(c*(e*x+d)^n))/g/(g*x+f)-b*e*n*ln(g*x+
f)/g/(-d*g+e*f)
```

Rubi [A] time = 0.03, antiderivative size = 74, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {2395, 36, 31}

$$-\frac{a+b\log\left(c(d+ex)^n\right)}{g(f+gx)}+\frac{ben\log(d+ex)}{g(ef-dg)}-\frac{ben\log(f+gx)}{g(ef-dg)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(f + g*x)^2,x]
```

```
[Out] (b*e*n*Log[d + e*x])/(g*(e*f - d*g)) - (a + b*Log[c*(d + e*x)^n])/(g*(f + g
*x)) - (b*e*n*Log[f + g*x])/(g*(e*f - d*g))
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rubi steps

$$\begin{aligned}
\int \frac{a+b\log\left(c(d+ex)^n\right)}{(f+gx)^2}\,dx &= -\frac{a+b\log\left(c(d+ex)^n\right)}{g(f+gx)}+\frac{(ben)\int \frac{1}{(d+ex)(f+gx)}\,dx}{g}\\
&= -\frac{a+b\log\left(c(d+ex)^n\right)}{g(f+gx)}-\frac{(ben)\int \frac{1}{f+gx}\,dx}{ef-dg}+\frac{\left(be^2n\right)\int \frac{1}{d+ex}\,dx}{g(ef-dg)}\\
&= \frac{ben\log(d+ex)}{g(ef-dg)}-\frac{a+b\log\left(c(d+ex)^n\right)}{g(f+gx)}-\frac{ben\log(f+gx)}{g(ef-dg)}
\end{aligned}$$

Mathematica [A] time = 0.09, size = 57, normalized size = 0.77

$$\frac{\frac{ben(\log(d+ex)-\log(f+gx))}{ef-dg}-\frac{a+b\log(c(d+ex)^n)}{f+gx}}{g}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(f + g*x)^2,x]
```

```
[Out] (-((a + b*Log[c*(d + e*x)^n])/(f + g*x)) + (b*e*n*(Log[d + e*x] - Log[f + g
*x]))/(e*f - d*g))/g
```

fricas [A] time = 0.46, size = 95, normalized size = 1.28

$$-\frac{aef - adg - \left(begnx + bdgn\right)\log\left(ex + d\right) + \left(begnx + befn\right)\log\left(gx + f\right) + \left(bef - bdg\right)\log(c)}{ef^2g - dfg^2 + \left(efg^2 - dg^3\right)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^2,x, algorithm="fricas")
```

```
[Out] -(a*e*f - a*d*g - (b*e*g*n*x + b*d*g*n)*log(e*x + d) + (b*e*g*n*x + b*e*f*n
)*log(g*x + f) + (b*e*f - b*d*g)*log(c))/(e*f^2*g - d*f*g^2 + (e*f*g^2 - d*
g^3)*x)
```

giac [A] time = 0.17, size = 111, normalized size = 1.50

$$\frac{bgnxe\log\left(gx + f\right) - bgnxe\log\left(xe + d\right) + bfne\log\left(gx + f\right) - bdgn\log\left(xe + d\right) - bdg\log(c) + bfe\log(c) - adg}{dg^3x - fg^2xe + dfg^2 - f^2ge}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^2,x, algorithm="giac")
```

```
[Out] (b*g*n*x*e*log(g*x + f) - b*g*n*x*e*log(x*e + d) + b*f*n*e*log(g*x + f) - b
*d*g*n*log(x*e + d) - b*d*g*log(c) + b*f*e*log(c) - a*d*g + a*f*e)/(d*g^3*x
 - f*g^2*x*e + d*f*g^2 - f^2*g*e)
```

maple [C] time = 0.07, size = 354, normalized size = 4.78

$$-\frac{b\ln\left((ex + d)^n\right)}{\left(gx + f\right)g} - \frac{-i\pi bdg\,\mathrm{csgn}\left(ic\right)\mathrm{csgn}\left(i\left(ex + d\right)^n\right)\mathrm{csgn}\left(ic\left(ex + d\right)^n\right) + i\pi bdg\,\mathrm{csgn}\left(ic\right)\mathrm{csgn}\left(ic\left(ex + d\right)^n\right)^2 +}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)/(g*x+f)^2,x)
```

```
[Out] -b/g/(g*x+f)*ln((e*x+d)^n)-1/2*(-I*Pi*b*e*f*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2
+I*Pi*b*e*f*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*Pi*b*d*g*csgn
(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+I*Pi*b*e*f*csgn(I*c*(e*x+d)^n)^3-I*Pi*b
*d*g*csgn(I*c*(e*x+d)^n)^3-I*Pi*b*e*f*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)
^2-I*Pi*b*d*g*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*Pi*b*d*g*cs
gn(I*c)*csgn(I*c*(e*x+d)^n)^2-2*b*e*g*n*x*ln(-g*x-f)+2*b*e*g*n*x*ln(e*x+d)-
2*b*e*f*n*ln(-g*x-f)+2*b*e*f*n*ln(e*x+d)+2*b*d*g*ln(c)-2*b*e*f*ln(c)+2*a*d*
g-2*a*e*f)/(g*x+f)/g/(d*g-e*f)
```

maxima [A] time = 0.48, size = 85, normalized size = 1.15

$$ben\left(\frac{\log\left(ex + d\right)}{efg - dg^2} - \frac{\log\left(gx + f\right)}{efg - dg^2}\right) - \frac{b\log\left((ex + d)^n c\right)}{g^2x + fg} - \frac{a}{g^2x + fg}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^2,x, algorithm="maxima")
```

```
[Out] b*e*n*(log(e*x + d)/(e*f*g - d*g^2) - log(g*x + f)/(e*f*g - d*g^2)) - b*log
((e*x + d)^n*c)/(g^2*x + f*g) - a/(g^2*x + f*g)
```

mupad [B] time = 0.50, size = 84, normalized size = 1.14

$$-\frac{a}{x g^2 + f g} - \frac{b \ln\left(c \left(d + e x\right)^n\right)}{g \left(f + g x\right)} + \frac{b e n \operatorname{atan}\left(\frac{e f 2\mathrm{i} + e g x 2\mathrm{i}}{d g - e f} + 1\mathrm{i}\right) 2\mathrm{i}}{g \left(d g - e f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/(f + g*x)^2,x)
```

```
[Out] (b*e*n*atan((e*f*2i + e*g*x*2i)/(d*g - e*f) + 1i)*2i)/(g*(d*g - e*f)) - (b*
log(c*(d + e*x)^n))/(g*(f + g*x)) - a/(f*g + g^2*x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(g*x+f)**2,x)
```

```
[Out] Exception raised: NotImplementedError
```

3.253 $\int \frac{a+b\log(c(d+ex)^n)}{x(f+gx)^2}\,dx$

Optimal. Leaf size=179

$$-\frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2}+\frac{\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2}+\frac{a+b\log\left(c(d+ex)^n\right)}{f(f+gx)}-\frac{bn\text{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)}{f^2}$$

```
[Out] -b*e*n*ln(e*x+d)/f/(-d*g+e*f)+(a+b*ln(c*(e*x+d)^n))/f/(g*x+f)+ln(-e*x/d)*(a
+b*ln(c*(e*x+d)^n))/f^2+b*e*n*ln(g*x+f)/f/(-d*g+e*f)-(a+b*ln(c*(e*x+d)^n))*
ln(e*(g*x+f)/(-d*g+e*f))/f^2-b*n*polylog(2,-g*(e*x+d)/(-d*g+e*f))/f^2+b*n*p
olylog(2,1+e*x/d)/f^2
```

Rubi [A] time = 0.20, antiderivative size = 179, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 9, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.360, Rules used = {44, 2416, 2394, 2315, 2395, 36, 31, 2393, 2391}

$$-\frac{bn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{f^2}+\frac{bn\text{PolyLog}\left(2,\frac{ex}{d}+1\right)}{f^2}-\frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2}+\frac{\log\left(-\frac{ex}{d}\right)\left(a+b\log(c\right.}{f^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(x*(f + g*x)^2),x]
```

```
[Out] -((b*e*n*Log[d + e*x])/(f*(e*f - d*g))) + (a + b*Log[c*(d + e*x)^n])/(f*(f
+ g*x)) + (Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]))/f^2 + (b*e*n*Log[f +
 g*x])/(f*(e*f - d*g)) - ((a + b*Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f
 - d*g)])/f^2 - (b*n*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/f^2 + (b*n*P
olyLog[2, 1 + (e*x)/d])/f^2
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{a+b\log\left(c(d+ex)^n\right)}{x(f+gx)^2}\,dx = \int \left(\frac{a+b\log\left(c(d+ex)^n\right)}{f^2x} - \frac{g\left(a+b\log\left(c(d+ex)^n\right)\right)}{f(f+gx)^2} - \frac{g\left(a+b\log\left(c(d+ex)^n\right)\right.}{f^2(f+gx)}\right.$$

$$= \frac{\int \frac{a+b\log(c(d+ex)^n)}{x}\,dx}{f^2} - \frac{g\int \frac{a+b\log(c(d+ex)^n)}{f+gx}\,dx}{f^2} - \frac{g\int \frac{a+b\log(c(d+ex)^n)}{(f+gx)^2}\,dx}{f}$$

$$= \frac{a+b\log\left(c(d+ex)^n\right)}{f(f+gx)} + \frac{\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2} - \frac{\left(a+b\log\left(c(d+e\right.\right.}{f^2}$$

$$= \frac{a+b\log\left(c(d+ex)^n\right)}{f(f+gx)} + \frac{\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2} - \frac{\left(a+b\log\left(c(d+e\right.\right.}{f^2}$$

$$= -\frac{ben\log(d+ex)}{f(ef-dg)} + \frac{a+b\log\left(c(d+ex)^n\right)}{f(f+gx)} + \frac{\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2} -$$

Mathematica [A] time = 0.13, size = 152, normalized size = 0.85

$$\frac{-\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right) + \frac{f\left(a+b\log\left(c(d+ex)^n\right)\right)}{f+gx} + \log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right) - bn\mathrm{Li}_2\left(\frac{g(d+ex)}{dg-ef}\right.}{f^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(x*(f + g*x)^2),x]
```

```
[Out] ((f*(a + b*Log[c*(d + e*x)^n]))/(f + g*x) + Log[-((e*x)/d)]*(a + b*Log[c*(d
 + e*x)^n]) - (b*e*f*n*(Log[d + e*x] - Log[f + g*x]))/(e*f - d*g) - (a + b*
```

```
Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)] - b*n*PolyLog[2, (g*(d +
 e*x))/(-(e*f) + d*g)] + b*n*PolyLog[2, 1 + (e*x)/d])/f^2
```

fricas [F] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b\log\left((ex+d)^n c\right)+a}{g^2x^3+2\,fgx^2+f^2x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x/(g*x+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b*log((e*x + d)^n*c) + a)/(g^2*x^3 + 2*f*g*x^2 + f^2*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{b\log\left((ex+d)^n c\right)+a}{\left(gx+f\right)^2 x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x/(g*x+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)/((g*x + f)^2*x), x)
```

maple [C] time = 0.26, size = 694, normalized size = 3.88

$$-\frac{bn\,\mathrm{dilog}\left(\frac{ex+d}{d}\right)}{f^2}+\frac{bn\,\mathrm{dilog}\left(\frac{dg-ef+\left(gx+f\right)e}{dg-ef}\right)}{f^2}-\frac{ben\ln\left(gx+f\right)}{\left(dg-ef\right)f}+\frac{ben\ln\left(ex+d\right)}{\left(dg-ef\right)f}+\frac{b\ln\left((ex+d)^n\right)}{\left(gx+f\right)f}+\frac{b\ln(x)\ln\left((ex+\right.}{f^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)/x/(g*x+f)^2,x)
```

```
[Out] -1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f^2*ln(x)-1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^
3/f/(g*x+f)-b*e*n/f/(d*g-e*f)*ln(g*x+f)+b*e*n/f/(d*g-e*f)*ln(e*x+d)+b*ln((e
*x+d)^n)/f/(g*x+f)+b*ln((e*x+d)^n)/f^2*ln(x)-b*ln((e*x+d)^n)/f^2*ln(g*x+f)-
b*n/f^2*dilog((e*x+d)/d)+b*n/f^2*dilog((d*g-e*f+(g*x+f)*e)/(d*g-e*f))-a/f^2
*ln(g*x+f)+a/f/(g*x+f)+a/f^2*ln(x)-1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*c
sgn(I*c*(e*x+d)^n)/f^2*ln(x)-1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*
c*(e*x+d)^n)/f/(g*x+f)-b*ln(c)/f^2*ln(g*x+f)+b*ln(c)/f/(g*x+f)+b*ln(c)/f^2*
ln(x)+1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f^2*ln(g*x
+f)-b*n/f^2*ln(x)*ln((e*x+d)/d)+1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+
d)^n)^2/f^2*ln(x)+b*n/f^2*ln(g*x+f)*ln((d*g-e*f+(g*x+f)*e)/(d*g-e*f))+1/2*I
*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f/(g*x+f)-1/2*I*b*Pi*csgn(I*(
e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f^2*ln(g*x+f)+1/2*I*b*Pi*csgn(I*c*(e*x+d)^n
)^3/f^2*ln(g*x+f)+1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f/(g*x+f)+1/2*
I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f^2*ln(x)-1/2*I*b*Pi*csgn(I*c)*csgn(
I*c*(e*x+d)^n)^2/f^2*ln(g*x+f)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$a\left(\frac{1}{fgx+f^2}-\frac{\log\left(gx+f\right)}{f^2}+\frac{\log(x)}{f^2}\right)+b\int\frac{\log\left((ex+d)^n\right)+\log(c)}{g^2x^3+2\,fgx^2+f^2x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x/(g*x+f)^2,x, algorithm="maxima")
```

```
[Out] a*(1/(f*g*x + f^2) - log(g*x + f)/f^2 + log(x)/f^2) + b*integrate((log((e*x
 + d)^n) + log(c))/(g^2*x^3 + 2*f*g*x^2 + f^2*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a + b \ln\left(c\,(d + e\,x)^n\right)}{x\left(f + g\,x\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/(x*(f + g*x)^2),x)
[Out] int((a + b*log(c*(d + e*x)^n))/(x*(f + g*x)^2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/x/(g*x+f)**2,x)
[Out] Timed out
```

3.254 $\int \frac{a+b\log(c(d+ex)^n)}{x^2(f+gx)^2}\,dx$

Optimal. Leaf size=240

$$-\frac{2g\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^3}+\frac{2g\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^3}-\frac{g\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2(f+gx)}-\frac{a+b}{}$$

```
[Out] b*e*n*ln(x)/d/f^2-b*e*n*ln(e*x+d)/d/f^2+b*e*g*n*ln(e*x+d)/f^2/(-d*g+e*f)+(-
a-b*ln(c*(e*x+d)^n))/f^2/x-g*(a+b*ln(c*(e*x+d)^n))/f^2/(g*x+f)-2*g*ln(-e*x/
d)*(a+b*ln(c*(e*x+d)^n))/f^3-b*e*g*n*ln(g*x+f)/f^2/(-d*g+e*f)+2*g*(a+b*ln(c
*(e*x+d)^n))*ln(e*(g*x+f)/(-d*g+e*f))/f^3+2*b*g*n*polylog(2,-g*(e*x+d)/(-d*
g+e*f))/f^3-2*b*g*n*polylog(2,1+e*x/d)/f^3
```

Rubi [A] time = 0.24, antiderivative size = 240, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 10, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {44, 2416, 2395, 36, 29, 31, 2394, 2315, 2393, 2391}

$$\frac{2bgn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{f^3}-\frac{2bgn\text{PolyLog}\left(2,\frac{ex}{d}+1\right)}{f^3}-\frac{2g\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^3}-\frac{g\left(a+b\log\left(c(d+\right.\right.}{f^2(f+gx)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(x^2*(f + g*x)^2),x]
```

```
[Out] (b*e*n*Log[x])/(d*f^2) - (b*e*n*Log[d + e*x])/(d*f^2) + (b*e*g*n*Log[d + e*
x])/(f^2*(e*f - d*g)) - (a + b*Log[c*(d + e*x)^n])/(f^2*x) - (g*(a + b*Log[
c*(d + e*x)^n]))/(f^2*(f + g*x)) - (2*g*Log[-((e*x)/d)]*(a + b*Log[c*(d + e
*x)^n]))/f^3 - (b*e*g*n*Log[f + g*x])/(f^2*(e*f - d*g)) + (2*g*(a + b*Log[c
*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/f^3 + (2*b*g*n*PolyLog[2, -(
(g*(d + e*x))/(e*f - d*g))])/f^3 - (2*b*g*n*PolyLog[2, 1 + (e*x)/d])/f^3
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{a+b\log(c(d+ex)^n)}{x^2(f+gx)^2}\,dx = \int \left(\frac{a+b\log(c(d+ex)^n)}{f^2x^2} - \frac{2g\left(a+b\log(c(d+ex)^n)\right)}{f^3x} + \frac{g^2\left(a+b\log(c(d+e\right.}{f^2(f+gx)^2}\right.$$

$$= \frac{\int \frac{a+b\log(c(d+ex)^n)}{x^2}\,dx}{f^2} - \frac{(2g)\int \frac{a+b\log(c(d+ex)^n)}{x}\,dx}{f^3} + \frac{\left(2g^2\right)\int \frac{a+b\log(c(d+ex)^n)}{f+gx}\,dx}{f^3} + \frac{g^2}{\ldots}$$

$$= -\frac{a+b\log(c(d+ex)^n)}{f^2x} - \frac{g\left(a+b\log(c(d+ex)^n)\right)}{f^2(f+gx)} - \frac{2g\log\left(-\frac{ex}{d}\right)\left(a+b\log(c\right.}{f^3}$$

$$= -\frac{a+b\log(c(d+ex)^n)}{f^2x} - \frac{g\left(a+b\log(c(d+ex)^n)\right)}{f^2(f+gx)} - \frac{2g\log\left(-\frac{ex}{d}\right)\left(a+b\log(c\right.}{f^3}$$

$$= \frac{ben\log(x)}{df^2} - \frac{ben\log(d+ex)}{df^2} + \frac{begn\log(d+ex)}{f^2(ef-dg)} - \frac{a+b\log(c(d+ex)^n)}{f^2x} - \frac{g(\ldots}{\ldots}$$

Mathematica [A] time = 0.21, size = 199, normalized size = 0.83

$$\frac{-\frac{fg\left(a+b\log(c(d+ex)^n)\right)}{f+gx} + 2g\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log(c(d+ex)^n)\right) - \frac{f\left(a+b\log(c(d+ex)^n)\right)}{x} - 2g\log\left(-\frac{ex}{d}\right)\left(a+b\log(c(d\right.}{f^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(x^2*(f + g*x)^2),x]
```

```
[Out] ((b*e*f*n*(Log[x] - Log[d + e*x]))/d - (f*(a + b*Log[c*(d + e*x)^n]))/x - (
f*g*(a + b*Log[c*(d + e*x)^n]))/(f + g*x) - 2*g*Log[-((e*x)/d)]*(a + b*Log[
c*(d + e*x)^n]) + (b*e*f*g*n*(Log[d + e*x] - Log[f + g*x]))/(e*f - d*g) + 2
*g*(a + b*Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)] + 2*b*g*n*Poly
Log[2, (g*(d + e*x))/(-(e*f) + d*g)] - 2*b*g*n*PolyLog[2, 1 + (e*x)/d])/f^3
```

fricas [F] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b\log\left((ex+d)^n c\right)+a}{g^2x^4+2\,fgx^3+f^2x^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^2/(g*x+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b*log((e*x + d)^n*c) + a)/(g^2*x^4 + 2*f*g*x^3 + f^2*x^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b\log\left((ex+d)^n c\right)+a}{\left(gx+f\right)^2 x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^2/(g*x+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)/((g*x + f)^2*x^2), x)
```

maple [C] time = 0.25, size = 936, normalized size = 3.90

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)/x^2/(g*x+f)^2,x)
```

```
[Out] -I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f^3*g*ln(x)-1/2*I*b*Pi*csgn
(I*c)*csgn(I*c*(e*x+d)^n)^2/f^2*g/(g*x+f)+1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+
d)^n)*csgn(I*c*(e*x+d)^n)/f^2/x-I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f^3*
g*ln(x)-1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f^2*g/(g*x+f)+I*
b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f^3*g*ln(g*x+f)+I*b*Pi*csgn(I*(e*x+d)^
n)*csgn(I*c*(e*x+d)^n)^2/f^3*g*ln(g*x+f)-b*ln((e*x+d)^n)/f^2/x+2*a/f^3*g*ln
(g*x+f)-2*a/f^3*g*ln(x)-b*ln(c)/f^2/x-a/f^2*g/(g*x+f)-2*b*ln((e*x+d)^n)/f^3
*g*ln(x)-I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f^3*g*ln(g*x+f)-1/2*I*b*Pi*csgn(I*c)*
csgn(I*c*(e*x+d)^n)^2/f^2/x-a/f^2/x+b*e*n/f^2*g/(d*g-e*f)*ln(g*x+f)-2*b*e*n
/f^2/(d*g-e*f)*ln(e*x+d)*g+b*e^2*n/f/(d*g-e*f)/d*ln(e*x+d)+b*e*n*ln(x)/d/f^
2-1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f^2/x+2*b*n/f^3*g*dilo
g((e*x+d)/d)-2*b*n/f^3*g*dilog((d*g-e*f+(g*x+f)*e)/(d*g-e*f))-I*b*Pi*csgn(I
*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f^3*g*ln(g*x+f)-b*ln(c)/f^2*g/(g*
x+f)-2*b*ln(c)/f^3*g*ln(x)+2*b*ln(c)/f^3*g*ln(g*x+f)+I*b*Pi*csgn(I*c)*csgn(
I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f^3*g*ln(x)+1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)
^3/f^2/x+2*b*n/f^3*g*ln(x)*ln((e*x+d)/d)-2*b*n/f^3*g*ln(g*x+f)*ln((d*g-e*f+
(g*x+f)*e)/(d*g-e*f))-b*ln((e*x+d)^n)/f^2*g/(g*x+f)+2*b*ln((e*x+d)^n)/f^3*g
*ln(g*x+f)+1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f^2*g
/(g*x+f)+1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f^2*g/(g*x+f)+I*b*Pi*csgn(I*c*(e*
x+d)^n)^3/f^3*g*ln(x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-a\left(\frac{2\,gx+f}{f^2gx^2+f^3x}-\frac{2\,g\log\left(gx+f\right)}{f^3}+\frac{2\,g\log(x)}{f^3}\right)+b\int\frac{\log\left((ex+d)^n\right)+\log(c)}{g^2x^4+2\,fgx^3+f^2x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^2/(g*x+f)^2,x, algorithm="maxima")
```

```
[Out] -a*((2*g*x + f)/(f^2*g*x^2 + f^3*x) - 2*g*log(g*x + f)/f^3 + 2*g*log(x)/f^3
) + b*integrate((log((e*x + d)^n) + log(c))/(g^2*x^4 + 2*f*g*x^3 + f^2*x^2)
, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{a+b\,\ln\left(c\,(d+e\,x)^n\right)}{x^2\,\left(f+g\,x\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/(x^2*(f + g*x)^2),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))/(x^2*(f + g*x)^2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/x**2/(g*x+f)**2,x)
```

```
[Out] Timed out
```

3.255 $\int \frac{a+b\log(c(d+ex)^n)}{x^3(f+gx)^2}\,dx$

Optimal. Leaf size=335

$$\frac{3g^2\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^4}-\frac{3g^2\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^4}+\frac{g^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^3(f+gx)}+\frac{2g\left(\right.}{}$$

```
[Out] -1/2*b*e*n/d/f^2/x-1/2*b*e^2*n*ln(x)/d^2/f^2-2*b*e*g*n*ln(x)/d/f^3+1/2*b*e^
2*n*ln(e*x+d)/d^2/f^2+2*b*e*g*n*ln(e*x+d)/d/f^3-b*e*g^2*n*ln(e*x+d)/f^3/(-d
*g+e*f)+1/2*(-a-b*ln(c*(e*x+d)^n))/f^2/x^2+2*g*(a+b*ln(c*(e*x+d)^n))/f^3/x+
g^2*(a+b*ln(c*(e*x+d)^n))/f^3/(g*x+f)+3*g^2*ln(-e*x/d)*(a+b*ln(c*(e*x+d)^n)
)/f^4+b*e*g^2*n*ln(g*x+f)/f^3/(-d*g+e*f)-3*g^2*(a+b*ln(c*(e*x+d)^n))*ln(e*(
g*x+f)/(-d*g+e*f))/f^4-3*b*g^2*n*polylog(2,-g*(e*x+d)/(-d*g+e*f))/f^4+3*b*g
^2*n*polylog(2,1+e*x/d)/f^4
```

Rubi [A] time = 0.31, antiderivative size = 335, normalized size of antiderivative = 1.00, number of steps used = 18, number of rules used = 10, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.400$, Rules used = {44, 2416, 2395, 36, 29, 31, 2394, 2315, 2393, 2391}

$$-\frac{3bg^2n\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{f^4}+\frac{3bg^2n\text{PolyLog}\left(2,\frac{ex}{d}+1\right)}{f^4}+\frac{3g^2\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^4}+\frac{g^2\left(a+b\log\left(\right.\right.}{f^3(f+}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(x^3*(f + g*x)^2),x]
```

```
[Out] -(b*e*n)/(2*d*f^2*x) - (b*e^2*n*Log[x])/(2*d^2*f^2) - (2*b*e*g*n*Log[x])/(d
*f^3) + (b*e^2*n*Log[d + e*x])/(2*d^2*f^2) + (2*b*e*g*n*Log[d + e*x])/(d*f^
3) - (b*e*g^2*n*Log[d + e*x])/(f^3*(e*f - d*g)) - (a + b*Log[c*(d + e*x)^n]
)/(2*f^2*x^2) + (2*g*(a + b*Log[c*(d + e*x)^n]))/(f^3*x) + (g^2*(a + b*Log[
c*(d + e*x)^n]))/(f^3*(f + g*x)) + (3*g^2*Log[-((e*x)/d)]*(a + b*Log[c*(d +
 e*x)^n]))/f^4 + (b*e*g^2*n*Log[f + g*x])/(f^3*(e*f - d*g)) - (3*g^2*(a + b
*Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/f^4 - (3*b*g^2*n*PolyL
og[2, -((g*(d + e*x))/(e*f - d*g))])/f^4 + (3*b*g^2*n*PolyLog[2, 1 + (e*x)/
d])/f^4
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{a+b\log\left(c(d+ex)^n\right)}{x^3(f+gx)^2}\,dx = \int \left(\frac{a+b\log\left(c(d+ex)^n\right)}{f^2x^3} - \frac{2g\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^3x^2} + \frac{3g^2\left(a+b\log\left(c(d+e\right.\right.}{f^4x}\right.$$

$$= \frac{\int \frac{a+b\log(c(d+ex)^n)}{x^3}\,dx}{f^2} - \frac{(2g)\int \frac{a+b\log(c(d+ex)^n)}{x^2}\,dx}{f^3} + \frac{\left(3g^2\right)\int \frac{a+b\log(c(d+ex)^n)}{x}\,dx}{f^4} - \frac{(3}{}$$

$$= -\frac{a+b\log\left(c(d+ex)^n\right)}{2f^2x^2} + \frac{2g\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^3x} + \frac{g^2\left(a+b\log\left(c(d+ex)^n\right.\right.}{f^3(f+gx)}$$

$$= -\frac{a+b\log\left(c(d+ex)^n\right)}{2f^2x^2} + \frac{2g\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^3x} + \frac{g^2\left(a+b\log\left(c(d+ex)^n\right.\right.}{f^3(f+gx)}$$

$$= -\frac{ben}{2df^2x} - \frac{be^2n\log(x)}{2d^2f^2} - \frac{2begn\log(x)}{df^3} + \frac{be^2n\log(d+ex)}{2d^2f^2} + \frac{2begn\log(d+ex)}{df^3}$$

Mathematica [A] time = 0.50, size = 269, normalized size = 0.80

$$-\frac{\frac{f^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{x^2}-\frac{2fg^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{f+gx}+6g^2\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)-\frac{4fg\left(a+b\log\left(c(d+ex)^n\right)\right)}{x}-6g^2\mathrm{lo}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(x^3*(f + g*x)^2),x]
```

```
[Out] -1/2*((4*b*e*f*g*n*(Log[x] - Log[d + e*x]))/d + (b*e*f^2*n*(d + e*x*Log[x]
- e*x*Log[d + e*x]))/(d^2*x) + (f^2*(a + b*Log[c*(d + e*x)^n]))/x^2 - (4*f*
g*(a + b*Log[c*(d + e*x)^n]))/x - (2*f*g^2*(a + b*Log[c*(d + e*x)^n]))/(f +
 g*x) - 6*g^2*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]) + (2*b*e*f*g^2*n*(
Log[d + e*x] - Log[f + g*x]))/(e*f - d*g) + 6*g^2*(a + b*Log[c*(d + e*x)^n]
)*Log[(e*(f + g*x))/(e*f - d*g)] + 6*b*g^2*n*PolyLog[2, (g*(d + e*x))/(-(e*
f) + d*g)] - 6*b*g^2*n*PolyLog[2, 1 + (e*x)/d])/f^4
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{b\log\left((ex+d)^n c\right)+a}{g^2x^5+2\,fgx^4+f^2x^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^3/(g*x+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b*log((e*x + d)^n*c) + a)/(g^2*x^5 + 2*f*g*x^4 + f^2*x^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{b\log\left((ex+d)^n c\right)+a}{\left(gx+f\right)^2x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^3/(g*x+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)/((g*x + f)^2*x^3), x)
```

maple [C] time = 0.26, size = 1224, normalized size = 3.65

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)/x^3/(g*x+f)^2,x)
```

```
[Out] -1/2*b*ln((e*x+d)^n)/f^2/x^2+3*a/f^4*g^2*ln(x)+a/f^3*g^2/(g*x+f)+2*a/f^3*g/
x-1/2*b*ln(c)/f^2/x^2-3*a/f^4*g^2*ln(g*x+f)+2*b*ln(c)/f^3*g/x-3*b*ln(c)/f^4
*g^2*ln(g*x+f)+3*b*ln(c)/f^4*g^2*ln(x)+b*ln(c)/f^3*g^2/(g*x+f)-1/2*a/f^2/x^
2-3/2*b*e^2*n/f^2/d/(d*g-e*f)*ln(e*x+d)*g-3/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+
d)^n)*csgn(I*c*(e*x+d)^n)/f^4*g^2*ln(x)-3/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I
*c*(e*x+d)^n)^2/f^4*g^2*ln(g*x+f)+1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*cs
gn(I*c*(e*x+d)^n)/f^2/x^2-1/2*b*e^2*n*ln(x)/d^2/f^2-3/2*I*b*Pi*csgn(I*c*(e*
x+d)^n)^3/f^4*g^2*ln(x)-I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f^3*g/x+1/2*I*b*Pi*csg
n(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f^3*g^2/(g*x+f)+3/2*I*b*Pi*csgn(I*(e*x
+d)^n)*csgn(I*c*(e*x+d)^n)^2/f^4*g^2*ln(x)-3*b*n/f^4*g^2*ln(x)*ln((e*x+d)/d
)+3*b*n/f^4*g^2*ln(g*x+f)*ln((d*g-e*f+(g*x+f)*e)/(d*g-e*f))+1/2*I*b*Pi*csgn
(I*c)*csgn(I*c*(e*x+d)^n)^2/f^3*g^2/(g*x+f)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+
d)^n)^2/f^3*g/x+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f^3*g/x+b*ln
```

```
((e*x+d)^n)/f^3*g^2/(g*x+f)+3*b*ln((e*x+d)^n)/f^4*g^2*ln(x)+2*b*ln((e*x+d)^
n)/f^3*g/x-2*b*e*g*n*ln(x)/d/f^3-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*
c*(e*x+d)^n)/f^3*g/x+3/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f^4*g^2*ln(
x)-3/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f^4*g^2*ln(g*x+f)-3*b*ln((e*x
+d)^n)/f^4*g^2*ln(g*x+f)+1/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f^2/x^2-3*b*n/f^4
*g^2*dilog((e*x+d)/d)+3*b*n/f^4*g^2*dilog((d*g-e*f+(g*x+f)*e)/(d*g-e*f))-1/
2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f^3*g^2/(g*x+f)+3/2*I*b*Pi*csgn(I*c*(e*x+d)^
n)^3/f^4*g^2*ln(g*x+f)-1/2*b*e*n/d/f^2/x-b*e*n/f^3*g^2/(d*g-e*f)*ln(g*x+f)+
3*b*e*n/f^3/(d*g-e*f)*ln(e*x+d)*g^2-1/2*b*e^3*n/f/d^2/(d*g-e*f)*ln(e*x+d)-1
/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f^3*g^2/(g*x+f)+3
/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f^4*g^2*ln(g*x+f)
-1/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f^2/x^2-1/4*I*b*Pi*csgn(I*(e*x+
d)^n)*csgn(I*c*(e*x+d)^n)^2/f^2/x^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{2}\,a\left(\frac{6\,g^2x^2+3\,fgx-f^2}{f^3gx^3+f^4x^2}-\frac{6\,g^2\log\left(gx+f\right)}{f^4}+\frac{6\,g^2\log(x)}{f^4}\right)+b\int\frac{\log\left((ex+d)^n\right)+\log(c)}{g^2x^5+2\,fgx^4+f^2x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^3/(g*x+f)^2,x, algorithm="maxima")
```

```
[Out] 1/2*a*((6*g^2*x^2 + 3*f*g*x - f^2)/(f^3*g*x^3 + f^4*x^2) - 6*g^2*log(g*x +
f)/f^4 + 6*g^2*log(x)/f^4) + b*integrate((log((e*x + d)^n) + log(c))/(g^2*x
^5 + 2*f*g*x^4 + f^2*x^3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{a+b\,\ln\left(c\,{(d+e\,x)}^n\right)}{x^3\,{\left(f+g\,x\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/(x^3*(f + g*x)^2),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))/(x^3*(f + g*x)^2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/x**3/(g*x+f)**2,x)
```

```
[Out] Timed out
```

3.256 $\int \frac{x^5(a+b\log(c(d+ex)^n))}{f+gx^2}\,dx$

Optimal. Leaf size=397

$$\frac{f^2\log\left(\frac{e(\sqrt{-f}-\sqrt{g}x)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+ex)^n))}{2g^3}+\frac{f^2\log\left(\frac{e(\sqrt{-f}+\sqrt{g}x)}{e\sqrt{-f}-d\sqrt{g}}\right)(a+b\log(c(d+ex)^n))}{2g^3}-\frac{fx^2(a+b\log(c(d+\dots}{2g^2}$$

```
[Out] -1/2*b*d*f*n*x/e/g^2+1/4*b*d^3*n*x/e^3/g+1/4*b*f*n*x^2/g^2-1/8*b*d^2*n*x^2/
e^2/g+1/12*b*d*n*x^3/e/g-1/16*b*n*x^4/g+1/2*b*d^2*f*n*ln(e*x+d)/e^2/g^2-1/4
*b*d^4*n*ln(e*x+d)/e^4/g-1/2*f*x^2*(a+b*ln(c*(e*x+d)^n))/g^2+1/4*x^4*(a+b*l
n(c*(e*x+d)^n))/g+1/2*f^2*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)-x*g^(1/2))
/(e*(-f)^(1/2)+d*g^(1/2)))/g^3+1/2*f^2*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/
2)+x*g^(1/2))/(e*(-f)^(1/2)-d*g^(1/2)))/g^3+1/2*b*f^2*n*polylog(2,-(e*x+d)*
g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))/g^3+1/2*b*f^2*n*polylog(2,(e*x+d)*g^(1/2)
/(e*(-f)^(1/2)+d*g^(1/2)))/g^3
```

Rubi [A] time = 0.51, antiderivative size = 397, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 8, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.296, Rules used = {266, 43, 2416, 2395, 260, 2394, 2393, 2391}

$$\frac{bf^2n\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2g^3}+\frac{bf^2n\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{2g^3}+\frac{f^2\log\left(\frac{e(\sqrt{-f}-\sqrt{g}x)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+ex)^n))}{2g^3}+\frac{f^2\dots}{}$$

Antiderivative was successfully verified.

```
[In] Int[(x^5*(a + b*Log[c*(d + e*x)^n]))/(f + g*x^2),x]
```

```
[Out] -(b*d*f*n*x)/(2*e*g^2) + (b*d^3*n*x)/(4*e^3*g) + (b*f*n*x^2)/(4*g^2) - (b*d
^2*n*x^2)/(8*e^2*g) + (b*d*n*x^3)/(12*e*g) - (b*n*x^4)/(16*g) + (b*d^2*f*n*
Log[d + e*x])/(2*e^2*g^2) - (b*d^4*n*Log[d + e*x])/(4*e^4*g) - (f*x^2*(a +
b*Log[c*(d + e*x)^n]))/(2*g^2) + (x^4*(a + b*Log[c*(d + e*x)^n]))/(4*g) + (
f^2*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] +
 d*Sqrt[g])])/(2*g^3) + (f^2*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] +
Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*g^3) + (b*f^2*n*PolyLog[2, -((Sqr
t[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*g^3) + (b*f^2*n*PolyLog[2, (
Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*g^3)
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{x^5 \left(a+b\log\left(c(d+ex)^n\right)\right)}{f+gx^2} dx = \int \left(-\frac{fx\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^2} + \frac{x^3\left(a+b\log\left(c(d+ex)^n\right)\right)}{g} + \frac{f^2x\left(a+b\log\right.}{g^2\left(f\right.}\right.$$

$$= -\frac{f\int x\left(a+b\log\left(c(d+ex)^n\right)\right)dx}{g^2} + \frac{f^2\int \frac{x\left(a+b\log\left(c(d+ex)^n\right)\right)}{f+gx^2}dx}{g^2} + \frac{\int x^3\left(a+b\log\right.}{}$$

$$= -\frac{fx^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g^2} + \frac{x^4\left(a+b\log\left(c(d+ex)^n\right)\right)}{4g} + \frac{f^2\int\left(-\frac{a+b\log(c(}{2\sqrt{g}\left(\sqrt{-f}\right.}\right.}{}$$

$$= -\frac{fx^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g^2} + \frac{x^4\left(a+b\log\left(c(d+ex)^n\right)\right)}{4g} - \frac{f^2\int\frac{a+b\log(c(d+ex}{\sqrt{-f}-\sqrt{g}x}}{2g^{5/2}}$$

$$= -\frac{bdfnx}{2eg^2} + \frac{bd^3nx}{4e^3g} + \frac{bfnx^2}{4g^2} - \frac{bd^2nx^2}{8e^2g} + \frac{bdnx^3}{12eg} - \frac{bnx^4}{16g} + \frac{bd^2fn\log(d+ex)}{2e^2g^2} -$$

$$= -\frac{bdfnx}{2eg^2} + \frac{bd^3nx}{4e^3g} + \frac{bfnx^2}{4g^2} - \frac{bd^2nx^2}{8e^2g} + \frac{bdnx^3}{12eg} - \frac{bnx^4}{16g} + \frac{bd^2fn\log(d+ex)}{2e^2g^2} -$$

$$= -\frac{bdfnx}{2eg^2} + \frac{bd^3nx}{4e^3g} + \frac{bfnx^2}{4g^2} - \frac{bd^2nx^2}{8e^2g} + \frac{bdnx^3}{12eg} - \frac{bnx^4}{16g} + \frac{bd^2fn\log(d+ex)}{2e^2g^2} -$$

Mathematica [A] time = 0.32, size = 331, normalized size = 0.83

$$\frac{24f^2\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)+24f^2\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)-24fgx^2\left(a+b\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^5*(a + b*Log[c*(d + e*x)^n]))/(f + g*x^2),x]
```

```
[Out] ((12*b*f*g*n*(e*x*(-2*d + e*x) + 2*d^2*Log[d + e*x]))/e^2 - (b*g^2*n*(e*x*(
-12*d^3 + 6*d^2*e*x - 4*d*e^2*x^2 + 3*e^3*x^3) + 12*d^4*Log[d + e*x]))/e^4
- 24*f*g*x^2*(a + b*Log[c*(d + e*x)^n]) + 12*g^2*x^4*(a + b*Log[c*(d + e*x)
^n]) + 24*f^2*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*
Sqrt[-f] + d*Sqrt[g])] + 24*f^2*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f]
 + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])] + 24*b*f^2*n*PolyLog[2, -((Sqrt[g]
*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))] + 24*b*f^2*n*PolyLog[2, (Sqrt[g]*(d
+ e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(48*g^3)
```

fricas [F] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{bx^5\log\left((ex+d)^nc\right)+ax^5}{gx^2+f}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*log(c*(e*x+d)^n))/(g*x^2+f),x, algorithm="fricas")
```

```
[Out] integral((b*x^5*log((e*x + d)^n*c) + a*x^5)/(g*x^2 + f), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\log\left((ex+d)^nc\right)+a\right)x^5}{gx^2+f} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*log(c*(e*x+d)^n))/(g*x^2+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*x^5/(g*x^2 + f), x)
```

maple [C] time = 0.31, size = 905, normalized size = 2.28

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*(b*ln(c*(e*x+d)^n)+a)/(g*x^2+f),x)
```

```
[Out] -1/2*b*f/g^2*x^2*ln((e*x+d)^n)-1/2*b*f/g^2*x^2*ln(c)+1/2*b*n*f^2/g^3*ln(e*x
+d)*ln((e*(-f*g)^(1/2)-(e*x+d)*g+d*g)/(e*(-f*g)^(1/2)+d*g))+1/2*b*n*f^2/g^3
*ln(e*x+d)*ln((e*(-f*g)^(1/2)+(e*x+d)*g-d*g)/(e*(-f*g)^(1/2)-d*g))-1/2*b*n*
f^2/g^3*ln(e*x+d)*ln(g*x^2+f)+1/4*b*ln((e*x+d)^n)/g*x^4+1/2*a*f^2/g^3*ln(g*
x^2+f)+1/4*b*ln(c)/g*x^4-1/4*I*Pi*b*f/g^2*x^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e
*x+d)^n)^2-1/4*I*Pi*b*f/g^2*x^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/4*I*Pi*b*
f/g^2*x^2*csgn(I*c*(e*x+d)^n)^3-1/2*a*f/g^2*x^2+1/4*I*Pi*b*f/g^2*x^2*csgn(I
*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+
d)^n)*csgn(I*c*(e*x+d)^n)*f^2/g^3*ln(g*x^2+f)+1/4*a/g*x^4-1/8*I*b*Pi*csgn(I
*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/g*x^4+1/4*I*b*Pi*csgn(I*c)*csgn(I
*c*(e*x+d)^n)^2*f^2/g^3*ln(g*x^2+f)+1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(
e*x+d)^n)^2*f^2/g^3*ln(g*x^2+f)+1/4*b*f/g^2*n*x^2-1/4*b*d^4*n*ln(e*x+d)/e^4
/g-1/2*b*d/e*f/g^2*n*x+1/2*b*d^2*f*n*ln(e*x+d)/e^2/g^2+1/2*b*ln(c)*f^2/g^3*
ln(g*x^2+f)+1/8*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/g*x^4+1/2*b*
n*f^2/g^3*dilog((e*(-f*g)^(1/2)-(e*x+d)*g+d*g)/(e*(-f*g)^(1/2)+d*g))+1/2*b*
n*f^2/g^3*dilog((e*(-f*g)^(1/2)+(e*x+d)*g-d*g)/(e*(-f*g)^(1/2)-d*g))+1/2*b*
ln((e*x+d)^n)*f^2/g^3*ln(g*x^2+f)-1/8*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/g*x^4-1/
4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*f^2/g^3*ln(g*x^2+f)-1/16*b*n*x^4/g+1/8*I*b*P
i*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/g*x^4+1/4*b*d^3*n*x/e^3/g-1/8*b*d^2*n*x^2
/e^2/g+1/12*b*d*n*x^3/e/g
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{4}a\left(\frac{2f^2\log\left(gx^2+f\right)}{g^3}+\frac{gx^4-2fx^2}{g^2}\right)+b\int\frac{x^5\log\left((ex+d)^n\right)+x^5\log(c)}{gx^2+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*log(c*(e*x+d)^n))/(g*x^2+f),x, algorithm="maxima")
```

```
[Out] 1/4*a*(2*f^2*log(g*x^2 + f)/g^3 + (g*x^4 - 2*f*x^2)/g^2) + b*integrate((x^5
*log((e*x + d)^n) + x^5*log(c))/(g*x^2 + f), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{x^5\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}{g\,x^2+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^5*(a + b*log(c*(d + e*x)^n)))/(f + g*x^2),x)
```

```
[Out] int((x^5*(a + b*log(c*(d + e*x)^n)))/(f + g*x^2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**5*(a+b*ln(c*(e*x+d)**n))/(g*x**2+f),x)
```

```
[Out] Timed out
```

3.257 $\int \frac{x^3(a+b\log(c(d+ex)^n))}{f+gx^2}\,dx$

Optimal. Leaf size=278

$$-\frac{f\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g^2}-\frac{f\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g^2}+\frac{x^2\left(a+b\log\left(c(d\right.\right.}{2g}$$

```
[Out] 1/2*b*d*n*x/e/g-1/4*b*n*x^2/g-1/2*b*d^2*n*ln(e*x+d)/e^2/g+1/2*x^2*(a+b*ln(c
*(e*x+d)^n))/g-1/2*f*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)-x*g^(1/2))/(e*(
-f)^(1/2)+d*g^(1/2)))/g^2-1/2*f*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)+x*g^
(1/2))/(e*(-f)^(1/2)-d*g^(1/2)))/g^2-1/2*b*f*n*polylog(2,-(e*x+d)*g^(1/2)/(
e*(-f)^(1/2)-d*g^(1/2)))/g^2-1/2*b*f*n*polylog(2,(e*x+d)*g^(1/2)/(e*(-f)^(1
/2)+d*g^(1/2)))/g^2
```

Rubi [A] time = 0.33, antiderivative size = 278, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 8, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.296, Rules used = {266, 43, 2416, 2395, 260, 2394, 2393, 2391}

$$-\frac{bfn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2g^2}-\frac{bfn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{2g^2}-\frac{f\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g^2}-\frac{f\ldots}{}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(a + b*Log[c*(d + e*x)^n]))/(f + g*x^2),x]
```

```
[Out] (b*d*n*x)/(2*e*g) - (b*n*x^2)/(4*g) - (b*d^2*n*Log[d + e*x])/(2*e^2*g) + (x
^2*(a + b*Log[c*(d + e*x)^n]))/(2*g) - (f*(a + b*Log[c*(d + e*x)^n])*Log[(e
*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*g^2) - (f*(a + b*Log
[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/
(2*g^2) - (b*f*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))
])/(2*g^2) - (b*f*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])
])/(2*g^2)
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{x^3\left(a+b\log\left(c(d+ex)^n\right)\right)}{f+gx^2}\,dx = \int \left(\frac{x\left(a+b\log\left(c(d+ex)^n\right)\right)}{g} - \frac{fx\left(a+b\log\left(c(d+ex)^n\right)\right)}{g\left(f+gx^2\right)}\right)dx$$

$$= \frac{\int x\left(a+b\log\left(c(d+ex)^n\right)\right)dx}{g} - \frac{f\int \frac{x\left(a+b\log\left(c(d+ex)^n\right)\right)}{f+gx^2}\,dx}{g}$$

$$= \frac{x^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g} - \frac{f\int\left(-\frac{a+b\log(c(d+ex)^n)}{2\sqrt{g}\left(\sqrt{-f}-\sqrt{g}x\right)} + \frac{a+b\log(c(d+ex)^n)}{2\sqrt{g}\left(\sqrt{-f}+\sqrt{g}x\right)}\right)dx}{g} - (be$$

$$= \frac{x^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g} + \frac{f\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{-f}-\sqrt{g}x}\,dx}{2g^{3/2}} - \frac{f\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{-f}+\sqrt{g}x}\,dx}{2g^{3/2}} -$$

$$= \frac{bdnx}{2eg} - \frac{bnx^2}{4g} - \frac{bd^2n\log(d+ex)}{2e^2g} + \frac{x^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g} - \frac{f\left(a+b\log\right.}{}$$

$$= \frac{bdnx}{2eg} - \frac{bnx^2}{4g} - \frac{bd^2n\log(d+ex)}{2e^2g} + \frac{x^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g} - \frac{f\left(a+b\log\right.}{}$$

$$= \frac{bdnx}{2eg} - \frac{bnx^2}{4g} - \frac{bd^2n\log(d+ex)}{2e^2g} + \frac{x^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g} - \frac{f\left(a+b\log\right.}{}$$

Mathematica [A] time = 0.18, size = 243, normalized size = 0.87

$$-\frac{2f\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)+2f\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)-2gx^2\left(a+b\log\right.}{4g^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(a + b*Log[c*(d + e*x)^n]))/(f + g*x^2),x]
```

```
[Out] -1/4*((b*g*n*(e*x*(-2*d + e*x) + 2*d^2*Log[d + e*x]))/e^2 - 2*g*x^2*(a + b*
Log[c*(d + e*x)^n]) + 2*f*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqr
t[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])] + 2*f*(a + b*Log[c*(d + e*x)^n])*Log[(e*
(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])] + 2*b*f*n*PolyLog[2, -((S
qrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))] + 2*b*f*n*PolyLog[2, (Sqrt[g]*
(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])]])/g^2
```

fricas [F] time = 0.40, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{bx^3\log\left((ex+d)^nc\right)+ax^3}{gx^2+f},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))/(g*x^2+f),x, algorithm="fricas")
```

```
[Out] integral((b*x^3*log((e*x + d)^n*c) + a*x^3)/(g*x^2 + f), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(b\log\left((ex+d)^nc\right)+a\right)x^3}{gx^2+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))/(g*x^2+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*x^3/(g*x^2 + f), x)
```

maple [C] time = 0.26, size = 631, normalized size = 2.27

$$-\frac{i\pi b\,x^2\text{csgn}\left(ic\right)\text{csgn}\left(i\left(ex+d\right)^n\right)\text{csgn}\left(ic\left(ex+d\right)^n\right)}{4g}+\frac{i\pi b\,x^2\text{csgn}\left(ic\right)\text{csgn}\left(ic\left(ex+d\right)^n\right)^2}{4g}+\frac{i\pi b\,x^2\text{csgn}\left(i\left(ex\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(b*ln(c*(e*x+d)^n)+a)/(g*x^2+f),x)
```

```
[Out] 1/2*b/g*x^2*ln((e*x+d)^n)-1/2*b*ln((e*x+d)^n)*f/g^2*ln(g*x^2+f)-1/4*b/g*n*x
^2+1/2*b*d/e/g*n*x-1/2*b*d^2*n*ln(e*x+d)/e^2/g+1/2*b*n*f/g^2*ln(e*x+d)*ln(g
*x^2+f)-1/2*b*n*f/g^2*ln(e*x+d)*ln((d*g+(-f*g)^(1/2)*e-(e*x+d)*g)/(d*g+(-f*
g)^(1/2)*e))-1/2*b*n*f/g^2*ln(e*x+d)*ln((-d*g+(-f*g)^(1/2)*e+(e*x+d)*g)/(-d
*g+(-f*g)^(1/2)*e))-1/2*b*n*f/g^2*dilog((d*g+(-f*g)^(1/2)*e-(e*x+d)*g)/(d*g
+(-f*g)^(1/2)*e))-1/2*b*n*f/g^2*dilog((-d*g+(-f*g)^(1/2)*e+(e*x+d)*g)/(-d*g
+(-f*g)^(1/2)*e))+1/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*f/g^2*ln(g*x^2+f)-1/4*I*
b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*f/g^2*ln(g*x^2+f)+1/4*I*b*Pi*csgn(I*c)
*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*f/g^2*ln(g*x^2+f)+1/4*I*Pi*b/g*x^2*c
sgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/4*I*Pi*b/g*x^2*csgn(I*(e*x+d)^n)*csgn(I*c*
(e*x+d)^n)^2-1/4*I*Pi*b/g*x^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^
n)-1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*f/g^2*ln(g*x^2+f)-1/4
```

```
*I*Pi*b/g*x^2*csgn(I*c*(e*x+d)^n)^3+1/2*b/g*x^2*ln(c)-1/2*b*ln(c)*f/g^2*ln(
g*x^2+f)+1/2*a/g*x^2-1/2*a*f/g^2*ln(g*x^2+f)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{2}a\left(\frac{x^2}{g}-\frac{f\log\left(gx^2+f\right)}{g^2}\right)+b\int\frac{x^3\log\left((ex+d)^n\right)+x^3\log(c)}{gx^2+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))/(g*x^2+f),x, algorithm="maxima")
```

```
[Out] 1/2*a*(x^2/g - f*log(g*x^2 + f)/g^2) + b*integrate((x^3*log((e*x + d)^n) +
x^3*log(c))/(g*x^2 + f), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{x^3\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}{g\,x^2+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(a + b*log(c*(d + e*x)^n)))/(f + g*x^2),x)
```

```
[Out] int((x^3*(a + b*log(c*(d + e*x)^n)))/(f + g*x^2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(a+b*ln(c*(e*x+d)**n))/(g*x**2+f),x)
```

```
[Out] Timed out
```

3.258 $\int \frac{x\left(a+b\log(c(d+ex)^n)\right)}{f+gx^2}\,dx$

Optimal. Leaf size=203

$$\frac{\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g}+\frac{\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}\,x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g}+\frac{bn\mathrm{Li}_2\left(-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2g}+\frac{b}{}$$

```
[Out] 1/2*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(1/
2)))/g+1/2*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)+x*g^(1/2))/(e*(-f)^(1/2)-
d*g^(1/2)))/g+1/2*b*n*polylog(2,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))/
g+1/2*b*n*polylog(2,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))/g
```

Rubi [A] time = 0.18, antiderivative size = 203, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.200$, Rules used = {260, 2416, 2394, 2393, 2391}

$$\frac{bn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2g}+\frac{bn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{2g}+\frac{\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g}+\frac{\log\left(\frac{e(}{e}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(a + b*Log[c*(d + e*x)^n]))/(f + g*x^2),x]
```

```
[Out] ((a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*
Sqrt[g])])/(2*g) + ((a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x
))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*g) + (b*n*PolyLog[2, -((Sqrt[g]*(d + e*x))
/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*g) + (b*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e
*Sqrt[-f] + d*Sqrt[g])])/(2*g)
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
```

```
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{x\left(a+b\log\left(c(d+ex)^n\right)\right)}{f+gx^2}\,dx = \int\left(-\frac{a+b\log\left(c(d+ex)^n\right)}{2\sqrt{g}\left(\sqrt{-f}-\sqrt{g}\,x\right)}+\frac{a+b\log\left(c(d+ex)^n\right)}{2\sqrt{g}\left(\sqrt{-f}+\sqrt{g}\,x\right)}\right)dx$$

$$= -\frac{\int\frac{a+b\log(c(d+ex)^n)}{\sqrt{-f}-\sqrt{g}\,x}\,dx}{2\sqrt{g}}+\frac{\int\frac{a+b\log(c(d+ex)^n)}{\sqrt{-f}+\sqrt{g}\,x}\,dx}{2\sqrt{g}}$$

$$= \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2g}+\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e\left(\sqrt{-f}\right.}{e\sqrt{-f}}\right.}{2g}$$

$$= \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2g}+\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e\left(\sqrt{-f}\right.}{e\sqrt{-f}}\right.}{2g}$$

$$= \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2g}+\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e\left(\sqrt{-f}\right.}{e\sqrt{-f}}\right.}{2g}$$

Mathematica [A] time = 0.05, size = 172, normalized size = 0.85

$$\frac{\left(\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)+\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}\,x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)\right)\left(a+b\log\left(c(d+ex)^n\right)\right)+bn\text{Li}_2\left(-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)+bn\text{Li}_2\left(\frac{\sqrt{g}(d+ex)}{\sqrt{g}d+e\sqrt{-f}}\right)}{2g}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(a + b*Log[c*(d + e*x)^n]))/(f + g*x^2),x]
```

```
[Out] ((a + b*Log[c*(d + e*x)^n])*(Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d
*Sqrt[g])] + Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])]) + b*
n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))] + b*n*PolyLog
[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*g)
```

fricas [F] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{bx\log\left((ex+d)^n c\right)+ax}{gx^2+f},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))/(g*x^2+f),x, algorithm="fricas")
```

```
[Out] integral((b*x*log((e*x + d)^n*c) + a*x)/(g*x^2 + f), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(b\log\left((ex+d)^n c\right)+a\right)x}{gx^2+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))/(g*x^2+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*x/(g*x^2 + f), x)
```

maple [C] time = 0.22, size = 411, normalized size = 2.02

$$-\frac{i\pi b\,\mathrm{csgn}\left(ic\right)\mathrm{csgn}\left(i\left(ex+d\right)^{n}\right)\mathrm{csgn}\left(ic\left(ex+d\right)^{n}\right)\ln\left(g\,x^{2}+f\right)}{4g}+\frac{i\pi b\,\mathrm{csgn}\left(ic\right)\mathrm{csgn}\left(ic\left(ex+d\right)^{n}\right)^{2}\ln\left(g\,x^{2}+\right.}{4g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(b*ln(c*(e*x+d)^n)+a)/(g*x^2+f),x)
```

```
[Out] 1/2*b/g*ln(g*x^2+f)*ln((e*x+d)^n)-1/2*b/g*n*ln(e*x+d)*ln(g*x^2+f)+1/2*b/g*n
*ln(e*x+d)*ln((d*g+(-f*g)^(1/2)*e-(e*x+d)*g)/(d*g+(-f*g)^(1/2)*e))+1/2*b/g*
n*ln(e*x+d)*ln((-d*g+(-f*g)^(1/2)*e+(e*x+d)*g)/(-d*g+(-f*g)^(1/2)*e))+1/2*b
/g*n*dilog((d*g+(-f*g)^(1/2)*e-(e*x+d)*g)/(d*g+(-f*g)^(1/2)*e))+1/2*b/g*n*d
ilog((-d*g+(-f*g)^(1/2)*e+(e*x+d)*g)/(-d*g+(-f*g)^(1/2)*e))-1/4*I/g*ln(g*x^
2+f)*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/4*I/g*ln(g*x^2+
f)*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/4*I/g*ln(g*x^2+f)*b*Pi*csgn(I*(e*
x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/4*I/g*ln(g*x^2+f)*b*Pi*csgn(I*c*(e*x+d)^n)^
3+1/2/g*ln(g*x^2+f)*b*ln(c)+1/2*a/g*ln(g*x^2+f)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$b\int\frac{x\log\left(\left(ex+d\right)^{n}\right)+x\log\left(c\right)}{gx^{2}+f}\,dx+\frac{a\log\left(gx^{2}+f\right)}{2\,g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))/(g*x^2+f),x, algorithm="maxima")
```

```
[Out] b*integrate((x*log((e*x + d)^n) + x*log(c))/(g*x^2 + f), x) + 1/2*a*log(g*x
^2 + f)/g
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{x\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^{n}\right)\right)}{g\,x^{2}+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(a + b*log(c*(d + e*x)^n)))/(f + g*x^2),x)
```

```
[Out] int((x*(a + b*log(c*(d + e*x)^n)))/(f + g*x^2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{x\left(a+b\log\left(c\left(d+ex\right)^{n}\right)\right)}{f+gx^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*ln(c*(e*x+d)**n))/(g*x**2+f),x)
```

```
[Out] Integral(x*(a + b*log(c*(d + e*x)**n))/(f + g*x**2), x)
```

3.259 $\int \frac{a+b\log(c(d+ex)^n)}{x(f+gx^2)}\,dx$

Optimal. Leaf size=245

$$-\frac{\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{2f}-\frac{\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}\,x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{2f}+\frac{\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d\right.\right.}{f}$$

```
[Out] ln(-e*x/d)*(a+b*ln(c*(e*x+d)^n))/f-1/2*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/
2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(1/2)))/f-1/2*(a+b*ln(c*(e*x+d)^n))*ln(e*((
-f)^(1/2)+x*g^(1/2))/(e*(-f)^(1/2)-d*g^(1/2)))/f+b*n*polylog(2,1+e*x/d)/f-1
/2*b*n*polylog(2,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))/f-1/2*b*n*polyl
og(2,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))/f
```

Rubi [A] time = 0.32, antiderivative size = 245, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 10, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.370, Rules used = {266, 36, 29, 31, 2416, 2394, 2315, 260, 2393, 2391}

$$-\frac{bn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2f}-\frac{bn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{2f}+\frac{bn\text{PolyLog}\left(2,\frac{ex}{d}+1\right)}{f}-\frac{\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\log\right.}{2f}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(x*(f + g*x^2)),x]
```

```
[Out] (Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]))/f - ((a + b*Log[c*(d + e*x)^n]
)*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*f) - ((a + b
*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g]
)])/(2*f) - (b*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))
])/(2*f) - (b*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(
2*f) + (b*n*PolyLog[2, 1 + (e*x)/d])/f
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{a+b\log\left(c(d+ex)^n\right)}{x\left(f+gx^2\right)}\,dx = \int \left(\frac{a+b\log\left(c(d+ex)^n\right)}{fx} - \frac{gx\left(a+b\log\left(c(d+ex)^n\right)\right)}{f\left(f+gx^2\right)}\right)dx$$

$$= \frac{\int \frac{a+b\log(c(d+ex)^n)}{x}\,dx}{f} - \frac{g\int \frac{x\left(a+b\log(c(d+ex)^n)\right)}{f+gx^2}\,dx}{f}$$

$$= \frac{\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f} - \frac{g\int \left(-\frac{a+b\log(c(d+ex)^n)}{2\sqrt{g}\left(\sqrt{-f}-\sqrt{g}\,x\right)} + \frac{a+b\log(c(d+ex)^n)}{2\sqrt{g}\left(\sqrt{-f}+\sqrt{g}\,x\right)}\right)dx}{f}$$

$$= \frac{\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f} + \frac{bn\text{Li}_2\left(1+\frac{ex}{d}\right)}{f} + \frac{\sqrt{g}\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{-f}-\sqrt{g}\,x}\,dx}{2f} -$$

$$= \frac{\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f} - \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2f} -$$

$$= \frac{\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f} - \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2f} -$$

$$= \frac{\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f} - \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2f} -$$

Mathematica [A] time = 0.10, size = 224, normalized size = 0.91

$$-\frac{\log\left(\frac{e(\sqrt{-f}-\sqrt{g}x)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+ex)^n))+\log\left(\frac{e(\sqrt{-f}+\sqrt{g}x)}{e\sqrt{-f}-d\sqrt{g}}\right)(a+b\log(c(d+ex)^n))-2\log\left(-\frac{ex}{d}\right)(a+b\log(c}{2f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(x*(f + g*x^2)),x]
```

```
[Out] -1/2*(-2*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]) + (a + b*Log[c*(d + e*x
)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])] + (a + b*Log
[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])] +
 b*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))] + b*n*Poly
Log[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])] - 2*b*n*PolyLog[2, 1 +
 (e*x)/d])/f
```

fricas [F] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b\log\left((ex+d)^n c\right)+a}{gx^3+fx},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x/(g*x^2+f),x, algorithm="fricas")
```

```
[Out] integral((b*log((e*x + d)^n*c) + a)/(g*x^3 + f*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{b\log\left((ex+d)^n c\right)+a}{(gx^2+f)x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x/(g*x^2+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)/((g*x^2 + f)*x), x)
```

maple [C] time = 0.23, size = 604, normalized size = 2.47

$$-\frac{i\pi b\,\mathrm{csgn}(ic)\,\mathrm{csgn}\left(i(ex+d)^n\right)\mathrm{csgn}\left(ic(ex+d)^n\right)\ln(x)}{2f}+\frac{i\pi b\,\mathrm{csgn}(ic)\,\mathrm{csgn}\left(i(ex+d)^n\right)\mathrm{csgn}\left(ic(ex+d)^n\right)\ln\left(\right.}{4f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)/x/(g*x^2+f),x)
```

```
[Out] -1/2*b*ln((e*x+d)^n)/f*ln(g*x^2+f)+b/f*ln(x)*ln((e*x+d)^n)-b*n/f*dilog((e*x
+d)/d)-b/f*n*ln(x)*ln((e*x+d)/d)+1/2*b*n/f*ln(e*x+d)*ln(g*x^2+f)-1/2*b*n/f*
ln(e*x+d)*ln((d*g+(-f*g)^(1/2)*e-(e*x+d)*g)/(d*g+(-f*g)^(1/2)*e))-1/2*b*n/f
*ln(e*x+d)*ln((-d*g+(-f*g)^(1/2)*e+(e*x+d)*g)/(-d*g+(-f*g)^(1/2)*e))-1/2*b*
n/f*dilog((d*g+(-f*g)^(1/2)*e-(e*x+d)*g)/(d*g+(-f*g)^(1/2)*e))-1/2*b*n/f*di
log((-d*g+(-f*g)^(1/2)*e+(e*x+d)*g)/(-d*g+(-f*g)^(1/2)*e))+1/2*I*Pi*b/f*csg
n(I*c)*csgn(I*c*(e*x+d)^n)^2*ln(x)+1/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f*ln(g*
x^2+f)-1/2*I*Pi*b/f*csgn(I*c*(e*x+d)^n)^3*ln(x)-1/4*I*b*Pi*csgn(I*(e*x+d)^n
)*csgn(I*c*(e*x+d)^n)^2/f*ln(g*x^2+f)-1/2*I*Pi*b/f*csgn(I*c)*csgn(I*(e*x+d)
^n)*csgn(I*c*(e*x+d)^n)*ln(x)+1/2*I*Pi*b/f*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+
d)^n)^2*ln(x)+1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f*
```

```
ln(g*x^2+f)-1/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f*ln(g*x^2+f)-1/2*b*
ln(c)/f*ln(g*x^2+f)+b/f*ln(c)*ln(x)-1/2*a/f*ln(g*x^2+f)+a/f*ln(x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{2}\,a\left(\frac{\log\left(gx^2+f\right)}{f}-\frac{2\,\log(x)}{f}\right)+b\int\frac{\log\left((ex+d)^n\right)+\log(c)}{gx^3+fx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x/(g*x^2+f),x, algorithm="maxima")
```

```
[Out] -1/2*a*(log(g*x^2 + f)/f - 2*log(x)/f) + b*integrate((log((e*x + d)^n) + lo
g(c))/(g*x^3 + f*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}{x\,\left(g\,x^2+f\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/(x*(f + g*x^2)),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))/(x*(f + g*x^2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{a+b\log\left(c\left(d+ex\right)^n\right)}{x\left(f+gx^2\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/x/(g*x**2+f),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))/(x*(f + g*x**2)), x)
```

3.260 $\int \frac{a+b\log(c(d+ex)^n)}{x^3(f+gx^2)}\,dx$

Optimal. Leaf size=331

$$-\frac{g\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2}+\frac{g\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{2f^2}+\frac{g\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)\left(a+b\log\right.}{2f^2}$$

```
[Out] -1/2*b*e*n/d/f/x-1/2*b*e^2*n*ln(x)/d^2/f+1/2*b*e^2*n*ln(e*x+d)/d^2/f+1/2*(-
a-b*ln(c*(e*x+d)^n))/f/x^2-g*ln(-e*x/d)*(a+b*ln(c*(e*x+d)^n))/f^2+1/2*g*(a+
b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(1/2)))/f^
2+1/2*g*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)+x*g^(1/2))/(e*(-f)^(1/2)-d*g
^(1/2)))/f^2-b*g*n*polylog(2,1+e*x/d)/f^2+1/2*b*g*n*polylog(2,-(e*x+d)*g^(1
/2)/(e*(-f)^(1/2)-d*g^(1/2)))/f^2+1/2*b*g*n*polylog(2,(e*x+d)*g^(1/2)/(e*(-
f)^(1/2)+d*g^(1/2)))/f^2
```

Rubi [A] time = 0.37, antiderivative size = 331, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 9, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {266, 44, 2416, 2395, 2394, 2315, 260, 2393, 2391}

$$\frac{bgn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2f^2}+\frac{bgn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{2f^2}-\frac{bgn\text{PolyLog}\left(2,\frac{ex}{d}+1\right)}{f^2}-\frac{g\log\left(-\frac{ex}{d}\right)\left(a+b\log(c(d\right.}{f^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(x^3*(f + g*x^2)),x]
```

```
[Out] -(b*e*n)/(2*d*f*x) - (b*e^2*n*Log[x])/(2*d^2*f) + (b*e^2*n*Log[d + e*x])/(2
*d^2*f) - (a + b*Log[c*(d + e*x)^n])/(2*f*x^2) - (g*Log[-((e*x)/d)]*(a + b*
Log[c*(d + e*x)^n]))/f^2 + (g*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] -
 Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*f^2) + (g*(a + b*Log[c*(d + e*x)
^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*f^2) + (b
*g*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*f^2) +
 (b*g*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*f^2) -
 (b*g*n*PolyLog[2, 1 + (e*x)/d])/f^2
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{a+b\log(c(d+ex)^n)}{x^3(f+gx^2)}\,dx = \int\left(\frac{a+b\log(c(d+ex)^n)}{fx^3} - \frac{g\left(a+b\log(c(d+ex)^n)\right)}{f^2x} + \frac{g^2x\left(a+b\log(c(d+ex)^n)\right)}{f^2(f+gx^2)}\right.$$

$$= \frac{\int \frac{a+b\log(c(d+ex)^n)}{x^3}dx}{f} - \frac{g\int \frac{a+b\log(c(d+ex)^n)}{x}dx}{f^2} + \frac{g^2\int \frac{x(a+b\log(c(d+ex)^n))}{f+gx^2}dx}{f^2}$$

$$= -\frac{a+b\log(c(d+ex)^n)}{2fx^2} - \frac{g\log\left(-\frac{ex}{d}\right)\left(a+b\log(c(d+ex)^n)\right)}{f^2} + \frac{g^2\int\left(-\frac{a+b\log(c(d+e}{2\sqrt{g}(\sqrt{-f}-\sqrt{}}\right.}{}$$

$$= -\frac{a+b\log(c(d+ex)^n)}{2fx^2} - \frac{g\log\left(-\frac{ex}{d}\right)\left(a+b\log(c(d+ex)^n)\right)}{f^2} - \frac{bgn\operatorname{Li}_2\left(1+\frac{ex}{d}\right)}{f^2} -$$

$$= -\frac{ben}{2dfx} - \frac{be^2n\log(x)}{2d^2f} + \frac{be^2n\log(d+ex)}{2d^2f} - \frac{a+b\log(c(d+ex)^n)}{2fx^2} - \frac{g\log\left(-\frac{ex}{d}\right)(a}{}$$

$$= -\frac{ben}{2dfx} - \frac{be^2n\log(x)}{2d^2f} + \frac{be^2n\log(d+ex)}{2d^2f} - \frac{a+b\log(c(d+ex)^n)}{2fx^2} - \frac{g\log\left(-\frac{ex}{d}\right)(a}{}$$

$$= -\frac{ben}{2dfx} - \frac{be^2n\log(x)}{2d^2f} + \frac{be^2n\log(d+ex)}{2d^2f} - \frac{a+b\log(c(d+ex)^n)}{2fx^2} - \frac{g\log\left(-\frac{ex}{d}\right)(a}{}$$

Mathematica [A] time = 0.19, size = 279, normalized size = 0.84

$$\frac{g\log\left(\frac{e(\sqrt{-f}-\sqrt{g}x)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\log(c(d+ex)^n)\right) + g\log\left(\frac{e(\sqrt{-f}+\sqrt{g}x)}{e\sqrt{-f}-d\sqrt{g}}\right)\left(a+b\log(c(d+ex)^n)\right) - \frac{f(a+b\log(c(d+ex)^n))}{x^2} - 2g}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(x^3*(f + g*x^2)),x]
```

```
[Out] (-((b*e*f*n*(d + e*x*Log[x] - e*x*Log[d + e*x]))/(d^2*x)) - (f*(a + b*Log[c
*(d + e*x)^n]))/x^2 - 2*g*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]) + g*(a
 + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqr
t[g])] + g*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqr
t[-f] - d*Sqrt[g])] + b*g*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] -
d*Sqrt[g]))] + b*g*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g]
)] - 2*b*g*n*PolyLog[2, 1 + (e*x)/d])/(2*f^2)
```

fricas [F] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b\log\left((ex+d)^n c\right)+a}{gx^5+fx^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^3/(g*x^2+f),x, algorithm="fricas")
```

```
[Out] integral((b*log((e*x + d)^n*c) + a)/(g*x^5 + f*x^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b\log\left((ex+d)^n c\right)+a}{(gx^2+f)x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^3/(g*x^2+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)/((g*x^2 + f)*x^3), x)
```

maple [C] time = 0.25, size = 841, normalized size = 2.54

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)/x^3/(g*x^2+f),x)
```

```
[Out] -1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f^2*g*ln(x)-1/2*I*b*Pi*
csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f^2*g*ln(x)+1/4*I*b*Pi*csgn(I*c)*csgn(I*c*(
e*x+d)^n)^2/f^2*g*ln(g*x^2+f)+1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)
^n)^2/f^2*g*ln(g*x^2+f)+1/2*a/f^2*g*ln(g*x^2+f)-1/2*b/f/x^2*ln((e*x+d)^n)-1
/2*b*n/f^2*g*ln(e*x+d)*ln(g*x^2+f)+1/2*b*n/f^2*g*ln(e*x+d)*ln((d*g+(-f*g)^(
1/2)*e-(e*x+d)*g)/(d*g+(-f*g)^(1/2)*e))+1/4*I*Pi*b/f/x^2*csgn(I*c*(e*x+d)^n
)^3+1/2*b*n/f^2*g*ln(e*x+d)*ln((-d*g+(-f*g)^(1/2)*e+(e*x+d)*g)/(-d*g+(-f*g)
^(1/2)*e))+1/4*I*Pi*b/f/x^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)
+b/f^2*g*n*ln(x)*ln((e*x+d)/d)-1/2*a/f/x^2-a/f^2*g*ln(x)-1/2*b/f/x^2*ln(c)+
1/2*b*ln((e*x+d)^n)/f^2*g*ln(g*x^2+f)+1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n
)*csgn(I*c*(e*x+d)^n)/f^2*g*ln(x)+1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f^2*g*ln
(x)-b/f^2*g*ln(x)*ln((e*x+d)^n)-b/f^2*g*ln(c)*ln(x)+b*n/f^2*g*dilog((e*x+d)
/d)-1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f^2*g*ln(g*x
^2+f)-1/2*b/d^2*e^2/f*n*ln(x)+1/2*b/d^2*e^2/f*n*ln(e*x+d)+1/2*b*n/f^2*g*dil
og((-d*g+(-f*g)^(1/2)*e+(e*x+d)*g)/(-d*g+(-f*g)^(1/2)*e))+1/2*b*ln(c)/f^2*g
*ln(g*x^2+f)+1/2*b*n/f^2*g*dilog((d*g+(-f*g)^(1/2)*e-(e*x+d)*g)/(d*g+(-f*g)
^(1/2)*e))-1/4*I*Pi*b/f/x^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/4*I*Pi*b/f/x^
2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/2*b/d*e/f*n/x-1/4*I*b*Pi*csgn(I
*c*(e*x+d)^n)^3/f^2*g*ln(g*x^2+f)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{2}\,a\left(\frac{g\log\left(gx^2+f\right)}{f^2}-\frac{2\,g\log(x)}{f^2}-\frac{1}{fx^2}\right)+b\int\frac{\log\left((ex+d)^n\right)+\log(c)}{gx^5+fx^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^3/(g*x^2+f),x, algorithm="maxima")
```

```
[Out] 1/2*a*(g*log(g*x^2 + f)/f^2 - 2*g*log(x)/f^2 - 1/(f*x^2)) + b*integrate((lo
g((e*x + d)^n) + log(c))/(g*x^5 + f*x^3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}{x^3\,\left(g\,x^2+f\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/(x^3*(f + g*x^2)),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))/(x^3*(f + g*x^2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/x**3/(g*x**2+f),x)
```

```
[Out] Timed out
```

3.261 $\int \frac{x^4\left(a+b\log(c(d+ex)^n)\right)}{f+gx^2}\,dx$

Optimal. Leaf size=369

$$\frac{(-f)^{3/2}\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g^{5/2}}-\frac{(-f)^{3/2}\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g^{5/2}}+\frac{x^3\left(a+b\right.}{}$$

```
[Out] -a*f*x/g^2+b*f*n*x/g^2-1/3*b*d^2*n*x/e^2/g+1/6*b*d*n*x^2/e/g-1/9*b*n*x^3/g+
1/3*b*d^3*n*ln(e*x+d)/e^3/g-b*f*(e*x+d)*ln(c*(e*x+d)^n)/e/g^2+1/3*x^3*(a+b*
ln(c*(e*x+d)^n))/g+1/2*(-f)^(3/2)*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)-x*
g^(1/2))/(e*(-f)^(1/2)+d*g^(1/2)))/g^(5/2)-1/2*(-f)^(3/2)*(a+b*ln(c*(e*x+d)
^n))*ln(e*((-f)^(1/2)+x*g^(1/2))/(e*(-f)^(1/2)-d*g^(1/2)))/g^(5/2)-1/2*b*(-
f)^(3/2)*n*polylog(2,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))/g^(5/2)+1/2
*b*(-f)^(3/2)*n*polylog(2,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))/g^(5/2)
```

Rubi [A] time = 0.39, antiderivative size = 369, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 11, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.407, Rules used = {302, 205, 2416, 2389, 2295, 2395, 43, 2409, 2394, 2393, 2391}

$$-\frac{b(-f)^{3/2}n\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2g^{5/2}}+\frac{b(-f)^{3/2}n\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{2g^{5/2}}+\frac{(-f)^{3/2}\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\log\right.}{2g^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(a + b*Log[c*(d + e*x)^n]))/(f + g*x^2),x]
```

```
[Out] -((a*f*x)/g^2) + (b*f*n*x)/g^2 - (b*d^2*n*x)/(3*e^2*g) + (b*d*n*x^2)/(6*e*g
) - (b*n*x^3)/(9*g) + (b*d^3*n*Log[d + e*x])/(3*e^3*g) - (b*f*(d + e*x)*Log
[c*(d + e*x)^n])/(e*g^2) + (x^3*(a + b*Log[c*(d + e*x)^n]))/(3*g) + ((-f)^(
3/2)*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f]
+ d*Sqrt[g])])/(2*g^(5/2)) - ((-f)^(3/2)*(a + b*Log[c*(d + e*x)^n])*Log[(e*
(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*g^(5/2)) - (b*(-f)^(3
/2)*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*g^(5/
2)) + (b*(-f)^(3/2)*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g
])])/(2*g^(5/2))
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 302

```
Int[(x_)^(m_)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Int[PolynomialDivide[x
^m, a + b*x^n, x], x] /; FreeQ[{a, b}, x] && IGtQ[m, 0] && IGtQ[n, 0] && Gt
Q[m, 2*n - 1]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{x^4 \left(a + b\log\left(c(d+ex)^n\right)\right)}{f+gx^2}\,dx = \int \left(-\frac{f\left(a + b\log\left(c(d+ex)^n\right)\right)}{g^2} + \frac{x^2\left(a + b\log\left(c(d+ex)^n\right)\right)}{g} + \frac{f^2\left(a+b\log\right.}{g^2\left(f\right.}\right.$$

$$= -\frac{f\int\left(a + b\log\left(c(d+ex)^n\right)\right)dx}{g^2} + \frac{f^2\int \frac{a+b\log(c(d+ex)^n)}{f+gx^2}\,dx}{g^2} + \frac{\int x^2\left(a+b\log\right.}{}$$

$$= -\frac{afx}{g^2} + \frac{x^3\left(a + b\log\left(c(d+ex)^n\right)\right)}{3g} - \frac{(bf)\int \log\left(c(d+ex)^n\right)dx}{g^2} + \frac{f^2\int\left(\sqrt{\right.}{}$$

$$= -\frac{afx}{g^2} + \frac{x^3\left(a + b\log\left(c(d+ex)^n\right)\right)}{3g} - \frac{(-f)^{3/2}\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{-f}-\sqrt{g}x}\,dx}{2g^2} - \frac{(-f)^{3/2}}{}$$

$$= -\frac{afx}{g^2} + \frac{bfnx}{g^2} - \frac{bd^2nx}{3e^2g} + \frac{bdnx^2}{6eg} - \frac{bnx^3}{9g} + \frac{bd^3n\log(d+ex)}{3e^3g} - \frac{bf(d+ex)}{}$$

$$= -\frac{afx}{g^2} + \frac{bfnx}{g^2} - \frac{bd^2nx}{3e^2g} + \frac{bdnx^2}{6eg} - \frac{bnx^3}{9g} + \frac{bd^3n\log(d+ex)}{3e^3g} - \frac{bf(d+ex)}{}$$

$$= -\frac{afx}{g^2} + \frac{bfnx}{g^2} - \frac{bd^2nx}{3e^2g} + \frac{bdnx^2}{6eg} - \frac{bnx^3}{9g} + \frac{bd^3n\log(d+ex)}{3e^3g} - \frac{bf(d+ex)}{}$$

Mathematica [A] time = 0.35, size = 339, normalized size = 0.92

$$\frac{9(-f)^{3/2}\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right) + 9\sqrt{-f}\,f\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right) + 6g^{3/2}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(a + b*Log[c*(d + e*x)^n]))/(f + g*x^2),x]
```

```
[Out] (-18*a*f*Sqrt[g]*x + 18*b*f*Sqrt[g]*n*x - (b*g^(3/2)*n*(e*x*(6*d^2 - 3*d*e*
x + 2*e^2*x^2) - 6*d^3*Log[d + e*x]))/e^3 - (18*b*f*Sqrt[g]*(d + e*x)*Log[c
*(d + e*x)^n])/e + 6*g^(3/2)*x^3*(a + b*Log[c*(d + e*x)^n]) + 9*(-f)^(3/2)*
(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*S
qrt[g])] + 9*Sqrt[-f]*f*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[
g]*x))/(e*Sqrt[-f] - d*Sqrt[g])] - 9*b*(-f)^(3/2)*n*PolyLog[2, -((Sqrt[g]*(
d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))] + 9*b*(-f)^(3/2)*n*PolyLog[2, (Sqrt[g]
*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(18*g^(5/2))
```

fricas [F] time = 0.41, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{bx^4\log\left((ex+d)^n c\right) + ax^4}{gx^2+f}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*log(c*(e*x+d)^n))/(g*x^2+f),x, algorithm="fricas")
```

```
[Out] integral((b*x^4*log((e*x + d)^n*c) + a*x^4)/(g*x^2 + f), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\log\left((ex+d)^n c\right) + a\right)x^4}{gx^2+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*log(c*(e*x+d)^n))/(g*x^2+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*x^4/(g*x^2 + f), x)
```

maple [C] time = 0.32, size = 982, normalized size = 2.66

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(b*ln(c*(e*x+d)^n)+a)/(g*x^2+f),x)
```

```
[Out] 1/3*b*ln((e*x+d)^n)/g*x^3-1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*f^2/g^2/(f*g)^(1
/2)*arctan(x*g/(f*g)^(1/2))-b*f/g^2*x*ln(c)+1/3*b/g*x^3*ln(c)+b*d/e*f/g^2*n
-1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/g^2*x*f+1/3*a/g*x^3-1/2*I*b*Pi*
csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/g^2*x*f+1/2*I*b*Pi*csgn(I*(e*x+d)^n
)*csgn(I*c*(e*x+d)^n)^2*f^2/g^2/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))-11/18*b
/e^3*n/g*d^3+1/3*b/e^3/g*d^3*ln((e*x+d)^n)+1/2*b*n*f^2/g^2*ln(e*x+d)/(-f*g)
^(1/2)*ln((d*g+(-f*g)^(1/2)*e-(e*x+d)*g)/(d*g+(-f*g)^(1/2)*e))-b*f^2/g^2/(f
*g)^(1/2)*arctan(1/2*(2*(e*x+d)*g-2*d*g)/e/(f*g)^(1/2))*n*ln(e*x+d)-b*ln((e
*x+d)^n)/g^2*x*f-1/6*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)
/g*x^3-1/2*b*n*f^2/g^2*ln(e*x+d)/(-f*g)^(1/2)*ln((-d*g+(-f*g)^(1/2)*e+(e*x+
d)*g)/(-d*g+(-f*g)^(1/2)*e))+a*f^2/g^2/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))+
b*f^2/g^2/(f*g)^(1/2)*arctan(1/2*(2*(e*x+d)*g-2*d*g)/e/(f*g)^(1/2))*ln((e*x
+d)^n)+b*f/g^2*n*x+1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*f^2/g^2/(f*g)
^(1/2)*arctan(x*g/(f*g)^(1/2))+1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(
I*c*(e*x+d)^n)/g^2*x*f-1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x
+d)^n)*f^2/g^2/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))-1/9*b/g*n*x^3+1/6*I*b*Pi
*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/g*x^3-1/6*I*b*Pi*csgn(I*c*(e*x+d)^
n)^3/g*x^3+b*ln(c)*f^2/g^2/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))-1/2*b*n*f^2/
g^2/(-f*g)^(1/2)*dilog((-d*g+(-f*g)^(1/2)*e+(e*x+d)*g)/(-d*g+(-f*g)^(1/2)*e
))+1/2*b*n*f^2/g^2/(-f*g)^(1/2)*dilog((d*g+(-f*g)^(1/2)*e-(e*x+d)*g)/(d*g+(
-f*g)^(1/2)*e))-b/e/g^2*f*d*ln((e*x+d)^n)-1/3*b*d^2/e^2/g*n*x+1/6*b*d/e/g*n
*x^2+1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/g^2*x*f-a*f/g^2*x+1/6*I*b*Pi*csgn(I*c
)*csgn(I*c*(e*x+d)^n)^2/g*x^3
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{3}a\left(\frac{3f^2\arctan\left(\frac{gx}{\sqrt{fg}}\right)}{\sqrt{fg}\,g^2}+\frac{gx^3-3fx}{g^2}\right)+b\int\frac{x^4\log\left((ex+d)^n\right)+x^4\log(c)}{gx^2+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*log(c*(e*x+d)^n))/(g*x^2+f),x, algorithm="maxima")
```

```
[Out] 1/3*a*(3*f^2*arctan(g*x/sqrt(f*g))/(sqrt(f*g)*g^2) + (g*x^3 - 3*f*x)/g^2) +
 b*integrate((x^4*log((e*x + d)^n) + x^4*log(c))/(g*x^2 + f), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{x^4\left(a+b\ln\left(c\,(d+e\,x)^n\right)\right)}{g\,x^2+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(a + b*log(c*(d + e*x)^n)))/(f + g*x^2),x)
```

```
[Out] int((x^4*(a + b*log(c*(d + e*x)^n)))/(f + g*x^2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(a+b*ln(c*(e*x+d)**n))/(g*x**2+f),x)
```

```
[Out] Timed out
```

3.262 $\int \frac{x^2(a+b\log(c(d+ex)^n))}{f+gx^2}\,dx$

Optimal. Leaf size=276

$$\frac{\sqrt{-f}\log\left(\frac{e(\sqrt{-f}-\sqrt{g}x)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g^{3/2}}-\frac{\sqrt{-f}\log\left(\frac{e(\sqrt{-f}+\sqrt{g}x)}{e\sqrt{-f}-d\sqrt{g}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g^{3/2}}+\frac{ax}{g}+\frac{b(d+ex)\log}{}$$

```
[Out] a*x/g-b*n*x/g+b*(e*x+d)*ln(c*(e*x+d)^n)/e/g+1/2*(a+b*ln(c*(e*x+d)^n))*ln(e*
((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(1/2)))*(-f)^(1/2)/g^(3/2)-1/2*(a+
b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)+x*g^(1/2))/(e*(-f)^(1/2)-d*g^(1/2)))*(-
f)^(1/2)/g^(3/2)-1/2*b*n*polylog(2,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)
))*(-f)^(1/2)/g^(3/2)+1/2*b*n*polylog(2,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(
1/2)))*(-f)^(1/2)/g^(3/2)
```

Rubi [A] time = 0.31, antiderivative size = 276, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 9, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {321, 205, 2416, 2389, 2295, 2409, 2394, 2393, 2391}

$$-\frac{b\sqrt{-f}\,n\,\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2g^{3/2}}+\frac{b\sqrt{-f}\,n\,\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{2g^{3/2}}+\frac{\sqrt{-f}\log\left(\frac{e(\sqrt{-f}-\sqrt{g}x)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\log\left(c(d+e\right.\right.}{2g^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(a + b*Log[c*(d + e*x)^n]))/(f + g*x^2),x]
```

```
[Out] (a*x)/g - (b*n*x)/g + (b*(d + e*x)*Log[c*(d + e*x)^n])/(e*g) + (Sqrt[-f]*(a
 + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqr
t[g])])/(2*g^(3/2)) - (Sqrt[-f]*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f]
 + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*g^(3/2)) - (b*Sqrt[-f]*n*PolyL
og[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*g^(3/2)) + (b*Sq
rt[-f]*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*g^(3/
2))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{x^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{f+gx^2}dx = \int \left(\frac{a+b\log\left(c(d+ex)^n\right)}{g} - \frac{f\left(a+b\log\left(c(d+ex)^n\right)\right)}{g\left(f+gx^2\right)}\right)dx$$

$$= \frac{\int \left(a+b\log\left(c(d+ex)^n\right)\right)dx}{g} - \frac{f\int \frac{a+b\log(c(d+ex)^n)}{f+gx^2}dx}{g}$$

$$= \frac{ax}{g} + \frac{b\int \log\left(c(d+ex)^n\right)dx}{g} - \frac{f\int \left(\frac{\sqrt{-f}\left(a+b\log(c(d+ex)^n)\right)}{2f\left(\sqrt{-f}-\sqrt{g}x\right)} + \frac{\sqrt{-f}\left(a+b\log(c(d+ex)^n)\right)}{2f\left(\sqrt{-f}+\sqrt{g}x\right)}\right.}{g}$$

$$= \frac{ax}{g} + \frac{b\,\mathrm{Subst}\left(\int \log\left(cx^n\right)dx, x, d+ex\right)}{eg} - \frac{\sqrt{-f}\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{-f}-\sqrt{g}x}dx}{2g} - \frac{\sqrt{-f}\int}{}$$

$$= \frac{ax}{g} - \frac{bnx}{g} + \frac{b(d+ex)\log\left(c(d+ex)^n\right)}{eg} + \frac{\sqrt{-f}\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e(}{e}\right.}{2g^{3/2}}$$

$$= \frac{ax}{g} - \frac{bnx}{g} + \frac{b(d+ex)\log\left(c(d+ex)^n\right)}{eg} + \frac{\sqrt{-f}\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e(}{e}\right.}{2g^{3/2}}$$

$$= \frac{ax}{g} - \frac{bnx}{g} + \frac{b(d+ex)\log\left(c(d+ex)^n\right)}{eg} + \frac{\sqrt{-f}\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e(}{e}\right.}{2g^{3/2}}$$

Mathematica [A] time = 0.15, size = 263, normalized size = 0.95

$$\frac{\sqrt{-f}\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right) - \sqrt{-f}\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right) + 2a\sqrt{g}x + \frac{2b\sqrt{g}}{}}{2g^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(a + b*Log[c*(d + e*x)^n]))/(f + g*x^2),x]
```

```
[Out] (2*a*Sqrt[g]*x - 2*b*Sqrt[g]*n*x + (2*b*Sqrt[g]*(d + e*x)*Log[c*(d + e*x)^n
])/e + Sqrt[-f]*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(
e*Sqrt[-f] + d*Sqrt[g])] - Sqrt[-f]*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt
[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])] - b*Sqrt[-f]*n*PolyLog[2, -((S
qrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))] + b*Sqrt[-f]*n*PolyLog[2, (Sqr
t[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*g^(3/2))
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{bx^2\log\left((ex+d)^n c\right)+ax^2}{gx^2+f}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))/(g*x^2+f),x, algorithm="fricas")
```

```
[Out] integral((b*x^2*log((e*x + d)^n*c) + a*x^2)/(g*x^2 + f), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)x^2}{gx^2+f}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))/(g*x^2+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*x^2/(g*x^2 + f), x)
```

maple [C] time = 0.30, size = 710, normalized size = 2.57

$$\frac{i\pi bf\arctan\left(\frac{gx}{\sqrt{fg}}\right)\mathrm{csgn}\left(ic\right)\mathrm{csgn}\left(i\left(ex+d\right)^{n}\right)\mathrm{csgn}\left(ic\left(ex+d\right)^{n}\right)}{2\sqrt{fg}\,g}-\frac{i\pi bf\arctan\left(\frac{gx}{\sqrt{fg}}\right)\mathrm{csgn}\left(ic\right)\mathrm{csgn}\left(ic\left(ex+\right.\right.}{2\sqrt{fg}\,g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(b*ln(c*(e*x+d)^n)+a)/(g*x^2+f),x)
```

```
[Out] b/g*x*ln((e*x+d)^n)+b/e/g*d*ln((e*x+d)^n)+b*f/g/(f*g)^(1/2)*arctan(1/2*(-2*
d*g+2*(e*x+d)*g)/(f*g)^(1/2)/e)*n*ln(e*x+d)-b*f/g/(f*g)^(1/2)*arctan(1/2*(-
2*d*g+2*(e*x+d)*g)/(f*g)^(1/2)/e)*ln((e*x+d)^n)-b/g*n*x-b/e*n/g*d-1/2*b*n*f
/g*ln(e*x+d)/(-f*g)^(1/2)*ln((d*g+(-f*g)^(1/2)*e-(e*x+d)*g)/(d*g+(-f*g)^(1/
2)*e))+1/2*b*n*f/g*ln(e*x+d)/(-f*g)^(1/2)*ln((-d*g+(-f*g)^(1/2)*e+(e*x+d)*g
)/(-d*g+(-f*g)^(1/2)*e))-1/2*b*n*f/g/(-f*g)^(1/2)*dilog((d*g+(-f*g)^(1/2)*e
-(e*x+d)*g)/(d*g+(-f*g)^(1/2)*e))+1/2*b*n*f/g/(-f*g)^(1/2)*dilog((-d*g+(-f*
g)^(1/2)*e+(e*x+d)*g)/(-d*g+(-f*g)^(1/2)*e))+1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)
^3*f/g/(f*g)^(1/2)*arctan(1/(f*g)^(1/2)*g*x)+1/2*I*Pi*b/g*x*csgn(I*c)*csgn(
I*c*(e*x+d)^n)^2-1/2*I*Pi*b/g*x*csgn(I*c*(e*x+d)^n)^3-1/2*I*Pi*b/g*x*csgn(I
*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+
d)^n)*csgn(I*c*(e*x+d)^n)*f/g/(f*g)^(1/2)*arctan(1/(f*g)^(1/2)*g*x)-1/2*I*b
*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*f/g/(f*g)^(1/2)*arctan(1/(f*g)^(1/2)*g*
x)-1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*f/g/(f*g)^(1/2)*arcta
n(1/(f*g)^(1/2)*g*x)+1/2*I*Pi*b/g*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2
+b/g*x*ln(c)-b*ln(c)*f/g/(f*g)^(1/2)*arctan(1/(f*g)^(1/2)*g*x)+a/g*x-a*f/g/
(f*g)^(1/2)*arctan(1/(f*g)^(1/2)*g*x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-a\left(\frac{f\arctan\left(\frac{gx}{\sqrt{fg}}\right)}{\sqrt{fg}g}-\frac{x}{g}\right)+b\int\frac{x^{2}\log\left(\left(ex+d\right)^{n}\right)+x^{2}\log\left(c\right)}{gx^{2}+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))/(g*x^2+f),x, algorithm="maxima")
```

```
[Out] -a*(f*arctan(g*x/sqrt(f*g))/(sqrt(f*g)*g) - x/g) + b*integrate((x^2*log((e*
x + d)^n) + x^2*log(c))/(g*x^2 + f), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{x^{2}\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^{n}\right)\right)}{g\,x^{2}+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(a + b*log(c*(d + e*x)^n)))/(f + g*x^2),x)
```

```
[Out] int((x^2*(a + b*log(c*(d + e*x)^n)))/(f + g*x^2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(a+b*ln(c*(e*x+d)**n))/(g*x**2+f),x)
```

```
[Out] Timed out
```

3.263 $\int \frac{a+b\log(c(d+ex)^n)}{f+gx^2}\,dx$

Optimal. Leaf size=239

$$\frac{\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{2\sqrt{-f}\,\sqrt{g}}-\frac{\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}\,x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{2\sqrt{-f}\,\sqrt{g}}-\frac{bn\text{Li}_2\left(-\frac{\sqrt{g}\,(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2\sqrt{-f}\,\sqrt{g}}+\ldots$$

```
[Out] 1/2*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(1/
2)))/(-f)^(1/2)/g^(1/2)-1/2*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)+x*g^(1/2
))/(e*(-f)^(1/2)-d*g^(1/2)))/(-f)^(1/2)/g^(1/2)-1/2*b*n*polylog(2,-(e*x+d)*
g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))/(-f)^(1/2)/g^(1/2)+1/2*b*n*polylog(2,(e*x
+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))/(-f)^(1/2)/g^(1/2)
```

Rubi [A] time = 0.17, antiderivative size = 239, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {2409, 2394, 2393, 2391}

$$-\frac{bn\text{PolyLog}\left(2,-\frac{\sqrt{g}\,(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2\sqrt{-f}\,\sqrt{g}}+\frac{bn\text{PolyLog}\left(2,\frac{\sqrt{g}\,(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{2\sqrt{-f}\,\sqrt{g}}+\frac{\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{2\sqrt{-f}\,\sqrt{g}}-\ldots$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(f + g*x^2),x]
```

```
[Out] ((a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*
Sqrt[g])])/(2*Sqrt[-f]*Sqrt[g]) - ((a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[
-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*Sqrt[-f]*Sqrt[g]) - (b*n*Po
lyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*Sqrt[-f]*Sqrt
[g]) + (b*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*Sq
rt[-f]*Sqrt[g])
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rubi steps

$$\int \frac{a+b\log\left(c(d+ex)^n\right)}{f+gx^2}\,dx = \int\left(\frac{\sqrt{-f}\,\left(a+b\log\left(c(d+ex)^n\right)\right)}{2f\left(\sqrt{-f}-\sqrt{g}\,x\right)}+\frac{\sqrt{-f}\,\left(a+b\log\left(c(d+ex)^n\right)\right)}{2f\left(\sqrt{-f}+\sqrt{g}\,x\right)}\right)dx$$

$$= -\frac{\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{-f}-\sqrt{g}\,x}\,dx}{2\sqrt{-f}} - \frac{\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{-f}+\sqrt{g}\,x}\,dx}{2\sqrt{-f}}$$

$$= \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2\sqrt{-f}\,\sqrt{g}} - \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}\cdots\right.}{e\sqrt{-f}-d\sqrt{\cdots}}\right.}{2\sqrt{-f}\,\sqrt{g}}$$

$$= \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2\sqrt{-f}\,\sqrt{g}} - \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}\cdots\right.}{e\sqrt{-f}-d\sqrt{\cdots}}\right.}{2\sqrt{-f}\,\sqrt{g}}$$

$$= \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2\sqrt{-f}\,\sqrt{g}} - \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}\cdots\right.}{e\sqrt{-f}-d\sqrt{\cdots}}\right.}{2\sqrt{-f}\,\sqrt{g}}$$

Mathematica [A] time = 0.06, size = 184, normalized size = 0.77

$$\frac{\left(\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)-\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}\,x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)\right)\left(a+b\log\left(c(d+ex)^n\right)\right)-bn\text{Li}_2\left(-\frac{\sqrt{g}\,(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)+bn\text{Li}_2\left(\frac{\sqrt{g}\,(d+ex)}{\sqrt{g}\,d+e\sqrt{-f}}\right)}{2\sqrt{-f}\,\sqrt{g}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(f + g*x^2),x]
```

```
[Out] ((a + b*Log[c*(d + e*x)^n])*(Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d
*Sqrt[g])] - Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])]) - b*
n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))] + b*n*PolyLog
[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*Sqrt[-f]*Sqrt[g])
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b\log\left((ex+d)^n c\right)+a}{gx^2+f},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x^2+f),x, algorithm="fricas")
```

```
[Out] integral((b*log((e*x + d)^n*c) + a)/(g*x^2 + f), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b\log\left((ex+d)^n c\right)+a}{gx^2+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x^2+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)/(g*x^2 + f), x)
```

maple [C] time = 0.35, size = 474, normalized size = 1.98

$$-\frac{i\pi b \arctan\left(\frac{gx}{\sqrt{fg}}\right)\operatorname{csgn}(ic)\operatorname{csgn}\left(i(ex+d)^n\right)\operatorname{csgn}\left(ic(ex+d)^n\right)}{2\sqrt{fg}}+\frac{i\pi b \arctan\left(\frac{gx}{\sqrt{fg}}\right)\operatorname{csgn}(ic)\operatorname{csgn}\left(ic(ex+d\right.}{2\sqrt{fg}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)/(g*x^2+f),x)
```

```
[Out] -b/(f*g)^(1/2)*arctan(1/2*(-2*d*g+2*(e*x+d)*g)/(f*g)^(1/2)/e)*n*ln(e*x+d)+b
/(f*g)^(1/2)*arctan(1/2*(-2*d*g+2*(e*x+d)*g)/(f*g)^(1/2)/e)*ln((e*x+d)^n)+1
/2*b*n*ln(e*x+d)/(-f*g)^(1/2)*ln((d*g+(-f*g)^(1/2)*e-(e*x+d)*g)/(d*g+(-f*g)
^(1/2)*e))-1/2*b*n*ln(e*x+d)/(-f*g)^(1/2)*ln((-d*g+(-f*g)^(1/2)*e+(e*x+d)*g
)/(-d*g+(-f*g)^(1/2)*e))+1/2*b*n/(-f*g)^(1/2)*dilog((d*g+(-f*g)^(1/2)*e-(e*
x+d)*g)/(d*g+(-f*g)^(1/2)*e))-1/2*b*n/(-f*g)^(1/2)*dilog((-d*g+(-f*g)^(1/2)
*e+(e*x+d)*g)/(-d*g+(-f*g)^(1/2)*e))-1/2*I/(f*g)^(1/2)*arctan(1/(f*g)^(1/2)
*g*x)*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/2*I/(f*g)^(1/2
)*arctan(1/(f*g)^(1/2)*g*x)*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/2*I/(f*g
)^(1/2)*arctan(1/(f*g)^(1/2)*g*x)*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n
)^2-1/2*I/(f*g)^(1/2)*arctan(1/(f*g)^(1/2)*g*x)*b*Pi*csgn(I*c*(e*x+d)^n)^3+
1/(f*g)^(1/2)*arctan(1/(f*g)^(1/2)*g*x)*b*ln(c)+a/(f*g)^(1/2)*arctan(1/(f*g
)^(1/2)*g*x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$b\int \frac{\log\left((ex+d)^n\right)+\log(c)}{gx^2+f}\,dx+\frac{a\arctan\left(\frac{gx}{\sqrt{fg}}\right)}{\sqrt{fg}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x^2+f),x, algorithm="maxima")
```

```
[Out] b*integrate((log((e*x + d)^n) + log(c))/(g*x^2 + f), x) + a*arctan(g*x/sqrt
(f*g))/sqrt(f*g)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,\ln\left(c\,(d+e\,x)^n\right)}{g\,x^2+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/(f + g*x^2),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))/(f + g*x^2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a+b\log\left(c\,(d+ex)^n\right)}{f+gx^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(g*x**2+f),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))/(f + g*x**2), x)
```

3.264 $\int \frac{a+b\log(c(d+ex)^n)}{x^2(f+gx^2)}\,dx$

Optimal. Leaf size=290

$$\frac{\sqrt{g}\log\left(\frac{e(\sqrt{-f}-\sqrt{g}x)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+ex)^n))}{2(-f)^{3/2}}-\frac{\sqrt{g}\log\left(\frac{e(\sqrt{-f}+\sqrt{g}x)}{e\sqrt{-f}-d\sqrt{g}}\right)(a+b\log(c(d+ex)^n))}{2(-f)^{3/2}}-\frac{a+b\log(c(d+ex}{fx}$$

```
[Out] b*e*n*ln(x)/d/f-b*e*n*ln(e*x+d)/d/f+(-a-b*ln(c*(e*x+d)^n))/f/x+1/2*(a+b*ln(
c*(e*x+d)^n))*ln(e*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(1/2)))*g^(1/2)
/(-f)^(3/2)-1/2*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)+x*g^(1/2))/(e*(-f)^(
1/2)-d*g^(1/2)))*g^(1/2)/(-f)^(3/2)-1/2*b*n*polylog(2,-(e*x+d)*g^(1/2)/(e*(
-f)^(1/2)-d*g^(1/2)))*g^(1/2)/(-f)^(3/2)+1/2*b*n*polylog(2,(e*x+d)*g^(1/2)/
(e*(-f)^(1/2)+d*g^(1/2)))*g^(1/2)/(-f)^(3/2)
```

Rubi [A] time = 0.32, antiderivative size = 290, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 11, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.407, Rules used = {325, 205, 2416, 2395, 36, 29, 31, 2409, 2394, 2393, 2391}

$$-\frac{b\sqrt{g}\,n\,\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2(-f)^{3/2}}+\frac{b\sqrt{g}\,n\,\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{2(-f)^{3/2}}+\frac{\sqrt{g}\log\left(\frac{e(\sqrt{-f}-\sqrt{g}x)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+ex)^n))}{2(-f)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(x^2*(f + g*x^2)),x]
```

```
[Out] (b*e*n*Log[x])/(d*f) - (b*e*n*Log[d + e*x])/(d*f) - (a + b*Log[c*(d + e*x)^
n])/(f*x) + (Sqrt[g]*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*
x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*(-f)^(3/2)) - (Sqrt[g]*(a + b*Log[c*(d +
e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*(-f)^
(3/2)) - (b*Sqrt[g]*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt
[g]))])/(2*(-f)^(3/2)) + (b*Sqrt[g]*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqr
t[-f] + d*Sqrt[g])])/(2*(-f)^(3/2))
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 325

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[((c*
x)^(m + 1)*(a + b*x^n)^(p + 1))/(a*c*(m + 1)), x] - Dist[(b*(m + n*(p + 1)
```

```
+ 1))/(a*c^n*(m + 1)), Int[(c*x)^(m + n)*(a + b*x^n)^p, x], x] /; FreeQ[{a,
 b, c, p}, x] && IGtQ[n, 0] && LtQ[m, -1] && IntBinomialQ[a, b, c, n, m, p,
 x]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{a+b\log(c(d+ex)^n)}{x^2(f+gx^2)}\,dx = \int \left(\frac{a+b\log(c(d+ex)^n)}{fx^2} - \frac{g\left(a+b\log(c(d+ex)^n)\right)}{f(f+gx^2)}\right) dx$$

$$= \frac{\int \frac{a+b\log(c(d+ex)^n)}{x^2}\,dx}{f} - \frac{g\int \frac{a+b\log(c(d+ex)^n)}{f+gx^2}\,dx}{f}$$

$$= -\frac{a+b\log(c(d+ex)^n)}{fx} - \frac{g\int \left(\frac{\sqrt{-f}\left(a+b\log(c(d+ex)^n)\right)}{2f\left(\sqrt{-f}-\sqrt{g}\,x\right)} + \frac{\sqrt{-f}\left(a+b\log(c(d+ex)^n)\right)}{2f\left(\sqrt{-f}+\sqrt{g}\,x\right)}\right) dx}{f} + \frac{(b \ldots}{\ldots}$$

$$= -\frac{a+b\log(c(d+ex)^n)}{fx} - \frac{g\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{-f}-\sqrt{g}\,x}\,dx}{2(-f)^{3/2}} - \frac{g\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{-f}+\sqrt{g}\,x}\,dx}{2(-f)^{3/2}} + \frac{(ben)\int \ldots}{df}$$

$$= \frac{ben\log(x)}{df} - \frac{ben\log(d+ex)}{df} - \frac{a+b\log(c(d+ex)^n)}{fx} + \frac{\sqrt{g}\left(a+b\log(c(d+ex)^n)\ldots\right.}{2(-f)^{3/\ldots}}$$

$$= \frac{ben\log(x)}{df} - \frac{ben\log(d+ex)}{df} - \frac{a+b\log(c(d+ex)^n)}{fx} + \frac{\sqrt{g}\left(a+b\log(c(d+ex)^n)\ldots\right.}{2(-f)^{3/\ldots}}$$

$$= \frac{ben\log(x)}{df} - \frac{ben\log(d+ex)}{df} - \frac{a+b\log(c(d+ex)^n)}{fx} + \frac{\sqrt{g}\left(a+b\log(c(d+ex)^n)\ldots\right.}{2(-f)^{3/\ldots}}$$

Mathematica [A] time = 0.23, size = 280, normalized size = 0.97

$$\frac{f\left(df\sqrt{g}\,x\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\log(c(d+ex)^n)\right) - df\sqrt{g}\,x\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}\,x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)\left(a+b\log(c(d+ex)^n)\right) + 2df\sqrt{-\ldots}\right.}{\ldots}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(x^2*(f + g*x^2)),x]
```

```
[Out] (f*(2*b*e*(-f)^(3/2)*n*x*(Log[x] - Log[d + e*x]) + 2*d*Sqrt[-f]*f*(a + b*Lo
g[c*(d + e*x)^n]) + d*f*Sqrt[g]*x*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-
f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])] - d*f*Sqrt[g]*x*(a + b*Log[c*(d
+ e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])] - b*d*f
*Sqrt[g]*n*x*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))] +
b*d*f*Sqrt[g]*n*x*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])
)/(2*d*(-f)^(7/2)*x)
```

fricas [F] time = 0.48, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b\log\left((ex+d)^n c\right)+a}{gx^4+fx^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^2/(g*x^2+f),x, algorithm="fricas")
```

```
[Out] integral((b*log((e*x + d)^n*c) + a)/(g*x^4 + f*x^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b\log\left((ex+d)^n c\right)+a}{\left(gx^2+f\right)x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^2/(g*x^2+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)/((g*x^2 + f)*x^2), x)
```

maple [C] time = 0.46, size = 722, normalized size = 2.49

$$\frac{i\pi bg \arctan\left(\frac{gx}{\sqrt{fg}}\right)\operatorname{csgn}(ic)\operatorname{csgn}\left(i(ex+d)^n\right)\operatorname{csgn}\left(ic(ex+d)^n\right)}{2\sqrt{fg}\,f}-\frac{i\pi bg \arctan\left(\frac{gx}{\sqrt{fg}}\right)\operatorname{csgn}(ic)\operatorname{csgn}\left(ic(ex+\right.}{2\sqrt{fg}\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)/x^2/(g*x^2+f),x)
```

```
[Out] -b/f/x*ln((e*x+d)^n)+b/f*g/(f*g)^(1/2)*arctan(1/2*(-2*d*g+2*(e*x+d)*g)/(f*g
)^(1/2)/e)*n*ln(e*x+d)-b/f*g/(f*g)^(1/2)*arctan(1/2*(-2*d*g+2*(e*x+d)*g)/(f
*g)^(1/2)/e)*ln((e*x+d)^n)+b*e*n/f/d*ln(e*x)-b/d*e/f*n*ln(e*x+d)-1/2*b*n/f*
g*ln(e*x+d)/(-f*g)^(1/2)*ln((d*g+(-f*g)^(1/2)*e-(e*x+d)*g)/(d*g+(-f*g)^(1/2
)*e))+1/2*b*n/f*g*ln(e*x+d)/(-f*g)^(1/2)*ln((-d*g+(-f*g)^(1/2)*e+(e*x+d)*g)
/(-d*g+(-f*g)^(1/2)*e))-1/2*b*n/f*g/(-f*g)^(1/2)*dilog((d*g+(-f*g)^(1/2)*e-
(e*x+d)*g)/(d*g+(-f*g)^(1/2)*e))+1/2*b*n/f*g/(-f*g)^(1/2)*dilog((-d*g+(-f*g
)^(1/2)*e+(e*x+d)*g)/(-d*g+(-f*g)^(1/2)*e))+1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*
x+d)^n)*csgn(I*c*(e*x+d)^n)/f*g/(f*g)^(1/2)*arctan(1/(f*g)^(1/2)*g*x)-1/2*I
*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f/x-1/2*I*b*Pi*csgn(I*(e*x+d)
^n)*csgn(I*c*(e*x+d)^n)^2/f*g/(f*g)^(1/2)*arctan(1/(f*g)^(1/2)*g*x)+1/2*I*b
*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f/x-1/2*I*b*Pi*csgn(I*c
)*csgn(I*c*(e*x+d)^n)^2/f/x+1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f*g/(f*g)^(1/2
)*arctan(1/(f*g)^(1/2)*g*x)-1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f*g/
(f*g)^(1/2)*arctan(1/(f*g)^(1/2)*g*x)+1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f/x-
b/f/x*ln(c)-b*ln(c)/f*g/(f*g)^(1/2)*arctan(1/(f*g)^(1/2)*g*x)-a/f/x-a/f*g/(
f*g)^(1/2)*arctan(1/(f*g)^(1/2)*g*x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-a\left(\frac{g\arctan\left(\frac{gx}{\sqrt{fg}}\right)}{\sqrt{fg}\,f}+\frac{1}{fx}\right)+b\int\frac{\log\left((ex+d)^n\right)+\log(c)}{gx^4+fx^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^2/(g*x^2+f),x, algorithm="maxima")
```

```
[Out] -a*(g*arctan(g*x/sqrt(f*g))/(sqrt(f*g)*f) + 1/(f*x)) + b*integrate((log((e*
x + d)^n) + log(c))/(g*x^4 + f*x^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}{x^2\,\left(g\,x^2+f\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/(x^2*(f + g*x^2)),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))/(x^2*(f + g*x^2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/x**2/(g*x**2+f),x)
```

```
[Out] Timed out
```

3.265 $\int \frac{a+b\log(c(d+ex)^n)}{x^4(f+gx^2)}\,dx$

Optimal. Leaf size=388

$$\frac{g\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2x}+\frac{g^{3/2}\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{2(-f)^{5/2}}-\frac{g^{3/2}\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}\,x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)\left(a+b\log\left(c(\cdots\right.\right.}{2(-f)^{5/2}}$$

```
[Out] -1/6*b*e*n/d/f/x^2+1/3*b*e^2*n/d^2/f/x+1/3*b*e^3*n*ln(x)/d^3/f-b*e*g*n*ln(x
)/d/f^2-1/3*b*e^3*n*ln(e*x+d)/d^3/f+b*e*g*n*ln(e*x+d)/d/f^2+1/3*(-a-b*ln(c*
(e*x+d)^n))/f/x^3+g*(a+b*ln(c*(e*x+d)^n))/f^2/x+1/2*g^(3/2)*(a+b*ln(c*(e*x+
d)^n))*ln(e*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(1/2)))/(-f)^(5/2)-1/2
*g^(3/2)*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)+x*g^(1/2))/(e*(-f)^(1/2)-d*
g^(1/2)))/(-f)^(5/2)-1/2*b*g^(3/2)*n*polylog(2,-(e*x+d)*g^(1/2)/(e*(-f)^(1/
2)-d*g^(1/2)))/(-f)^(5/2)+1/2*b*g^(3/2)*n*polylog(2,(e*x+d)*g^(1/2)/(e*(-f)
^(1/2)+d*g^(1/2)))/(-f)^(5/2)
```

Rubi [A] time = 0.38, antiderivative size = 388, normalized size of antiderivative = 1.00, number of steps used = 17, number of rules used = 12, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.444, Rules used = {325, 205, 2416, 2395, 44, 36, 29, 31, 2409, 2394, 2393, 2391}

$$-\frac{bg^{3/2}n\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2(-f)^{5/2}}+\frac{bg^{3/2}n\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{2(-f)^{5/2}}+\frac{g\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2x}+\frac{g^{3/2}\log\left(\frac{e\left(\sqrt{-f}\cdots\right.}{d\sqrt{g}+\cdots}\right.}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(x^4*(f + g*x^2)),x]
```

```
[Out] -(b*e*n)/(6*d*f*x^2) + (b*e^2*n)/(3*d^2*f*x) + (b*e^3*n*Log[x])/(3*d^3*f) -
 (b*e*g*n*Log[x])/(d*f^2) - (b*e^3*n*Log[d + e*x])/(3*d^3*f) + (b*e*g*n*Log
[d + e*x])/(d*f^2) - (a + b*Log[c*(d + e*x)^n])/(3*f*x^3) + (g*(a + b*Log[c
*(d + e*x)^n]))/(f^2*x) + (g^(3/2)*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[
-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*(-f)^(5/2)) - (g^(3/2)*(a +
 b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[
g])])/(2*(-f)^(5/2)) - (b*g^(3/2)*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqr
t[-f] - d*Sqrt[g]))])/(2*(-f)^(5/2)) + (b*g^(3/2)*n*PolyLog[2, (Sqrt[g]*(d
+ e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*(-f)^(5/2))
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
```

```
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 325

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[((c*
x)^(m + 1)*(a + b*x^n)^(p + 1))/(a*c*(m + 1)), x] - Dist[(b*(m + n*(p + 1)
+ 1))/(a*c^n*(m + 1)), Int[(c*x)^(m + n)*(a + b*x^n)^p, x], x] /; FreeQ[{a,
 b, c, p}, x] && IGtQ[n, 0] && LtQ[m, -1] && IntBinomialQ[a, b, c, n, m, p,
 x]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{a+b\log(c(d+ex)^n)}{x^4(f+gx^2)}dx = \int \left(\frac{a+b\log(c(d+ex)^n)}{fx^4} - \frac{g(a+b\log(c(d+ex)^n))}{f^2x^2} + \frac{g^2(a+b\log(c(d+ex)^n))}{f^2(f+gx^2)}\right.$$

$$= \frac{\int \frac{a+b\log(c(d+ex)^n)}{x^4}dx}{f} - \frac{g\int \frac{a+b\log(c(d+ex)^n)}{x^2}dx}{f^2} + \frac{g^2\int \frac{a+b\log(c(d+ex)^n)}{f+gx^2}dx}{f^2}$$

$$= -\frac{a+b\log(c(d+ex)^n)}{3fx^3} + \frac{g(a+b\log(c(d+ex)^n))}{f^2x} + \frac{g^2\int\left(\frac{\sqrt{-f}(a+b\log(c(d+ex)^n))}{2f(\sqrt{-f}-\sqrt{g}x)}\right.}{}$$

$$= -\frac{a+b\log(c(d+ex)^n)}{3fx^3} + \frac{g(a+b\log(c(d+ex)^n))}{f^2x} - \frac{g^2\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{-f}-\sqrt{g}x}dx}{2(-f)^{5/2}} -$$

$$= -\frac{ben}{6dfx^2} + \frac{be^2n}{3d^2fx} + \frac{be^3n\log(x)}{3d^3f} - \frac{begn\log(x)}{df^2} - \frac{be^3n\log(d+ex)}{3d^3f} + \frac{begn\log(}{df^2}$$

$$= -\frac{ben}{6dfx^2} + \frac{be^2n}{3d^2fx} + \frac{be^3n\log(x)}{3d^3f} - \frac{begn\log(x)}{df^2} - \frac{be^3n\log(d+ex)}{3d^3f} + \frac{begn\log(}{df^2}$$

$$= -\frac{ben}{6dfx^2} + \frac{be^2n}{3d^2fx} + \frac{be^3n\log(x)}{3d^3f} - \frac{begn\log(x)}{df^2} - \frac{be^3n\log(d+ex)}{3d^3f} + \frac{begn\log(}{df^2}$$

Mathematica [A] time = 0.48, size = 350, normalized size = 0.90

$$\frac{1}{6}\left(\frac{6g(a+b\log(c(d+ex)^n))}{f^2x} + \frac{3g^{3/2}\log\left(\frac{e(\sqrt{-f}-\sqrt{g}x)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+ex)^n))}{(-f)^{5/2}} - \frac{3g^{3/2}\log\left(\frac{e(\sqrt{-f}+\sqrt{g}x)}{e\sqrt{-f}-d\sqrt{g}}\right)(a+}{(-f)^{5/2}}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(x^4*(f + g*x^2)),x]
```

```
[Out] ((-6*b*e*g*n*(Log[x] - Log[d + e*x]))/(d*f^2) - (b*e*n*(d*(d - 2*e*x) - 2*e
^2*x^2*Log[x] + 2*e^2*x^2*Log[d + e*x]))/(d^3*f*x^2) - (2*(a + b*Log[c*(d +
 e*x)^n]))/(f*x^3) + (6*g*(a + b*Log[c*(d + e*x)^n]))/(f^2*x) + (3*g^(3/2)*
(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*S
qrt[g])])/(-f)^(5/2) - (3*g^(3/2)*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-
f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(-f)^(5/2) - (3*b*g^(3/2)*n*Pol
yLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(-f)^(5/2) + (3*b
*g^(3/2)*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(-f)^(
5/2))/6
```

fricas [F] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b\log\left((ex+d)^n c\right)+a}{gx^6+fx^4}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^4/(g*x^2+f),x, algorithm="fricas")
```

```
[Out] integral((b*log((e*x + d)^n*c) + a)/(g*x^6 + f*x^4), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b \log\left((ex+d)^n c\right) + a}{\left(gx^2 + f\right)x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^4/(g*x^2+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)/((g*x^2 + f)*x^4), x)
```

maple [C] time = 0.49, size = 983, normalized size = 2.53

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)/x^4/(g*x^2+f),x)
```

```
[Out] -1/3*b/f/x^3*ln((e*x+d)^n)-1/3*b*ln(c)/f/x^3-1/3*a/f/x^3+1/2*I*Pi*b/f^2*g/x
*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/2*I*Pi*b/f^2*g/x*csgn(I*c)*csgn(I*(e*x+d
)^n)*csgn(I*c*(e*x+d)^n)+a/f^2*g/x+1/2*I*Pi*b/f^2*g/x*csgn(I*(e*x+d)^n)*csg
n(I*c*(e*x+d)^n)^2+b/f^2*g/x*ln(c)+1/6*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*c
sgn(I*c*(e*x+d)^n)/f/x^3-1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f^2*g^2/(f*g)^(1/
2)*arctan(1/(f*g)^(1/2)*g*x)-1/3*b*e^3*n*ln(e*x+d)/d^3/f-1/6*I*b*Pi*csgn(I*
(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f/x^3+a/f^2*g^2/(f*g)^(1/2)*arctan(1/(f*g)
^(1/2)*g*x)+b/d*e/f^2*g*n*ln(e*x+d)+b/f^2*g/x*ln((e*x+d)^n)-1/2*I*b*Pi*csgn
(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f^2*g^2/(f*g)^(1/2)*arctan(1/(f
*g)^(1/2)*g*x)+b*ln(c)/f^2*g^2/(f*g)^(1/2)*arctan(1/(f*g)^(1/2)*g*x)+b*g^2/
f^2/(f*g)^(1/2)*arctan(1/2*(-2*d*g+2*(e*x+d)*g)/(f*g)^(1/2)/e)*ln((e*x+d)^n
)-1/2*b*n*g^2/f^2/(-f*g)^(1/2)*dilog((-d*g+(-f*g)^(1/2)*e+(e*x+d)*g)/(-d*g+
(-f*g)^(1/2)*e))+1/3*b*e^3*n/f/d^3*ln(e*x)+1/2*b*n*g^2/f^2/(-f*g)^(1/2)*dil
og((d*g+(-f*g)^(1/2)*e-(e*x+d)*g)/(d*g+(-f*g)^(1/2)*e))+1/6*I*b*Pi*csgn(I*c
*(e*x+d)^n)^3/f/x^3-1/6*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f/x^3+1/2*I*
b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f^2*g^2/(f*g)^(1/2)*arctan(1/(
f*g)^(1/2)*g*x)+1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f^2*g^2/(f*g)^(1
/2)*arctan(1/(f*g)^(1/2)*g*x)-1/2*I*Pi*b/f^2*g/x*csgn(I*c*(e*x+d)^n)^3-b*g^
2/f^2/(f*g)^(1/2)*arctan(1/2*(-2*d*g+2*(e*x+d)*g)/(f*g)^(1/2)/e)*n*ln(e*x+d
)-b*e*n/f^2*g/d*ln(e*x)+1/2*b*n*g^2/f^2*ln(e*x+d)/(-f*g)^(1/2)*ln((d*g+(-f*
g)^(1/2)*e-(e*x+d)*g)/(d*g+(-f*g)^(1/2)*e))-1/2*b*n*g^2/f^2*ln(e*x+d)/(-f*g
)^(1/2)*ln((-d*g+(-f*g)^(1/2)*e+(e*x+d)*g)/(-d*g+(-f*g)^(1/2)*e))-1/6*b*e*n
/d/f/x^2+1/3*b*e^2*n/d^2/f/x
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{3}\,a\left(\frac{3\,g^2\arctan\left(\frac{gx}{\sqrt{fg}}\right)}{\sqrt{fg}\,f^2} + \frac{3\,gx^2 - f}{f^2x^3}\right) + b\int \frac{\log\left((ex+d)^n\right) + \log(c)}{gx^6 + fx^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^4/(g*x^2+f),x, algorithm="maxima")
```

```
[Out] 1/3*a*(3*g^2*arctan(g*x/sqrt(f*g))/(sqrt(f*g)*f^2) + (3*g*x^2 - f)/(f^2*x^3
)) + b*integrate((log((e*x + d)^n) + log(c))/(g*x^6 + f*x^4), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a + b\,\ln\left(c\,(d + e\,x)^n\right)}{x^4\,\left(g\,x^2 + f\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/(x^4*(f + g*x^2)),x)
[Out] int((a + b*log(c*(d + e*x)^n))/(x^4*(f + g*x^2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/x**4/(g*x**2+f),x)
[Out] Timed out
```

3.266 $\int \frac{x^5(a+b\log(c(d+ex)^n))}{(f+gx^2)^2} dx$

Optimal. Leaf size=417

$$-\frac{f^2(a+b\log(c(d+ex)^n))}{2g^3(f+gx^2)}-\frac{f\log\left(\frac{e(\sqrt{-f}-\sqrt{g}x)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+ex)^n))}{g^3}-\frac{f\log\left(\frac{e(\sqrt{-f}+\sqrt{g}x)}{e\sqrt{-f}-d\sqrt{g}}\right)(a+b\log(c(d+e$$

```
[Out] 1/2*b*d*n*x/e/g^2-1/4*b*n*x^2/g^2+1/2*b*d*e*f^(3/2)*n*arctan(x*g^(1/2)/f^(1
/2))/g^(5/2)/(d^2*g+e^2*f)-1/2*b*d^2*n*ln(e*x+d)/e^2/g^2+1/2*b*e^2*f^2*n*ln
(e*x+d)/g^3/(d^2*g+e^2*f)+1/2*x^2*(a+b*ln(c*(e*x+d)^n))/g^2-1/2*f^2*(a+b*ln
(c*(e*x+d)^n))/g^3/(g*x^2+f)-1/4*b*e^2*f^2*n*ln(g*x^2+f)/g^3/(d^2*g+e^2*f)-
f*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(1/2)
))/g^3-f*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)+x*g^(1/2))/(e*(-f)^(1/2)-d*
g^(1/2)))/g^3-b*f*n*polylog(2,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))/g^
3-b*f*n*polylog(2,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))/g^3
```

Rubi [A] time = 0.49, antiderivative size = 417, normalized size of antiderivative = 1.00, number of steps used = 19, number of rules used = 13, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.482, Rules used = {266, 43, 2416, 2395, 2413, 706, 31, 635, 205, 260, 2394, 2393, 2391}

$$-\frac{bfn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{g^3}-\frac{bfn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{g^3}-\frac{f^2(a+b\log(c(d+ex)^n))}{2g^3(f+gx^2)}-\frac{f\log\left(\frac{e(\sqrt{-f}-\sqrt{g}x)}{d\sqrt{g}+e\sqrt{-f}}\right)(a}{g^3}$$

Antiderivative was successfully verified.

```
[In] Int[(x^5*(a + b*Log[c*(d + e*x)^n]))/(f + g*x^2)^2,x]
```

```
[Out] (b*d*n*x)/(2*e*g^2) - (b*n*x^2)/(4*g^2) + (b*d*e*f^(3/2)*n*ArcTan[(Sqrt[g]*
x)/Sqrt[f]])/(2*g^(5/2)*(e^2*f + d^2*g)) - (b*d^2*n*Log[d + e*x])/(2*e^2*g^
2) + (b*e^2*f^2*n*Log[d + e*x])/(2*g^3*(e^2*f + d^2*g)) + (x^2*(a + b*Log[c
*(d + e*x)^n]))/(2*g^2) - (f^2*(a + b*Log[c*(d + e*x)^n]))/(2*g^3*(f + g*x^
2)) - (f*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[
-f] + d*Sqrt[g])])/g^3 - (f*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + S
qrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/g^3 - (b*e^2*f^2*n*Log[f + g*x^2])/(4
*g^3*(e^2*f + d^2*g)) - (b*f*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f]
 - d*Sqrt[g]))])/g^3 - (b*f*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] +
d*Sqrt[g])])/g^3
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 706

```
Int[1/(((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)), x_Symbol] :> Dist[e^2/(c
*d^2 + a*e^2), Int[1/(d + e*x), x], x] + Dist[1/(c*d^2 + a*e^2), Int[(c*d -
 c*e*x)/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 + a*e^2,
 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2413

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(x_)^(m_.)*(
(f_.) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Simp[((f + g*x^r)^(q + 1)*(a
+ b*Log[c*(d + e*x)^n])^p)/(g*r*(q + 1)), x] - Dist[(b*e*n*p)/(g*r*(q + 1))
, Int[((f + g*x^r)^(q + 1)*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x
], x] /; FreeQ[{a, b, c, d, e, f, g, m, n, q, r}, x] && EqQ[m, r - 1] && Ne
Q[q, -1] && IGtQ[p, 0]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{x^5\left(a+b\log\left(c(d+ex)^n\right)\right)}{\left(f+gx^2\right)^2}\,dx = \int\left(\frac{x\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^2}+\frac{f^2x\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^2\left(f+gx^2\right)^2}-\frac{2fx\left(a+b\log\right.}{g^2\left(f+\right.}\right.$$

$$=\frac{\int x\left(a+b\log\left(c(d+ex)^n\right)\right)dx}{g^2}-\frac{(2f)\int\frac{x\left(a+b\log\left(c(d+ex)^n\right)\right)}{f+gx^2}dx}{g^2}+\frac{f^2\int\frac{x\left(a+b\log(c(\right.}{\left(f+gx\right.}}{g^2}$$

$$=\frac{x^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g^2}-\frac{f^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g^3\left(f+gx^2\right)}-\frac{(2f)\int\left(-\frac{a+b\log(c(d+}{2\sqrt{g}\left(\sqrt{-f}-\right.}\right.}{}$$

$$=\frac{x^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g^2}-\frac{f^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g^3\left(f+gx^2\right)}+\frac{f\int\frac{a+b\log(c(d+ex)^n)}{\sqrt{-f}-\sqrt{g}x}d}{g^{5/2}}$$

$$=\frac{bdnx}{2eg^2}-\frac{bnx^2}{4g^2}-\frac{bd^2n\log(d+ex)}{2e^2g^2}+\frac{be^2f^2n\log(d+ex)}{2g^3\left(e^2f+d^2g\right)}+\frac{x^2\left(a+b\log\left(c(d+\right.\right.}{2g^2}$$

$$=\frac{bdnx}{2eg^2}-\frac{bnx^2}{4g^2}+\frac{bdef^{3/2}n\tan^{-1}\left(\frac{\sqrt{g}x}{\sqrt{f}}\right)}{2g^{5/2}\left(e^2f+d^2g\right)}-\frac{bd^2n\log(d+ex)}{2e^2g^2}+\frac{be^2f^2n\log(d+e}{2g^3\left(e^2f+d^2g\right)}$$

$$=\frac{bdnx}{2eg^2}-\frac{bnx^2}{4g^2}+\frac{bdef^{3/2}n\tan^{-1}\left(\frac{\sqrt{g}x}{\sqrt{f}}\right)}{2g^{5/2}\left(e^2f+d^2g\right)}-\frac{bd^2n\log(d+ex)}{2e^2g^2}+\frac{be^2f^2n\log(d+e}{2g^3\left(e^2f+d^2g\right)}$$

Mathematica [C] time = 1.48, size = 530, normalized size = 1.27

$$\frac{-\frac{2f^2\left(a+b\log(c(d+ex)^n)-bn\log(d+ex)\right)}{f+gx^2}-4f\log\left(f+gx^2\right)\left(a+b\log\left(c(d+ex)^n\right)-bn\log(d+ex)\right)+2gx^2\left(a+b\log\left(c(d\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^5*(a + b*Log[c*(d + e*x)^n]))/(f + g*x^2)^2,x]
```

```
[Out] (2*g*x^2*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n]) - (2*f^2*(a - b*n*Lo
g[d + e*x] + b*Log[c*(d + e*x)^n]))/(f + g*x^2) - 4*f*(a - b*n*Log[d + e*x]
 + b*Log[c*(d + e*x)^n])*Log[f + g*x^2] + b*n*((g*(e*x*(2*d - e*x) - 2*(d^2
 - e^2*x^2)*Log[d + e*x]))/e^2 + (f^(3/2)*(I*Sqrt[g]*(d + e*x)*Log[d + e*x]
 - e*(Sqrt[f] + I*Sqrt[g]*x)*Log[I*Sqrt[f] - Sqrt[g]*x]))/((e*Sqrt[f] - I*d
*Sqrt[g])*(Sqrt[f] + I*Sqrt[g]*x)) + (I*f^(3/2)*(-(Sqrt[g]*(d + e*x)*Log[d
+ e*x]) + e*(I*Sqrt[f] + Sqrt[g]*x)*Log[I*Sqrt[f] + Sqrt[g]*x]))/((e*Sqrt[f
] + I*d*Sqrt[g])*(Sqrt[f] - I*Sqrt[g]*x)) - 4*f*(Log[d + e*x]*Log[(e*(Sqrt[
f] + I*Sqrt[g]*x))/(e*Sqrt[f] - I*d*Sqrt[g])] + PolyLog[2, ((-I)*Sqrt[g]*(d
 + e*x))/(e*Sqrt[f] - I*d*Sqrt[g])]) - 4*f*(Log[d + e*x]*Log[(e*(Sqrt[f] -
```

```
I*Sqrt[g]*x))/(e*Sqrt[f] + I*d*Sqrt[g])] + PolyLog[2, (I*Sqrt[g]*(d + e*x))
/(e*Sqrt[f] + I*d*Sqrt[g])])))/(4*g^3)
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{bx^5\log\left((ex+d)^n c\right)+ax^5}{g^2x^4+2\,fgx^2+f^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*log(c*(e*x+d)^n))/(g*x^2+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b*x^5*log((e*x + d)^n*c) + a*x^5)/(g^2*x^4 + 2*f*g*x^2 + f^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(b\log\left((ex+d)^n c\right)+a\right)x^5}{\left(gx^2+f\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*log(c*(e*x+d)^n))/(g*x^2+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*x^5/(g*x^2 + f)^2, x)
```

maple [C] time = 0.28, size = 1008, normalized size = 2.42

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*(b*ln(c*(e*x+d)^n)+a)/(g*x^2+f)^2,x)
```

```
[Out] 1/2*b*e*n/g^2*f^2/(d^2*g+e^2*f)*d/(f*g)^(1/2)*arctan(1/(f*g)^(1/2)*g*x)-1/2
*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*f/g^3*ln(g*x^2+f)-1/4*I*b*P
i*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*f^2/g^3/(g*x^2+f)+1/2*b*ln((e*x+d)^n)/g^2
*x^2-1/2*a*f^2/g^3/(g*x^2+f)-a*f/g^3*ln(g*x^2+f)+1/2*b/g^2*x^2*ln(c)+1/2*a/
g^2*x^2-1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/g^2*x^2-
1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*f^2/g^3/(g*x^2+f)-1/2*I*
b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*f/g^3*ln(g*x^2+f)+1/4*I*b*Pi*csgn(I*c)
*csgn(I*c*(e*x+d)^n)^2/g^2*x^2+1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d
)^n)^2/g^2*x^2-1/2*b/e^2*n/g/(d^2*g+e^2*f)*ln(e*x+d)*d^4-1/2*b*n/g^2/(d^2*g
+e^2*f)*ln(e*x+d)*d^2*f-b*ln((e*x+d)^n)*f/g^3*ln(g*x^2+f)-1/2*b*ln((e*x+d)^
n)*f^2/g^3/(g*x^2+f)-b*n*f/g^3*dilog((d*g+(-f*g)^(1/2)*e-(e*x+d)*g)/(d*g+(-
f*g)^(1/2)*e))-b*n*f/g^3*dilog((-d*g+(-f*g)^(1/2)*e+(e*x+d)*g)/(-d*g+(-f*g)
^(1/2)*e))+1/2*b*e^2*f^2*n*ln(e*x+d)/g^3/(d^2*g+e^2*f)-1/4*b*e^2*f^2*n*ln(g
*x^2+f)/g^3/(d^2*g+e^2*f)-b*ln(c)*f/g^3*ln(g*x^2+f)-1/2*b*ln(c)*f^2/g^3/(g*
x^2+f)+1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*f^2/g^3/(
g*x^2+f)+1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*f/g^3*l
n(g*x^2+f)+b*n*f/g^3*ln(e*x+d)*ln(g*x^2+f)-b*n*f/g^3*ln(e*x+d)*ln((d*g+(-f*
g)^(1/2)*e-(e*x+d)*g)/(d*g+(-f*g)^(1/2)*e))-b*n*f/g^3*ln(e*x+d)*ln((-d*g+(-
f*g)^(1/2)*e+(e*x+d)*g)/(-d*g+(-f*g)^(1/2)*e))-1/4*b/g^2*n*x^2-1/4*I*b*Pi*c
sgn(I*c*(e*x+d)^n)^3/g^2*x^2+1/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*f^2/g^3/(g*x^
2+f)+1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*f/g^3*ln(g*x^2+f)+1/2*b*d/e/g^2*n*x
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{2}\,a\left(\frac{f^2}{g^4x^2+fg^3}-\frac{x^2}{g^2}+\frac{2\,f\log\left(gx^2+f\right)}{g^3}\right)+b\int\frac{x^5\log\left((ex+d)^n\right)+x^5\log(c)}{g^2x^4+2\,fgx^2+f^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*log(c*(e*x+d)^n))/(g*x^2+f)^2,x, algorithm="maxima")
```

```
[Out] -1/2*a*(f^2/(g^4*x^2 + f*g^3) - x^2/g^2 + 2*f*log(g*x^2 + f)/g^3) + b*integ
rate((x^5*log((e*x + d)^n) + x^5*log(c))/(g^2*x^4 + 2*f*g*x^2 + f^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^5 \left(a + b \ln\left(c \left(d + e x\right)^n\right)\right)}{\left(g x^2 + f\right)^2} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^5*(a + b*log(c*(d + e*x)^n)))/(f + g*x^2)^2,x)
```

```
[Out] int((x^5*(a + b*log(c*(d + e*x)^n)))/(f + g*x^2)^2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**5*(a+b*ln(c*(e*x+d)**n))/(g*x**2+f)**2,x)
```

```
[Out] Timed out
```

3.267 $\int \frac{x^3(a+b\log(c(d+ex)^n))}{(f+gx^2)^2}\,dx$

Optimal. Leaf size=344

$$\frac{f\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g^2\left(f+gx^2\right)}+\frac{\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g^2}+\frac{\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)\left(a+b\log\left(c(d+ex)^n\right.\right.}{2g^2}$$

```
[Out] -1/2*b*e^2*f*n*ln(e*x+d)/g^2/(d^2*g+e^2*f)+1/2*f*(a+b*ln(c*(e*x+d)^n))/g^2/
(g*x^2+f)+1/4*b*e^2*f*n*ln(g*x^2+f)/g^2/(d^2*g+e^2*f)+1/2*(a+b*ln(c*(e*x+d)
^n))*ln(e*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(1/2)))/g^2+1/2*(a+b*ln(
c*(e*x+d)^n))*ln(e*((-f)^(1/2)+x*g^(1/2))/(e*(-f)^(1/2)-d*g^(1/2)))/g^2+1/2
*b*n*polylog(2,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))/g^2+1/2*b*n*polyl
og(2,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))/g^2-1/2*b*d*e*n*arctan(x*g^(
1/2)/f^(1/2))*f^(1/2)/g^(3/2)/(d^2*g+e^2*f)
```

Rubi [A] time = 0.41, antiderivative size = 344, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 12, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.444, Rules used = {266, 43, 2416, 2413, 706, 31, 635, 205, 260, 2394, 2393, 2391}

$$\frac{bn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2g^2}+\frac{bn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{2g^2}+\frac{f\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g^2\left(f+gx^2\right)}+\frac{\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\right.}{2g^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(a + b*Log[c*(d + e*x)^n]))/(f + g*x^2)^2,x]
```

```
[Out] -(b*d*e*Sqrt[f]*n*ArcTan[(Sqrt[g]*x)/Sqrt[f]])/(2*g^(3/2)*(e^2*f + d^2*g))
- (b*e^2*f*n*Log[d + e*x])/(2*g^2*(e^2*f + d^2*g)) + (f*(a + b*Log[c*(d + e
*x)^n]))/(2*g^2*(f + g*x^2)) + ((a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f]
 - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*g^2) + ((a + b*Log[c*(d + e*x)
^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*g^2) + (b
*e^2*f*n*Log[f + g*x^2])/(4*g^2*(e^2*f + d^2*g)) + (b*n*PolyLog[2, -((Sqrt[
g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*g^2) + (b*n*PolyLog[2, (Sqrt[g
]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*g^2)
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 706

```
Int[1/(((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)), x_Symbol] :> Dist[e^2/(c
*d^2 + a*e^2), Int[1/(d + e*x), x], x] + Dist[1/(c*d^2 + a*e^2), Int[(c*d -
 c*e*x)/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 + a*e^2,
 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2413

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(x_)^(m_.)*(
(f_.) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Simp[((f + g*x^r)^(q + 1)*(a
+ b*Log[c*(d + e*x)^n])^p)/(g*r*(q + 1)), x] - Dist[(b*e*n*p)/(g*r*(q + 1))
, Int[((f + g*x^r)^(q + 1)*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x
], x] /; FreeQ[{a, b, c, d, e, f, g, m, n, q, r}, x] && EqQ[m, r - 1] && Ne
Q[q, -1] && IGtQ[p, 0]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{x^3\left(a+b\log\left(c(d+ex)^n\right)\right)}{\left(f+gx^2\right)^2}dx = \int\left(-\frac{fx\left(a+b\log\left(c(d+ex)^n\right)\right)}{g\left(f+gx^2\right)^2}+\frac{x\left(a+b\log\left(c(d+ex)^n\right)\right)}{g\left(f+gx^2\right)}\right)dx$$

$$= \frac{\int \frac{x\left(a+b\log(c(d+ex)^n)\right)}{f+gx^2}dx}{g} - \frac{f\int \frac{x\left(a+b\log(c(d+ex)^n)\right)}{\left(f+gx^2\right)^2}dx}{g}$$

$$= \frac{f\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g^2\left(f+gx^2\right)} + \frac{\int\left(-\frac{a+b\log(c(d+ex)^n)}{2\sqrt{g}\left(\sqrt{-f}-\sqrt{g}x\right)}+\frac{a+b\log(c(d+ex)^n)}{2\sqrt{g}\left(\sqrt{-f}+\sqrt{g}x\right)}\right)dx}{g} - \frac{(be}{}$$

$$= \frac{f\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g^2\left(f+gx^2\right)} - \frac{\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{-f}-\sqrt{g}x}dx}{2g^{3/2}} + \frac{\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{-f}+\sqrt{g}x}dx}{2g^{3/2}} - \frac{(b}{2}$$

$$= -\frac{be^2fn\log(d+ex)}{2g^2\left(e^2f+d^2g\right)} + \frac{f\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g^2\left(f+gx^2\right)} + \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g^2}$$

$$= -\frac{bde\sqrt{f}n\tan^{-1}\left(\frac{\sqrt{g}x}{\sqrt{f}}\right)}{2g^{3/2}\left(e^2f+d^2g\right)} - \frac{be^2fn\log(d+ex)}{2g^2\left(e^2f+d^2g\right)} + \frac{f\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g^2\left(f+gx^2\right)} +$$

$$= -\frac{bde\sqrt{f}n\tan^{-1}\left(\frac{\sqrt{g}x}{\sqrt{f}}\right)}{2g^{3/2}\left(e^2f+d^2g\right)} - \frac{be^2fn\log(d+ex)}{2g^2\left(e^2f+d^2g\right)} + \frac{f\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g^2\left(f+gx^2\right)} +$$

Mathematica [C] time = 1.16, size = 455, normalized size = 1.32

$$\frac{2\log\left(f+gx^2\right)\left(a+b\log\left(c(d+ex)^n\right)-bn\log(d+ex)\right)+\frac{2f\left(a+b\log(c(d+ex)^n)-bn\log(d+ex)\right)}{f+gx^2}+bn\left(2\left(\text{Li}_2\left(-\frac{i\sqrt{g}(d+e}{e\sqrt{f}-id}\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(a + b*Log[c*(d + e*x)^n]))/(f + g*x^2)^2,x]
```

```
[Out] ((2*f*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n]))/(f + g*x^2) + 2*(a - b
*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*Log[f + g*x^2] + b*n*((Sqrt[f]*((-I
)*Sqrt[g]*(d + e*x)*Log[d + e*x] + e*(Sqrt[f] + I*Sqrt[g]*x)*Log[I*Sqrt[f]
- Sqrt[g]*x]))/((e*Sqrt[f] - I*d*Sqrt[g])*(Sqrt[f] + I*Sqrt[g]*x)) + (Sqrt[
f]*(I*Sqrt[g]*(d + e*x)*Log[d + e*x] + e*(Sqrt[f] - I*Sqrt[g]*x)*Log[I*Sqrt
[f] + Sqrt[g]*x]))/((e*Sqrt[f] + I*d*Sqrt[g])*(Sqrt[f] - I*Sqrt[g]*x)) + 2*
(Log[d + e*x]*Log[(e*(Sqrt[f] + I*Sqrt[g]*x))/(e*Sqrt[f] - I*d*Sqrt[g])] +
PolyLog[2, ((-I)*Sqrt[g]*(d + e*x))/(e*Sqrt[f] - I*d*Sqrt[g])]) + 2*(Log[d
+ e*x]*Log[(e*(Sqrt[f] - I*Sqrt[g]*x))/(e*Sqrt[f] + I*d*Sqrt[g])] + PolyLog
[2, (I*Sqrt[g]*(d + e*x))/(e*Sqrt[f] + I*d*Sqrt[g])])))/(4*g^2)
```

fricas [F] time = 0.42, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{bx^3\log\left((ex+d)^nc\right)+ax^3}{g^2x^4+2fgx^2+f^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))/(g*x^2+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b*x^3*log((e*x + d)^n*c) + a*x^3)/(g^2*x^4 + 2*f*g*x^2 + f^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b \log \left((ex+d)^n c\right)+a\right)x^3}{\left(gx^2+f\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))/(g*x^2+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*x^3/(g*x^2 + f)^2, x)
```

maple [C] time = 0.24, size = 726, normalized size = 2.11

$$-\frac{bdefn\arctan\left(\frac{gx}{\sqrt{fg}}\right)}{2\left(d^2g+fe^2\right)\sqrt{fg}\,g}-\frac{be^2fn\ln(ex+d)}{2\left(d^2g+fe^2\right)g^2}+\frac{be^2fn\ln\left(gx^2+f\right)}{4\left(d^2g+fe^2\right)g^2}-\frac{i\pi bf\,\mathrm{csgn}(ic)\,\mathrm{csgn}\left(i(ex+d)^n\right)\mathrm{csgn}\left(ic(ex+\right.}{4\left(gx^2+f\right)g^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(b*ln(c*(e*x+d)^n)+a)/(g*x^2+f)^2,x)
```

```
[Out] 1/2*b*ln((e*x+d)^n)*f/g^2/(g*x^2+f)+1/2*b*ln((e*x+d)^n)/g^2*ln(g*x^2+f)-1/2
*b*n/g^2*ln(e*x+d)*ln(g*x^2+f)+1/2*b*n/g^2*ln(e*x+d)*ln((d*g+(-f*g)^(1/2)*e
-(e*x+d)*g)/(d*g+(-f*g)^(1/2)*e))+1/2*b*n/g^2*ln(e*x+d)*ln((-d*g+(-f*g)^(1/
2)*e+(e*x+d)*g)/(-d*g+(-f*g)^(1/2)*e))+1/2*b*n/g^2*dilog((d*g+(-f*g)^(1/2)*
e-(e*x+d)*g)/(d*g+(-f*g)^(1/2)*e))+1/2*b*n/g^2*dilog((-d*g+(-f*g)^(1/2)*e+(
e*x+d)*g)/(-d*g+(-f*g)^(1/2)*e))+1/4*b*e^2*f*n*ln(g*x^2+f)/g^2/(d^2*g+e^2*f
)-1/2*b*e*n*f/g/(d^2*g+e^2*f)*d/(f*g)^(1/2)*arctan(1/(f*g)^(1/2)*g*x)-1/2*b
*e^2*f*n*ln(e*x+d)/g^2/(d^2*g+e^2*f)+1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*
(e*x+d)^n)^2/g^2*ln(g*x^2+f)+1/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/g^2
*ln(g*x^2+f)-1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*f/g
^2/(g*x^2+f)-1/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*f/g^2/(g*x^2+f)-1/4*I*b*Pi*cs
gn(I*c*(e*x+d)^n)^3/g^2*ln(g*x^2+f)+1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(
e*x+d)^n)^2*f/g^2/(g*x^2+f)-1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c
*(e*x+d)^n)/g^2*ln(g*x^2+f)+1/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*f/g^
2/(g*x^2+f)+1/2*b*ln(c)*f/g^2/(g*x^2+f)+1/2*b*ln(c)/g^2*ln(g*x^2+f)+1/2*a*f
/g^2/(g*x^2+f)+1/2*a/g^2*ln(g*x^2+f)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{2}a\left(\frac{f}{g^3x^2+fg^2}+\frac{\log\left(gx^2+f\right)}{g^2}\right)+b\int\frac{x^3\log\left((ex+d)^n\right)+x^3\log(c)}{g^2x^4+2\,fgx^2+f^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))/(g*x^2+f)^2,x, algorithm="maxima")
```

```
[Out] 1/2*a*(f/(g^3*x^2 + f*g^2) + log(g*x^2 + f)/g^2) + b*integrate((x^3*log((e*
x + d)^n) + x^3*log(c))/(g^2*x^4 + 2*f*g*x^2 + f^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^3\,\left(a+b\,\ln\left(c\,(d+e\,x)^n\right)\right)}{\left(g\,x^2+f\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(a + b*log(c*(d + e*x)^n)))/(f + g*x^2)^2,x)
```

```
[Out] int((x^3*(a + b*log(c*(d + e*x)^n)))/(f + g*x^2)^2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(a+b*ln(c*(e*x+d)**n))/(g*x**2+f)**2,x)
```

```
[Out] Timed out
```

3.268 $\int \frac{x\left(a+b\log(c(d+ex)^n)\right)}{\left(f+gx^2\right)^2}\,dx$

Optimal. Leaf size=139

$$-\frac{a+b\log\left(c(d+ex)^n\right)}{2g\left(f+gx^2\right)}-\frac{be^2n\log\left(f+gx^2\right)}{4g\left(d^2g+e^2f\right)}+\frac{be^2n\log(d+ex)}{2g\left(d^2g+e^2f\right)}+\frac{bden\tan^{-1}\left(\frac{\sqrt{g}x}{\sqrt{f}}\right)}{2\sqrt{f}\sqrt{g}\left(d^2g+e^2f\right)}$$

```
[Out] 1/2*b*e^2*n*ln(e*x+d)/g/(d^2*g+e^2*f)+1/2*(-a-b*ln(c*(e*x+d)^n))/g/(g*x^2+f
)-1/4*b*e^2*n*ln(g*x^2+f)/g/(d^2*g+e^2*f)+1/2*b*d*e*n*arctan(x*g^(1/2)/f^(1
/2))/(d^2*g+e^2*f)/f^(1/2)/g^(1/2)
```

Rubi [A] time = 0.08, antiderivative size = 139, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.240, Rules used = {2413, 706, 31, 635, 205, 260}

$$-\frac{a+b\log\left(c(d+ex)^n\right)}{2g\left(f+gx^2\right)}-\frac{be^2n\log\left(f+gx^2\right)}{4g\left(d^2g+e^2f\right)}+\frac{be^2n\log(d+ex)}{2g\left(d^2g+e^2f\right)}+\frac{bden\tan^{-1}\left(\frac{\sqrt{g}x}{\sqrt{f}}\right)}{2\sqrt{f}\sqrt{g}\left(d^2g+e^2f\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(a + b*Log[c*(d + e*x)^n]))/(f + g*x^2)^2,x]
```

```
[Out] (b*d*e*n*ArcTan[(Sqrt[g]*x)/Sqrt[f]])/(2*Sqrt[f]*Sqrt[g]*(e^2*f + d^2*g)) +
 (b*e^2*n*Log[d + e*x])/(2*g*(e^2*f + d^2*g)) - (a + b*Log[c*(d + e*x)^n])/
(2*g*(f + g*x^2)) - (b*e^2*n*Log[f + g*x^2])/(4*g*(e^2*f + d^2*g))
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 706

```
Int[1/(((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)), x_Symbol] :> Dist[e^2/(c
*d^2 + a*e^2), Int[1/(d + e*x), x], x] + Dist[1/(c*d^2 + a*e^2), Int[(c*d -
 c*e*x)/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 + a*e^2,
 0]
```

Rule 2413

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(x_)^(m_.)*(
(f_.) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Simp[((f + g*x^r)^(q + 1)*(a
+ b*Log[c*(d + e*x)^n])^p)/(g*r*(q + 1)), x] - Dist[(b*e*n*p)/(g*r*(q + 1))
, Int[((f + g*x^r)^(q + 1)*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x
], x] /; FreeQ[{a, b, c, d, e, f, g, m, n, q, r}, x] && EqQ[m, r - 1] && Ne
Q[q, -1] && IGtQ[p, 0]
```

Rubi steps

$$\int \frac{x\left(a+b\log\left(c(d+ex)^n\right)\right)}{\left(f+gx^2\right)^2}\,dx = -\frac{a+b\log\left(c(d+ex)^n\right)}{2g\left(f+gx^2\right)}+\frac{(ben)\int\frac{1}{(d+ex)\left(f+gx^2\right)}\,dx}{2g}$$

$$= -\frac{a+b\log\left(c(d+ex)^n\right)}{2g\left(f+gx^2\right)}+\frac{(ben)\int\frac{dg-egx}{f+gx^2}\,dx}{2g\left(e^2f+d^2g\right)}+\frac{\left(be^3n\right)\int\frac{1}{d+ex}\,dx}{2g\left(e^2f+d^2g\right)}$$

$$= \frac{be^2n\log(d+ex)}{2g\left(e^2f+d^2g\right)}-\frac{a+b\log\left(c(d+ex)^n\right)}{2g\left(f+gx^2\right)}+\frac{(bden)\int\frac{1}{f+gx^2}\,dx}{2\left(e^2f+d^2g\right)}-\frac{\left(be^2n\right)\int\frac{}{f+}}{2\left(e^2f+\right.}$$

$$= \frac{bden\tan^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{f}}\right)}{2\sqrt{f}\,\sqrt{g}\,\left(e^2f+d^2g\right)}+\frac{be^2n\log(d+ex)}{2g\left(e^2f+d^2g\right)}-\frac{a+b\log\left(c(d+ex)^n\right)}{2g\left(f+gx^2\right)}-\frac{be^2n\log}{4g\left(e^2\right.}$$

Mathematica [A] time = 0.20, size = 165, normalized size = 1.19

$$\frac{2bde\sqrt{g}\,n\left(f+gx^2\right)\tan^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{f}}\right)-\sqrt{f}\,\left(2ad^2g+2ae^2f+2b\left(d^2g+e^2f\right)\log\left(c(d+ex)^n\right)-2be^2n\left(f+gx^2\right)\log\right.}{4\sqrt{f}\,g\left(f+gx^2\right)\left(d^2g+e^2f\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(a + b*Log[c*(d + e*x)^n]))/(f + g*x^2)^2,x]
```

```
[Out] (2*b*d*e*Sqrt[g]*n*(f + g*x^2)*ArcTan[(Sqrt[g]*x)/Sqrt[f]] - Sqrt[f]*(2*a*e
^2*f + 2*a*d^2*g - 2*b*e^2*n*(f + g*x^2)*Log[d + e*x] + 2*b*(e^2*f + d^2*g)
*Log[c*(d + e*x)^n] + b*e^2*f*n*Log[f + g*x^2] + b*e^2*g*n*x^2*Log[f + g*x^
2]))/(4*Sqrt[f]*g*(e^2*f + d^2*g)*(f + g*x^2))
```

fricas [A] time = 0.49, size = 373, normalized size = 2.68

$$\left[-\frac{2\,ae^2f^2+2\,ad^2fg+\left(bdegnx^2+bdefn\right)\sqrt{-fg}\,\log\left(\frac{gx^2-2\,\sqrt{-fg}\,x-f}{gx^2+f}\right)+\left(be^2fgnx^2+be^2f^2n\right)\log\left(gx^2+f\right)-}{4\left(e^2f^3g+d^2f^2g^2+\left(e^2f^2g^2+d^2fg^3\right)x^2\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))/(g*x^2+f)^2,x, algorithm="fricas")
```

```
[Out] [-1/4*(2*a*e^2*f^2 + 2*a*d^2*f*g + (b*d*e*g*n*x^2 + b*d*e*f*n)*sqrt(-f*g)*l
og((g*x^2 - 2*sqrt(-f*g)*x - f)/(g*x^2 + f)) + (b*e^2*f*g*n*x^2 + b*e^2*f^2
*n)*log(g*x^2 + f) - 2*(b*e^2*f*g*n*x^2 - b*d^2*f*g*n)*log(e*x + d) + 2*(b*
e^2*f^2 + b*d^2*f*g)*log(c))/(e^2*f^3*g + d^2*f^2*g^2 + (e^2*f^2*g^2 + d^2*
f*g^3)*x^2), -1/4*(2*a*e^2*f^2 + 2*a*d^2*f*g - 2*(b*d*e*g*n*x^2 + b*d*e*f*n
)*sqrt(f*g)*arctan(sqrt(f*g)*x/f) + (b*e^2*f*g*n*x^2 + b*e^2*f^2*n)*log(g*x
^2 + f) - 2*(b*e^2*f*g*n*x^2 - b*d^2*f*g*n)*log(e*x + d) + 2*(b*e^2*f^2 + b
*d^2*f*g)*log(c))/(e^2*f^3*g + d^2*f^2*g^2 + (e^2*f^2*g^2 + d^2*f*g^3)*x^2)
]
```

giac [A] time = 0.23, size = 218, normalized size = 1.57

$$\frac{bdn\arctan\left(\frac{gx}{\sqrt{fg}}\right)e}{2\left(d^2g+fe^2\right)\sqrt{fg}}-\frac{bne^2\log\left(gx^2+f\right)}{4\left(d^2g^2+fge^2\right)}+\frac{bgnx^2e^2\log\left(xe+d\right)-bd^2gn\log\left(xe+d\right)-2\,bd^2g\log(c)-2\,ad^2g-2\,b}{2\left(d^2g^3x^2+fg^2x^2e^2+d^2fg^2+f^2ge^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))/(g*x^2+f)^2,x, algorithm="giac")
```

```
[Out] 1/2*b*d*n*arctan(g*x/sqrt(f*g))*e/((d^2*g + f*e^2)*sqrt(f*g)) - 1/4*b*n*e^2
*log(g*x^2 + f)/(d^2*g^2 + f*g*e^2) + 1/2*(b*g*n*x^2*e^2*log(x*e + d) - b*d
^2*g*n*log(x*e + d) - 2*b*d^2*g*log(c) - 2*a*d^2*g - 2*b*f*e^2*log(c) - 2*a
*f*e^2)/(d^2*g^3*x^2 + f*g^2*x^2*e^2 + d^2*f*g^2 + f^2*g*e^2) - 1/2*(b*d^2*
g*log(c) + a*d^2*g + b*f*e^2*log(c) + a*f*e^2)/((d^2*g + f*e^2)*(g*x^2 + f)
*g)
```

maple [C] time = 0.56, size = 765, normalized size = 5.50

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(b*ln(c*(e*x+d)^n)+a)/(g*x^2+f)^2,x)
```

```
[Out] -1/2*b/g/(g*x^2+f)*ln((e*x+d)^n)+1/4*(I*Pi*b*e^2*f*csgn(I*c)*csgn(I*(e*x+d)
^n)*csgn(I*c*(e*x+d)^n)-I*Pi*b*e^2*f*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-I*Pi*b
*d^2*g*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+I*Pi*b*d^2*g*csgn(I*c*(e*x+d
)^n)^3+I*Pi*b*d^2*g*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*Pi*b*
e^2*f*csgn(I*c*(e*x+d)^n)^3-I*Pi*b*d^2*g*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-I*
Pi*b*e^2*f*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+2*ln(e*x+d)*b*e^2*g*n*x^
2+sum(_R*ln(((-d^2*g^2+3*e^2*f*g)*_R+3*b*e^2*n)*x+4*d*e*f*g*_R+b*d*e*n),_R=
RootOf((d^2*f*g^3+e^2*f^2*g^2)*_Z^2+2*b*e^2*f*g*n*_Z+b^2*e^2*n^2))*d^2*g^3*
x^2+sum(_R*ln(((-d^2*g^2+3*e^2*f*g)*_R+3*b*e^2*n)*x+4*d*e*f*g*_R+b*d*e*n),_
R=RootOf((d^2*f*g^3+e^2*f^2*g^2)*_Z^2+2*b*e^2*f*g*n*_Z+b^2*e^2*n^2))*e^2*f*
g^2*x^2+2*ln(e*x+d)*b*e^2*f*n+sum(_R*ln(((-d^2*g^2+3*e^2*f*g)*_R+3*b*e^2*n)
*x+4*d*e*f*g*_R+b*d*e*n),_R=RootOf((d^2*f*g^3+e^2*f^2*g^2)*_Z^2+2*b*e^2*f*g
*n*_Z+b^2*e^2*n^2))*d^2*f*g^2+sum(_R*ln(((-d^2*g^2+3*e^2*f*g)*_R+3*b*e^2*n)
*x+4*d*e*f*g*_R+b*d*e*n),_R=RootOf((d^2*f*g^3+e^2*f^2*g^2)*_Z^2+2*b*e^2*f*g
*n*_Z+b^2*e^2*n^2))*e^2*f^2*g-2*ln(c)*b*d^2*g-2*ln(c)*b*e^2*f-2*a*d^2*g-2*a
*e^2*f)/(g*x^2+f)/g/(d^2*g+e^2*f)
```

maxima [A] time = 1.05, size = 130, normalized size = 0.94

$$-\frac{1}{4}\,ben\left(\frac{e\log\left(gx^2+f\right)}{e^2fg+d^2g^2}-\frac{2\,e\log\left(ex+d\right)}{e^2fg+d^2g^2}-\frac{2\,d\arctan\left(\frac{gx}{\sqrt{fg}}\right)}{\left(e^2f+d^2g\right)\sqrt{fg}}\right)-\frac{b\log\left(\left(ex+d\right)^nc\right)}{2\left(g^2x^2+fg\right)}-\frac{a}{2\left(g^2x^2+fg\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))/(g*x^2+f)^2,x, algorithm="maxima")
```

```
[Out] -1/4*b*e*n*(e*log(g*x^2 + f)/(e^2*f*g + d^2*g^2) - 2*e*log(e*x + d)/(e^2*f*
g + d^2*g^2) - 2*d*arctan(g*x/sqrt(f*g))/((e^2*f + d^2*g)*sqrt(f*g))) - 1/2
*b*log((e*x + d)^n*c)/(g^2*x^2 + f*g) - 1/2*a/(g^2*x^2 + f*g)
```

mupad [B] time = 0.79, size = 366, normalized size = 2.63

$$\frac{b\,e^2\,n\,\ln\left(d+e\,x\right)}{2\,d^2\,g^2+2\,f\,e^2\,g}-\frac{\ln\left(\frac{\left(b\,e^2\,f\,g\,n+b\,d\,e\,n\,\sqrt{-f\,g^3}\right)\left(x\left(2\,d^2\,e\,g^3-6\,e^3\,f\,g^2\right)-8\,d\,e^2\,f\,g^2\right)}{4\left(d^2\,f\,g^3+e^2\,f^2\,g^2\right)}+\frac{b\,d\,e^2\,g\,n}{2}+\frac{3\,b\,e^3\,g\,n\,x}{2}\right)\left(b\,e^2\,f\,g\,n+b\,d\,e\,n\,\sqrt{\right.}{4\left(d^2\,f\,g^3+e^2\,f^2\,g^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(a + b*log(c*(d + e*x)^n)))/(f + g*x^2)^2,x)
```

```
[Out] (b*e^2*n*log(d + e*x))/(2*d^2*g^2 + 2*e^2*f*g) - (log(((b*e^2*f*g*n + b*d*e
*n*(-f*g^3)^(1/2))*(x*(2*d^2*e*g^3 - 6*e^3*f*g^2) - 8*d*e^2*f*g^2))/(4*(d^2
*f*g^3 + e^2*f^2*g^2)) + (b*d*e^2*g*n)/2 + (3*b*e^3*g*n*x)/2)*(b*e^2*f*g*n
+ b*d*e*n*(-f*g^3)^(1/2)))/(4*(d^2*f*g^3 + e^2*f^2*g^2)) - (log(((b*e^2*f*g
*n - b*d*e*n*(-f*g^3)^(1/2))*(x*(2*d^2*e*g^3 - 6*e^3*f*g^2) - 8*d*e^2*f*g^2
))/(4*(d^2*f*g^3 + e^2*f^2*g^2)) + (b*d*e^2*g*n)/2 + (3*b*e^3*g*n*x)/2)*(b*
e^2*f*g*n - b*d*e*n*(-f*g^3)^(1/2)))/(4*(d^2*f*g^3 + e^2*f^2*g^2)) - (b*log
(c*(d + e*x)^n))/(2*g*(f + g*x^2)) - a/(2*f*g + 2*g^2*x^2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*ln(c*(e*x+d)**n))/(g*x**2+f)**2,x)
```

```
[Out] Timed out
```

3.269 $\int \frac{a+b\log(c(d+ex)^n)}{x(f+gx^2)^2}\,dx$

Optimal. Leaf size=383

$$-\frac{\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{2f^2}-\frac{\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}\,x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{2f^2}+\frac{\log\left(-\frac{ex}{d}\right)\left(a+b\log(c(d\right.}{f^2}$$

```
[Out] -1/2*b*e^2*n*ln(e*x+d)/f/(d^2*g+e^2*f)+1/2*(a+b*ln(c*(e*x+d)^n))/f/(g*x^2+f
)+ln(-e*x/d)*(a+b*ln(c*(e*x+d)^n))/f^2+1/4*b*e^2*n*ln(g*x^2+f)/f/(d^2*g+e^2
*f)-1/2*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g
^(1/2)))/f^2-1/2*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)+x*g^(1/2))/(e*(-f)^
(1/2)-d*g^(1/2)))/f^2+b*n*polylog(2,1+e*x/d)/f^2-1/2*b*n*polylog(2,-(e*x+d)
*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))/f^2-1/2*b*n*polylog(2,(e*x+d)*g^(1/2)/(e
*(-f)^(1/2)+d*g^(1/2)))/f^2-1/2*b*d*e*n*arctan(x*g^(1/2)/f^(1/2))*g^(1/2)/f
^(3/2)/(d^2*g+e^2*f)
```

Rubi [A] time = 0.45, antiderivative size = 383, normalized size of antiderivative = 1.00, number of steps used = 18, number of rules used = 13, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.482, Rules used = {266, 44, 2416, 2394, 2315, 2413, 706, 31, 635, 205, 260, 2393, 2391}

$$-\frac{bn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2f^2}-\frac{bn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{2f^2}+\frac{bn\text{PolyLog}\left(2,\frac{ex}{d}+1\right)}{f^2}-\frac{\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\log\right.}{2f^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(x*(f + g*x^2)^2),x]
```

```
[Out] -(b*d*e*Sqrt[g]*n*ArcTan[(Sqrt[g]*x)/Sqrt[f]])/(2*f^(3/2)*(e^2*f + d^2*g))
- (b*e^2*n*Log[d + e*x])/(2*f*(e^2*f + d^2*g)) + (a + b*Log[c*(d + e*x)^n])
/(2*f*(f + g*x^2)) + (Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]))/f^2 - ((a
 + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqr
t[g])])/(2*f^2) - ((a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x)
)/(e*Sqrt[-f] - d*Sqrt[g])])/(2*f^2) + (b*e^2*n*Log[f + g*x^2])/(4*f*(e^2*f
 + d^2*g)) - (b*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g])
)])/(2*f^2) - (b*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])]
)/(2*f^2) + (b*n*PolyLog[2, 1 + (e*x)/d])/f^2
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 706

```
Int[1/(((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)), x_Symbol] :> Dist[e^2/(c
*d^2 + a*e^2), Int[1/(d + e*x), x], x] + Dist[1/(c*d^2 + a*e^2), Int[(c*d -
 c*e*x)/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 + a*e^2,
 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2413

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(x_)^(m_.)*(
(f_.) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Simp[((f + g*x^r)^(q + 1)*(a
+ b*Log[c*(d + e*x)^n])^p)/(g*r*(q + 1)), x] - Dist[(b*e*n*p)/(g*r*(q + 1))
, Int[((f + g*x^r)^(q + 1)*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x
], x] /; FreeQ[{a, b, c, d, e, f, g, m, n, q, r}, x] && EqQ[m, r - 1] && Ne
Q[q, -1] && IGtQ[p, 0]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
```

```
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{a+b\log(c(d+ex)^n)}{x\left(f+gx^2\right)^2}dx = \int \left(\frac{a+b\log(c(d+ex)^n)}{f^2x} - \frac{gx\left(a+b\log(c(d+ex)^n)\right)}{f\left(f+gx^2\right)^2} - \frac{gx\left(a+b\log(c(d+ex)^n)\right)}{f^2\left(f+gx^2\right)}\right.$$

$$= \frac{\int \frac{a+b\log(c(d+ex)^n)}{x}dx}{f^2} - \frac{g\int \frac{x\left(a+b\log(c(d+ex)^n)\right)}{f+gx^2}dx}{f^2} - \frac{g\int \frac{x\left(a+b\log(c(d+ex)^n)\right)}{\left(f+gx^2\right)^2}dx}{f}$$

$$= \frac{a+b\log(c(d+ex)^n)}{2f\left(f+gx^2\right)} + \frac{\log\left(-\frac{ex}{d}\right)\left(a+b\log(c(d+ex)^n)\right)}{f^2} - \frac{g\int\left(-\frac{a+b\log(c(d+ex)^n)}{2\sqrt{g}\left(\sqrt{-f}-\sqrt{g}x\right)}\right.}{f^2}$$

$$= \frac{a+b\log(c(d+ex)^n)}{2f\left(f+gx^2\right)} + \frac{\log\left(-\frac{ex}{d}\right)\left(a+b\log(c(d+ex)^n)\right)}{f^2} + \frac{bn\text{Li}_2\left(1+\frac{ex}{d}\right)}{f^2} + \frac{\sqrt{g}}{}$$

$$= -\frac{be^2n\log(d+ex)}{2f\left(e^2f+d^2g\right)} + \frac{a+b\log(c(d+ex)^n)}{2f\left(f+gx^2\right)} + \frac{\log\left(-\frac{ex}{d}\right)\left(a+b\log(c(d+ex)^n)\right)}{f^2} - $$

$$= -\frac{bde\sqrt{g}\,n\tan^{-1}\left(\frac{\sqrt{g}x}{\sqrt{f}}\right)}{2f^{3/2}\left(e^2f+d^2g\right)} - \frac{be^2n\log(d+ex)}{2f\left(e^2f+d^2g\right)} + \frac{a+b\log(c(d+ex)^n)}{2f\left(f+gx^2\right)} + \frac{\log\left(-\frac{ex}{d}\right)(a}{}$$

$$= -\frac{bde\sqrt{g}\,n\tan^{-1}\left(\frac{\sqrt{g}x}{\sqrt{f}}\right)}{2f^{3/2}\left(e^2f+d^2g\right)} - \frac{be^2n\log(d+ex)}{2f\left(e^2f+d^2g\right)} + \frac{a+b\log(c(d+ex)^n)}{2f\left(f+gx^2\right)} + \frac{\log\left(-\frac{ex}{d}\right)(a}{}$$

Mathematica [C] time = 1.41, size = 521, normalized size = 1.36

$$-\frac{\log\left(f+gx^2\right)\left(a+b\log(c(d+ex)^n)-bn\log(d+ex)\right)}{2f^2} + \frac{a+b\log(c(d+ex)^n)-bn\log(d+ex)}{2f^2+2fgx^2} + \frac{\log(x)\left(a+b\log\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(x*(f + g*x^2)^2),x]
```

```
[Out] (a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])/(2*f^2 + 2*f*g*x^2) + (Log[x]
*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n]))/f^2 - ((a - b*n*Log[d + e*x
] + b*Log[c*(d + e*x)^n])*Log[f + g*x^2])/(2*f^2) + (b*n*((Sqrt[f]*((-I)*Sq
rt[g]*(d + e*x)*Log[d + e*x] + e*(Sqrt[f] + I*Sqrt[g]*x)*Log[I*Sqrt[f] - Sq
rt[g]*x]))/((e*Sqrt[f] - I*d*Sqrt[g])*(Sqrt[f] + I*Sqrt[g]*x)) + (Sqrt[f]*(
I*Sqrt[g]*(d + e*x)*Log[d + e*x] + e*(Sqrt[f] - I*Sqrt[g]*x)*Log[I*Sqrt[f]
+ Sqrt[g]*x]))/((e*Sqrt[f] + I*d*Sqrt[g])*(Sqrt[f] - I*Sqrt[g]*x)) - 2*(Log
[d + e*x]*Log[(e*(Sqrt[f] + I*Sqrt[g]*x))/(e*Sqrt[f] - I*d*Sqrt[g])] + Poly
Log[2, ((-I)*Sqrt[g]*(d + e*x))/(e*Sqrt[f] - I*d*Sqrt[g])]) - 2*(Log[d + e*
x]*Log[(e*(Sqrt[f] - I*Sqrt[g]*x))/(e*Sqrt[f] + I*d*Sqrt[g])] + PolyLog[2,
(I*Sqrt[g]*(d + e*x))/(e*Sqrt[f] + I*d*Sqrt[g])]) + 4*(Log[-((e*x)/d)]*Log[
d + e*x] + PolyLog[2, 1 + (e*x)/d])))/(4*f^2)
```

fricas [F] time = 0.41, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b\log\left((ex+d)^{n}c\right)+a}{g^{2}x^{5}+2\,fgx^{3}+f^{2}x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x/(g*x^2+f)^2,x, algorithm="fricas")
[Out] integral((b*log((e*x + d)^n*c) + a)/(g^2*x^5 + 2*f*g*x^3 + f^2*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{b\log\left((ex+d)^{n}c\right)+a}{\left(gx^{2}+f\right)^{2}x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x/(g*x^2+f)^2,x, algorithm="giac")
[Out] integrate((b*log((e*x + d)^n*c) + a)/((g*x^2 + f)^2*x), x)
```

maple [C] time = 0.25, size = 910, normalized size = 2.38

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)/x/(g*x^2+f)^2,x)
[Out] -1/2*b*ln((e*x+d)^n)/f^2*ln(g*x^2+f)+1/2*b*ln((e*x+d)^n)/f/(g*x^2+f)+1/2*b*
ln(c)/f/(g*x^2+f)-1/2*b*ln(c)/f^2*ln(g*x^2+f)-1/2*b*n/f^2*dilog((d*g+(-f*g)
^(1/2)*e-(e*x+d)*g)/(d*g+(-f*g)^(1/2)*e))-1/2*b*n/f^2*dilog((-d*g+(-f*g)^(1
/2)*e+(e*x+d)*g)/(-d*g+(-f*g)^(1/2)*e))-1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)
^n)*csgn(I*c*(e*x+d)^n)/f/(g*x^2+f)+1/2*a/f/(g*x^2+f)-1/2*a/f^2*ln(g*x^2+f)
+b/f^2*ln(x)*ln((e*x+d)^n)-b*n/f^2*dilog((e*x+d)/d)+a/f^2*ln(x)-1/2*I*b*Pi*
csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f^2*ln(x)-1/2*b*e*n/f*g/(d^
2*g+e^2*f)*d/(f*g)^(1/2)*arctan(1/(f*g)^(1/2)*g*x)+b/f^2*ln(c)*ln(x)+1/4*I*
b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f^2*ln(g*x^2+f)-b/f^2*
n*ln(x)*ln((e*x+d)/d)-1/2*b*e^2*n*ln(e*x+d)/f/(d^2*g+e^2*f)+1/4*b*e^2*n*ln(
g*x^2+f)/f/(d^2*g+e^2*f)+1/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f^2*ln(g*x^2+f)+1
/2*b*n/f^2*ln(e*x+d)*ln(g*x^2+f)-1/2*b*n/f^2*ln(e*x+d)*ln((d*g+(-f*g)^(1/2)
*e-(e*x+d)*g)/(d*g+(-f*g)^(1/2)*e))-1/2*b*n/f^2*ln(e*x+d)*ln((-d*g+(-f*g)^(
1/2)*e+(e*x+d)*g)/(-d*g+(-f*g)^(1/2)*e))-1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f
^2*ln(x)+1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f^2*ln(x)+1/4*I*b*Pi*cs
gn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f/(g*x^2+f)-1/4*I*b*Pi*csgn(I*c*(e*x+
d)^n)^3/f/(g*x^2+f)-1/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f^2*ln(g*x^2
+f)+1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f^2*ln(x)-1/4*I*b*Pi
*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f^2*ln(g*x^2+f)+1/4*I*b*Pi*csgn(I*
c)*csgn(I*c*(e*x+d)^n)^2/f/(g*x^2+f)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{2}\,a\left(\frac{1}{fgx^{2}+f^{2}}-\frac{\log\left(gx^{2}+f\right)}{f^{2}}+\frac{2\,\log(x)}{f^{2}}\right)+b\int\frac{\log\left((ex+d)^{n}\right)+\log(c)}{g^{2}x^{5}+2\,fgx^{3}+f^{2}x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x/(g*x^2+f)^2,x, algorithm="maxima")
```

```
[Out] 1/2*a*(1/(f*g*x^2 + f^2) - log(g*x^2 + f)/f^2 + 2*log(x)/f^2) + b*integrate
((log((e*x + d)^n) + log(c))/(g^2*x^5 + 2*f*g*x^3 + f^2*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a + b \ln \left(c (d + e x)^n\right)}{x \left(g x^2 + f\right)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/(x*(f + g*x^2)^2),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))/(x*(f + g*x^2)^2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/x/(g*x**2+f)**2,x)
```

```
[Out] Timed out
```

3.270 $\int \frac{a+b\log(c(d+ex)^n)}{x^3\left(f+gx^2\right)^2}\,dx$

Optimal. Leaf size=460

$$-\frac{2g\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^3}+\frac{g\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^3}+\frac{g\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}\,x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)\left(a+b\right.}{f^3}$$

```
[Out] -1/2*b*e*n/d/f^2/x+1/2*b*d*e*g^(3/2)*n*arctan(x*g^(1/2)/f^(1/2))/f^(5/2)/(d
^2*g+e^2*f)-1/2*b*e^2*n*ln(x)/d^2/f^2+1/2*b*e^2*n*ln(e*x+d)/d^2/f^2+1/2*b*e
^2*g*n*ln(e*x+d)/f^2/(d^2*g+e^2*f)+1/2*(-a-b*ln(c*(e*x+d)^n))/f^2/x^2-1/2*g
*(a+b*ln(c*(e*x+d)^n))/f^2/(g*x^2+f)-2*g*ln(-e*x/d)*(a+b*ln(c*(e*x+d)^n))/f
^3-1/4*b*e^2*g*n*ln(g*x^2+f)/f^2/(d^2*g+e^2*f)+g*(a+b*ln(c*(e*x+d)^n))*ln(e
*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(1/2)))/f^3+g*(a+b*ln(c*(e*x+d)^n
))*ln(e*((-f)^(1/2)+x*g^(1/2))/(e*(-f)^(1/2)-d*g^(1/2)))/f^3-2*b*g*n*polylo
g(2,1+e*x/d)/f^3+b*g*n*polylog(2,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))
/f^3+b*g*n*polylog(2,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))/f^3
```

Rubi [A] time = 0.52, antiderivative size = 460, normalized size of antiderivative = 1.00, number of steps used = 21, number of rules used = 14, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.518, Rules used = {266, 44, 2416, 2395, 2394, 2315, 2413, 706, 31, 635, 205, 260, 2393, 2391}

$$\frac{bgn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{f^3}+\frac{bgn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{f^3}-\frac{2bgn\text{PolyLog}\left(2,\frac{ex}{d}+1\right)}{f^3}-\frac{g\left(a+b\log\left(c(d+ex)\right.\right.}{2f^2\left(f+gx^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(x^3*(f + g*x^2)^2),x]
```

```
[Out] -(b*e*n)/(2*d*f^2*x) + (b*d*e*g^(3/2)*n*ArcTan[(Sqrt[g]*x)/Sqrt[f]])/(2*f^(
5/2)*(e^2*f + d^2*g)) - (b*e^2*n*Log[x])/(2*d^2*f^2) + (b*e^2*n*Log[d + e*x
])/(2*d^2*f^2) + (b*e^2*g*n*Log[d + e*x])/(2*f^2*(e^2*f + d^2*g)) - (a + b*
Log[c*(d + e*x)^n])/(2*f^2*x^2) - (g*(a + b*Log[c*(d + e*x)^n]))/(2*f^2*(f
+ g*x^2)) - (2*g*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]))/f^3 + (g*(a +
b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g
])])/f^3 + (g*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*
Sqrt[-f] - d*Sqrt[g])])/f^3 - (b*e^2*g*n*Log[f + g*x^2])/(4*f^2*(e^2*f + d^
2*g)) + (b*g*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])
/f^3 + (b*g*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/f^3
 - (2*b*g*n*PolyLog[2, 1 + (e*x)/d])/f^3
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 706

```
Int[1/(((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)), x_Symbol] :> Dist[e^2/(c
*d^2 + a*e^2), Int[1/(d + e*x), x], x] + Dist[1/(c*d^2 + a*e^2), Int[(c*d -
 c*e*x)/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 + a*e^2,
 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2413

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(x_)^(m_.)*(
(f_.) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Simp[((f + g*x^r)^(q + 1)*(a
```

```
+ b*Log[c*(d + e*x)^n])^p)/(g*r*(q + 1)), x] - Dist[(b*e*n*p)/(g*r*(q + 1))
, Int[((f + g*x^r)^(q + 1)*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x
], x] /; FreeQ[{a, b, c, d, e, f, g, m, n, q, r}, x] && EqQ[m, r - 1] && Ne
Q[q, -1] && IGtQ[p, 0]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{a+b\log\left(c(d+ex)^n\right)}{x^3\left(f+gx^2\right)^2}\,dx = \int \left(\frac{a+b\log\left(c(d+ex)^n\right)}{f^2x^3} - \frac{2g\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^3x} + \frac{g^2x\left(a+b\log\left(c(d+e\right.\right.}{f^2\left(f+gx^2\right)^2}\right.$$

$$= \frac{\int \frac{a+b\log\left(c(d+ex)^n\right)}{x^3}\,dx}{f^2} - \frac{(2g)\int \frac{a+b\log\left(c(d+ex)^n\right)}{x}\,dx}{f^3} + \frac{\left(2g^2\right)\int \frac{x\left(a+b\log\left(c(d+ex)^n\right)\right)}{f+gx^2}\,dx}{f^3} +$$

$$= -\frac{a+b\log\left(c(d+ex)^n\right)}{2f^2x^2} - \frac{g\left(a+b\log\left(c(d+ex)^n\right)\right)}{2f^2\left(f+gx^2\right)} - \frac{2g\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c\right.\right.}{f^3}$$

$$= -\frac{a+b\log\left(c(d+ex)^n\right)}{2f^2x^2} - \frac{g\left(a+b\log\left(c(d+ex)^n\right)\right)}{2f^2\left(f+gx^2\right)} - \frac{2g\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c\right.\right.}{f^3}$$

$$= -\frac{ben}{2df^2x} - \frac{be^2n\log(x)}{2d^2f^2} + \frac{be^2n\log(d+ex)}{2d^2f^2} + \frac{be^2gn\log(d+ex)}{2f^2\left(e^2f+d^2g\right)} - \frac{a+b\log\left(c(d\right.}{2f^2x^2}$$

$$= -\frac{ben}{2df^2x} + \frac{bdeg^{3/2}n\tan^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{f}}\right)}{2f^{5/2}\left(e^2f+d^2g\right)} - \frac{be^2n\log(x)}{2d^2f^2} + \frac{be^2n\log(d+ex)}{2d^2f^2} + \frac{be^2gn\log}{2f^2\left(e^2f\right.}$$

$$= -\frac{ben}{2df^2x} + \frac{bdeg^{3/2}n\tan^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{f}}\right)}{2f^{5/2}\left(e^2f+d^2g\right)} - \frac{be^2n\log(x)}{2d^2f^2} + \frac{be^2n\log(d+ex)}{2d^2f^2} + \frac{be^2gn\log}{2f^2\left(e^2f\right.}$$

Mathematica [C] time = 1.54, size = 596, normalized size = 1.30

$$4g\log\left(f+gx^2\right)\left(a+b\log\left(c(d+ex)^n\right)-bn\log(d+ex)\right) - \frac{2fg\left(a+b\log\left(c(d+ex)^n\right)-bn\log(d+ex)\right)}{f+gx^2} - \frac{2f\left(a+b\log\left(c(d+ex)^n\right)-b\right.}{x^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(x^3*(f + g*x^2)^2),x]
```

```
[Out] ((-2*f*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n]))/x^2 - (2*f*g*(a - b*n
*Log[d + e*x] + b*Log[c*(d + e*x)^n]))/(f + g*x^2) - 8*g*Log[x]*(a - b*n*Lo
g[d + e*x] + b*Log[c*(d + e*x)^n]) + 4*g*(a - b*n*Log[d + e*x] + b*Log[c*(d
 + e*x)^n])*Log[f + g*x^2] + b*n*((-2*f*(d*e*x + e^2*x^2*Log[x] + (d^2 - e^
2*x^2)*Log[d + e*x]))/(d^2*x^2) + (I*Sqrt[f]*g*(Sqrt[g]*(d + e*x)*Log[d + e
```

```
*x] + I*e*(Sqrt[f] + I*Sqrt[g]*x)*Log[I*Sqrt[f] - Sqrt[g]*x]))/((e*Sqrt[f]
- I*d*Sqrt[g])*(Sqrt[f] + I*Sqrt[g]*x)) + (I*Sqrt[f]*g*(-(Sqrt[g]*(d + e*x)
*Log[d + e*x]) + e*(I*Sqrt[f] + Sqrt[g]*x)*Log[I*Sqrt[f] + Sqrt[g]*x]))/((e
*Sqrt[f] + I*d*Sqrt[g])*(Sqrt[f] - I*Sqrt[g]*x)) + 4*g*(Log[d + e*x]*Log[(e
*(Sqrt[f] + I*Sqrt[g]*x))/(e*Sqrt[f] - I*d*Sqrt[g])] + PolyLog[2, ((-I)*Sqr
t[g]*(d + e*x))/(e*Sqrt[f] - I*d*Sqrt[g])]) + 4*g*(Log[d + e*x]*Log[(e*(Sqr
t[f] - I*Sqrt[g]*x))/(e*Sqrt[f] + I*d*Sqrt[g])] + PolyLog[2, (I*Sqrt[g]*(d
+ e*x))/(e*Sqrt[f] + I*d*Sqrt[g])]) - 8*g*(Log[-((e*x)/d)]*Log[d + e*x] + P
olyLog[2, 1 + (e*x)/d])))/(4*f^3)
```

fricas [F] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b\log\left((ex+d)^n c\right)+a}{g^2x^7+2\,fgx^5+f^2x^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^3/(g*x^2+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b*log((e*x + d)^n*c) + a)/(g^2*x^7 + 2*f*g*x^5 + f^2*x^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{b\log\left((ex+d)^n c\right)+a}{\left(gx^2+f\right)^2x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^3/(g*x^2+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)/((g*x^2 + f)^2*x^3), x)
```

maple [C] time = 0.26, size = 1165, normalized size = 2.53

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)/x^3/(g*x^2+f)^2,x)
```

```
[Out] -1/2*b*ln((e*x+d)^n)/f^2/x^2+a/f^3*g*ln(g*x^2+f)-1/2*a/f^2*g/(g*x^2+f)-1/2*
b/f^2/x^2*ln(c)-2*a/f^3*g*ln(x)-2*b/f^3*g*ln(x)*ln((e*x+d)^n)-1/2*a/f^2/x^2
-1/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f^2*g/(g*x^2+f)+1/4*I*Pi*b/f^2/
x^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/2*I*b*Pi*csgn(I*c)*cs
gn(I*c*(e*x+d)^n)^2/f^3*g*ln(g*x^2+f)+1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c
*(e*x+d)^n)^2/f^3*g*ln(g*x^2+f)+1/2*b*e*n/f^2*g^2/(d^2*g+e^2*f)*d/(f*g)^(1/
2)*arctan(1/(f*g)^(1/2)*g*x)-1/2*b/d^2*e^2/f^2*n*ln(x)-1/4*I*b*Pi*csgn(I*(e
*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f^2*g/(g*x^2+f)+1/2*b*e^4*n/f/(d^2*g+e^2*f)/
d^2*ln(e*x+d)+2*b*n/f^3*g*dilog((e*x+d)/d)+1/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3
/f^2*g/(g*x^2+f)-I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f^3*g*ln(x)-I*b*Pi*
csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f^3*g*ln(x)-2*b/f^3*g*ln(c)*ln(x)+I
*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f^3*g*ln(x)+b*e^2*g*n
*ln(e*x+d)/f^2/(d^2*g+e^2*f)-1/4*b*e^2*g*n*ln(g*x^2+f)/f^2/(d^2*g+e^2*f)+2*
b/f^3*g*n*ln(x)*ln((e*x+d)/d)-1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f^3*g*ln(g*x
^2+f)-b*n/f^3*g*ln(e*x+d)*ln(g*x^2+f)+b*n/f^3*g*ln(e*x+d)*ln((d*g+(-f*g)^(1
/2)*e-(e*x+d)*g)/(d*g+(-f*g)^(1/2)*e))+b*n/f^3*g*ln(e*x+d)*ln((-d*g+(-f*g)^
(1/2)*e+(e*x+d)*g)/(-d*g+(-f*g)^(1/2)*e))+I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f^3*
g*ln(x)-1/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f^2/x^2+b*ln((e*x+d)^n)/
f^3*g*ln(g*x^2+f)-1/2*b*ln((e*x+d)^n)/f^2*g/(g*x^2+f)+b*n/f^3*g*dilog((d*g+
(-f*g)^(1/2)*e-(e*x+d)*g)/(d*g+(-f*g)^(1/2)*e))+b*n/f^3*g*dilog((-d*g+(-f*g
)^(1/2)*e+(e*x+d)*g)/(-d*g+(-f*g)^(1/2)*e))-1/2*b*ln(c)/f^2*g/(g*x^2+f)+b*l
```

```
n(c)/f^3*g*ln(g*x^2+f)+1/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f^2/x^2-1/2*b/d*e/f
^2*n/x-1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f^2/x^2+1/4*I*b*P
i*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f^2*g/(g*x^2+f)-1/2*I*b*P
i*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f^3*g*ln(g*x^2+f)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{2}\,a\left(\frac{2\,gx^2+f}{f^2gx^4+f^3x^2}-\frac{2\,g\log\left(gx^2+f\right)}{f^3}+\frac{4\,g\log(x)}{f^3}\right)+b\int\frac{\log\left((ex+d)^n\right)+\log(c)}{g^2x^7+2\,fgx^5+f^2x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^3/(g*x^2+f)^2,x, algorithm="maxima")
```

```
[Out] -1/2*a*((2*g*x^2 + f)/(f^2*g*x^4 + f^3*x^2) - 2*g*log(g*x^2 + f)/f^3 + 4*g*
log(x)/f^3) + b*integrate((log((e*x + d)^n) + log(c))/(g^2*x^7 + 2*f*g*x^5
+ f^2*x^3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}{x^3\,{\left(g\,x^2+f\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/(x^3*(f + g*x^2)^2),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))/(x^3*(f + g*x^2)^2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/x**3/(g*x**2+f)**2,x)
```

```
[Out] Timed out
```

3.271 $\int \frac{x^4(a+b\log(c(d+ex)^n))}{(f+gx^2)^2}\,dx$

Optimal. Leaf size=534

$$-\frac{f\left(a+b\log\left(c(d+ex)^n\right)\right)}{4g^{5/2}\left(\sqrt{-f}-\sqrt{g}\,x\right)}+\frac{f\left(a+b\log\left(c(d+ex)^n\right)\right)}{4g^{5/2}\left(\sqrt{-f}+\sqrt{g}\,x\right)}+\frac{3\sqrt{-f}\,\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{4g^{5/2}}-\frac{3\sqrt{-f}\ \cdots}{\cdots}$$

```
[Out] a*x/g^2-b*n*x/g^2+b*(e*x+d)*ln(c*(e*x+d)^n)/e/g^2+3/4*(a+b*ln(c*(e*x+d)^n))
*ln(e*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(1/2)))*(-f)^(1/2)/g^(5/2)-3
/4*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)+x*g^(1/2))/(e*(-f)^(1/2)-d*g^(1/2
)))*(-f)^(1/2)/g^(5/2)-3/4*b*n*polylog(2,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g
^(1/2)))*(-f)^(1/2)/g^(5/2)+3/4*b*n*polylog(2,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)
+d*g^(1/2)))*(-f)^(1/2)/g^(5/2)-1/4*b*e*f*n*ln(e*x+d)/g^(5/2)/(e*(-f)^(1/2)
-d*g^(1/2))+1/4*b*e*f*n*ln((-f)^(1/2)+x*g^(1/2))/g^(5/2)/(e*(-f)^(1/2)-d*g^
(1/2))+1/4*b*e*f*n*ln(e*x+d)/g^(5/2)/(e*(-f)^(1/2)+d*g^(1/2))-1/4*b*e*f*n*l
n((-f)^(1/2)-x*g^(1/2))/g^(5/2)/(e*(-f)^(1/2)+d*g^(1/2))-1/4*f*(a+b*ln(c*(e
*x+d)^n))/g^(5/2)/((-f)^(1/2)-x*g^(1/2))+1/4*f*(a+b*ln(c*(e*x+d)^n))/g^(5/2
)/((-f)^(1/2)+x*g^(1/2))
```

Rubi [A] time = 0.93, antiderivative size = 534, normalized size of antiderivative = 1.00, number of steps used = 31, number of rules used = 13, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.482, Rules used = {288, 321, 205, 2416, 2389, 2295, 2409, 2395, 36, 31, 2394, 2393, 2391}

$$-\frac{3b\sqrt{-f}\,n\,\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{4g^{5/2}}+\frac{3b\sqrt{-f}\,n\,\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{4g^{5/2}}-\frac{f\left(a+b\log\left(c(d+ex)^n\right)\right)}{4g^{5/2}\left(\sqrt{-f}-\sqrt{g}\,x\right)}+\frac{f\left(a+b\log\left(\cdots\right.\right.}{4g^{5/2}\left(\sqrt{-\cdots}\right.}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(a + b*Log[c*(d + e*x)^n]))/(f + g*x^2)^2,x]
```

```
[Out] (a*x)/g^2 - (b*n*x)/g^2 - (b*e*f*n*Log[d + e*x])/(4*(e*Sqrt[-f] - d*Sqrt[g]
)*g^(5/2)) + (b*e*f*n*Log[d + e*x])/(4*(e*Sqrt[-f] + d*Sqrt[g])*g^(5/2)) +
(b*(d + e*x)*Log[c*(d + e*x)^n])/(e*g^2) - (f*(a + b*Log[c*(d + e*x)^n]))/(
4*g^(5/2)*(Sqrt[-f] - Sqrt[g]*x)) + (f*(a + b*Log[c*(d + e*x)^n]))/(4*g^(5/
2)*(Sqrt[-f] + Sqrt[g]*x)) - (b*e*f*n*Log[Sqrt[-f] - Sqrt[g]*x])/(4*(e*Sqrt
[-f] + d*Sqrt[g])*g^(5/2)) + (3*Sqrt[-f]*(a + b*Log[c*(d + e*x)^n])*Log[(e*
(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(4*g^(5/2)) + (b*e*f*n*L
og[Sqrt[-f] + Sqrt[g]*x])/(4*(e*Sqrt[-f] - d*Sqrt[g])*g^(5/2)) - (3*Sqrt[-f
]*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d
*Sqrt[g])])/(4*g^(5/2)) - (3*b*Sqrt[-f]*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/
(e*Sqrt[-f] - d*Sqrt[g]))])/(4*g^(5/2)) + (3*b*Sqrt[-f]*n*PolyLog[2, (Sqrt[
g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(4*g^(5/2))
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 288

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^
(n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*n*(p + 1)), x] - Dist[(c^
n*(m - n + 1))/(b*n*(p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^(p + 1), x], x]
 /; FreeQ[{a, b, c}, x] && IGtQ[n, 0] && LtQ[p, -1] && GtQ[m + 1, n] &&  !I
LtQ[(m + n*(p + 1) + 1)/n, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{x^4 \left(a+b\log \left(c(d+ex)^n\right)\right)}{\left(f+gx^2\right)^2} dx = \int \left(\frac{a+b\log \left(c(d+ex)^n\right)}{g^2}+\frac{f^2 \left(a+b\log \left(c(d+ex)^n\right)\right)}{g^2 \left(f+gx^2\right)^2}-\frac{2f \left(a+b\log \left(c(d+\right.\right.}{g^2 \left(f+gx^2\right)}\right.$$

$$=\frac{\int \left(a+b\log \left(c(d+ex)^n\right)\right) dx}{g^2}-\frac{(2f)\int \frac{a+b\log(c(d+ex)^n)}{f+gx^2} dx}{g^2}+\frac{f^2\int \frac{a+b\log(c(d+ex)^n}{\left(f+gx^2\right)^2}}{g^2}$$

$$=\frac{ax}{g^2}+\frac{b\int \log \left(c(d+ex)^n\right) dx}{g^2}-\frac{(2f)\int \left(\frac{\sqrt{-f}\left(a+b\log(c(d+ex)^n)\right)}{2f\left(\sqrt{-f}-\sqrt{g}\,x\right)}+\frac{\sqrt{-f}\left(a+b\log(c(d+e\right.}{2f\left(\sqrt{-f}+\sqrt{g}\,x\right)}\right.}{g^2}$$

$$=\frac{ax}{g^2}+\frac{b\,\text{Subst}\left(\int \log \left(cx^n\right) dx,x,d+ex\right)}{eg^2}-\frac{\sqrt{-f}\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{-f}-\sqrt{g}\,x} dx}{g^2}-\frac{\sqrt{-f}\int}{}$$

$$=\frac{ax}{g^2}-\frac{bnx}{g^2}+\frac{b(d+ex)\log \left(c(d+ex)^n\right)}{eg^2}-\frac{f\left(a+b\log \left(c(d+ex)^n\right)\right)}{4g^{5/2}\left(\sqrt{-f}-\sqrt{g}\,x\right)}+\frac{f\left(a+b\right.}{4g^{5/2}\left(\right.}$$

$$=\frac{ax}{g^2}-\frac{bnx}{g^2}+\frac{b(d+ex)\log \left(c(d+ex)^n\right)}{eg^2}-\frac{f\left(a+b\log \left(c(d+ex)^n\right)\right)}{4g^{5/2}\left(\sqrt{-f}-\sqrt{g}\,x\right)}+\frac{f\left(a+b\right.}{4g^{5/2}\left(\right.}$$

$$=\frac{ax}{g^2}-\frac{bnx}{g^2}-\frac{befn\log(d+ex)}{4\left(e\sqrt{-f}-d\sqrt{g}\right)g^{5/2}}+\frac{befn\log(d+ex)}{4\left(e\sqrt{-f}+d\sqrt{g}\right)g^{5/2}}+\frac{b(d+ex)\log \left(c\right.}{eg^2}$$

$$=\frac{ax}{g^2}-\frac{bnx}{g^2}-\frac{befn\log(d+ex)}{4\left(e\sqrt{-f}-d\sqrt{g}\right)g^{5/2}}+\frac{befn\log(d+ex)}{4\left(e\sqrt{-f}+d\sqrt{g}\right)g^{5/2}}+\frac{b(d+ex)\log \left(c\right.}{eg^2}$$

$$=\frac{ax}{g^2}-\frac{bnx}{g^2}-\frac{befn\log(d+ex)}{4\left(e\sqrt{-f}-d\sqrt{g}\right)g^{5/2}}+\frac{befn\log(d+ex)}{4\left(e\sqrt{-f}+d\sqrt{g}\right)g^{5/2}}+\frac{b(d+ex)\log \left(c\right.}{eg^2}$$

Mathematica [A] time = 0.78, size = 434, normalized size = 0.81

$$\frac{-\frac{f\left(a+b\log(c(d+ex)^n)\right)}{\sqrt{-f}-\sqrt{g}\,x}+\frac{f\left(a+b\log(c(d+ex)^n)\right)}{\sqrt{-f}+\sqrt{g}\,x}+3\sqrt{-f}\,\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\log \left(c(d+ex)^n\right)\right)-3\sqrt{-f}\,\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}\,x\right.}{e\sqrt{-f}-d\sqrt{g}}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(a + b*Log[c*(d + e*x)^n]))/(f + g*x^2)^2,x]
```

```
[Out] (4*a*Sqrt[g]*x - 4*b*Sqrt[g]*n*x + (4*b*Sqrt[g]*(d + e*x)*Log[c*(d + e*x)^n
])/e - (f*(a + b*Log[c*(d + e*x)^n]))/(Sqrt[-f] - Sqrt[g]*x) + (f*(a + b*Lo
g[c*(d + e*x)^n]))/(Sqrt[-f] + Sqrt[g]*x) + (b*e*f*n*(Log[d + e*x] - Log[Sq
rt[-f] - Sqrt[g]*x]))/(e*Sqrt[-f] + d*Sqrt[g]) + 3*Sqrt[-f]*(a + b*Log[c*(d
 + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])] - (b*e
*f*n*(Log[d + e*x] - Log[Sqrt[-f] + Sqrt[g]*x]))/(e*Sqrt[-f] - d*Sqrt[g]) -
 3*Sqrt[-f]*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sq
rt[-f] - d*Sqrt[g])] - 3*b*Sqrt[-f]*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*S
qrt[-f] - d*Sqrt[g]))] + 3*b*Sqrt[-f]*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*S
qrt[-f] + d*Sqrt[g])])/(4*g^(5/2))
```

fricas [F] time = 0.42, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{bx^4\log\left((ex+d)^n c\right)+ax^4}{g^2x^4+2\,fgx^2+f^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*log(c*(e*x+d)^n))/(g*x^2+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b*x^4*log((e*x + d)^n*c) + a*x^4)/(g^2*x^4 + 2*f*g*x^2 + f^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(b\log\left((ex+d)^n c\right)+a\right)x^4}{\left(gx^2+f\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*log(c*(e*x+d)^n))/(g*x^2+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*x^4/(g*x^2 + f)^2, x)
```

maple [C] time = 0.41, size = 2021, normalized size = 3.78

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(b*ln(c*(e*x+d)^n)+a)/(g*x^2+f)^2,x)
```

```
[Out] 3/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/g^2*f/(f*g)^(1/2)*arctan(1/(f*g)^(1/2)*g*x
)-1/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/g^2*f*x/(g*x^2+f)+b/g^2*x*ln(c)-1/2*I*b*
Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/g^2*x+b*ln((e*x+d)^n)/g^
2*x-b*n/g^2*f*ln(e*x+d)/(-f*g)^(1/2)*ln((d*g+(-f*g)^(1/2)*e-(e*x+d)*g)/(d*g
+(-f*g)^(1/2)*e))+3/2*b/g^2*f/(f*g)^(1/2)*arctan(1/2*(-2*d*g+2*(e*x+d)*g)/(
f*g)^(1/2)/e)*n*ln(e*x+d)+b*n/g^2*f*ln(e*x+d)/(-f*g)^(1/2)*ln((-d*g+(-f*g)^
(1/2)*e+(e*x+d)*g)/(-d*g+(-f*g)^(1/2)*e))+1/2*b*e^2/g^2*f/(e^2*g*x^2+e^2*f)
*x*ln((e*x+d)^n)-1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)
/g^2*f*x/(g*x^2+f)+1/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/g^2*f*x/(g*x^
2+f)+1/2*b*ln(c)/g^2*f*x/(g*x^2+f)-3/2*b*ln(c)/g^2*f/(f*g)^(1/2)*arctan(1/(
f*g)^(1/2)*g*x)-1/2*b*e^2/g^2*f/(e^2*g*x^2+e^2*f)*x*n*ln(e*x+d)-1/2*b*e^2*n
/g^2*f^2/(d^2*g+e^2*f)/(f*g)^(1/2)*arctan(1/2*(-2*d*g+2*(e*x+d)*g)/(f*g)^(1
/2)/e)+1/4*b*e^2*n*f*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*g)^(1/2)
*ln((d*g+(-f*g)^(1/2)*e-(e*x+d)*g)/(d*g+(-f*g)^(1/2)*e))*d^2*x^2-1/4*b*e^2*
n*f*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*g)^(1/2)*ln((-d*g+(-f*g)^
(1/2)*e+(e*x+d)*g)/(-d*g+(-f*g)^(1/2)*e))*d^2*x^2+1/4*b*e^4*n/g*f^2*ln(e*x+
```

```
d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*g)^(1/2)*ln((d*g+(-f*g)^(1/2)*e-(e*x
+d)*g)/(d*g+(-f*g)^(1/2)*e))*x^2+1/4*b*e^2*n/g*f^2*ln(e*x+d)/(d^2*g+e^2*f)/
(e^2*g*x^2+e^2*f)/(-f*g)^(1/2)*ln((d*g+(-f*g)^(1/2)*e-(e*x+d)*g)/(d*g+(-f*g
)^(1/2)*e))*d^2-1/4*b*e^4*n/g*f^2*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)
/(-f*g)^(1/2)*ln((-d*g+(-f*g)^(1/2)*e+(e*x+d)*g)/(-d*g+(-f*g)^(1/2)*e))*x^2
-1/4*b*e^2*n/g*f^2*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*g)^(1/2)*l
n((-d*g+(-f*g)^(1/2)*e+(e*x+d)*g)/(-d*g+(-f*g)^(1/2)*e))*d^2-1/2*I*b*Pi*csg
n(I*c*(e*x+d)^n)^3/g^2*x-1/4*b*e*n/g^2*f/(d^2*g+e^2*f)*d*ln(g*(e*x+d)^2-2*d
*g*(e*x+d)+d^2*g+f*e^2)-3/2*b/g^2*f/(f*g)^(1/2)*arctan(1/2*(-2*d*g+2*(e*x+d
)*g)/(f*g)^(1/2)/e)*ln((e*x+d)^n)-b/e*n/g^2*d+1/2*a/g^2*f*x/(g*x^2+f)-3/2*a
/g^2*f/(f*g)^(1/2)*arctan(1/(f*g)^(1/2)*g*x)+b/e/g^2*d*ln((e*x+d)^n)+3/4*b*
n/g^2*f/(-f*g)^(1/2)*dilog((-d*g+(-f*g)^(1/2)*e+(e*x+d)*g)/(-d*g+(-f*g)^(1/
2)*e))-3/4*b*n/g^2*f/(-f*g)^(1/2)*dilog((d*g+(-f*g)^(1/2)*e-(e*x+d)*g)/(d*g
+(-f*g)^(1/2)*e))+1/2*b*e^3*n/g^2*f^2*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^
2*f)*d+1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/g^2*f*x/(g*x^2+f)
+1/4*b*e^4*n/g^2*f^3*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*g)^(1/2)
*ln((d*g+(-f*g)^(1/2)*e-(e*x+d)*g)/(d*g+(-f*g)^(1/2)*e))-1/4*b*e^4*n/g^2*f^
3*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*g)^(1/2)*ln((-d*g+(-f*g)^(1
/2)*e+(e*x+d)*g)/(-d*g+(-f*g)^(1/2)*e))+1/2*b*e^3*n/g*f*ln(e*x+d)/(d^2*g+e^
2*f)/(e^2*g*x^2+e^2*f)*d*x^2+1/2*b*e^2*n/g*f*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g
*x^2+e^2*f)*d^2*x-3/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/g^2*f/(f*g)^(1
/2)*arctan(1/(f*g)^(1/2)*g*x)+1/2*b*e^4*n/g^2*f^2*ln(e*x+d)/(d^2*g+e^2*f)/(
e^2*g*x^2+e^2*f)*x-3/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/g^2*f
/(f*g)^(1/2)*arctan(1/(f*g)^(1/2)*g*x)+a/g^2*x-b/g^2*n*x+3/4*I*b*Pi*csgn(I*
c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/g^2*f/(f*g)^(1/2)*arctan(1/(f*g)^(
1/2)*g*x)+1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/g^2*x+1/2*I*b*Pi*csgn(
I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/g^2*x
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{2}\,a\left(\frac{fx}{g^3x^2+fg^2}-\frac{3\,f\arctan\left(\frac{gx}{\sqrt{fg}}\right)}{\sqrt{fg}\,g^2}+\frac{2\,x}{g^2}\right)+b\int\frac{x^4\log\left((ex+d)^n\right)+x^4\log(c)}{g^2x^4+2\,fgx^2+f^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*log(c*(e*x+d)^n))/(g*x^2+f)^2,x, algorithm="maxima")
```

```
[Out] 1/2*a*(f*x/(g^3*x^2 + f*g^2) - 3*f*arctan(g*x/sqrt(f*g))/(sqrt(f*g)*g^2) +
2*x/g^2) + b*integrate((x^4*log((e*x + d)^n) + x^4*log(c))/(g^2*x^4 + 2*f*g
*x^2 + f^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{x^4\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}{{\left(g\,x^2+f\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(a + b*log(c*(d + e*x)^n)))/(f + g*x^2)^2,x)
```

```
[Out] int((x^4*(a + b*log(c*(d + e*x)^n)))/(f + g*x^2)^2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(a+b*ln(c*(e*x+d)**n))/(g*x**2+f)**2,x)
```

```
[Out] Timed out
```

3.272 $\int \frac{x^2(a+b\log(c(d+ex)^n))}{(f+gx^2)^2}\,dx$

Optimal. Leaf size=491

$$\frac{a+b\log\left(c(d+ex)^n\right)}{4g^{3/2}\left(\sqrt{-f}-\sqrt{g}\,x\right)}-\frac{a+b\log\left(c(d+ex)^n\right)}{4g^{3/2}\left(\sqrt{-f}+\sqrt{g}\,x\right)}+\frac{\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{4\sqrt{-f}\,g^{3/2}}-\frac{\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}\,x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)(a \cdots}{4\sqrt{-\cdots}}$$

```
[Out] 1/4*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(1/
2)))/g^(3/2)/(-f)^(1/2)-1/4*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)+x*g^(1/2
))/(e*(-f)^(1/2)-d*g^(1/2)))/g^(3/2)/(-f)^(1/2)-1/4*b*n*polylog(2,-(e*x+d)*
g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))/g^(3/2)/(-f)^(1/2)+1/4*b*n*polylog(2,(e*x
+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))/g^(3/2)/(-f)^(1/2)+1/4*b*e*n*ln(e*x+d
)/g^(3/2)/(e*(-f)^(1/2)-d*g^(1/2))-1/4*b*e*n*ln((-f)^(1/2)+x*g^(1/2))/g^(3/
2)/(e*(-f)^(1/2)-d*g^(1/2))-1/4*b*e*n*ln(e*x+d)/g^(3/2)/(e*(-f)^(1/2)+d*g^(
1/2))+1/4*b*e*n*ln((-f)^(1/2)-x*g^(1/2))/g^(3/2)/(e*(-f)^(1/2)+d*g^(1/2))+1
/4*(a+b*ln(c*(e*x+d)^n))/g^(3/2)/((-f)^(1/2)-x*g^(1/2))+1/4*(-a-b*ln(c*(e*x
+d)^n))/g^(3/2)/((-f)^(1/2)+x*g^(1/2))
```

Rubi [A] time = 0.76, antiderivative size = 491, normalized size of antiderivative = 1.00, number of steps used = 28, number of rules used = 10, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.370$, Rules used = {288, 205, 2416, 2409, 2395, 36, 31, 2394, 2393, 2391}

$$-\frac{bn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{4\sqrt{-f}\,g^{3/2}}+\frac{bn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{4\sqrt{-f}\,g^{3/2}}+\frac{a+b\log\left(c(d+ex)^n\right)}{4g^{3/2}\left(\sqrt{-f}-\sqrt{g}\,x\right)}-\frac{a+b\log\left(c(d+ex)^n\right)}{4g^{3/2}\left(\sqrt{-f}+\sqrt{g}\,x\right)}+\frac{\log \cdots}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(a + b*Log[c*(d + e*x)^n]))/(f + g*x^2)^2,x]
```

```
[Out] (b*e*n*Log[d + e*x])/(4*(e*Sqrt[-f] - d*Sqrt[g])*g^(3/2)) - (b*e*n*Log[d +
e*x])/(4*(e*Sqrt[-f] + d*Sqrt[g])*g^(3/2)) + (a + b*Log[c*(d + e*x)^n])/(4*
g^(3/2)*(Sqrt[-f] - Sqrt[g]*x)) - (a + b*Log[c*(d + e*x)^n])/(4*g^(3/2)*(Sq
rt[-f] + Sqrt[g]*x)) + (b*e*n*Log[Sqrt[-f] - Sqrt[g]*x])/(4*(e*Sqrt[-f] + d
*Sqrt[g])*g^(3/2)) + ((a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]
*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(4*Sqrt[-f]*g^(3/2)) - (b*e*n*Log[Sqrt[-f]
+ Sqrt[g]*x])/(4*(e*Sqrt[-f] - d*Sqrt[g])*g^(3/2)) - ((a + b*Log[c*(d + e*x
)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(4*Sqrt[-f]
*g^(3/2)) - (b*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))
])/(4*Sqrt[-f]*g^(3/2)) + (b*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] +
 d*Sqrt[g])])/(4*Sqrt[-f]*g^(3/2))
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 288

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^
(n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*n*(p + 1)), x] - Dist[(c^
n*(m - n + 1))/(b*n*(p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^(p + 1), x], x]
 /; FreeQ[{a, b, c}, x] && IGtQ[n, 0] && LtQ[p, -1] && GtQ[m + 1, n] &&  !I
LtQ[(m + n*(p + 1) + 1)/n, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{x^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{\left(f+gx^2\right)^2}\,dx=\int\left(-\frac{f\left(a+b\log\left(c(d+ex)^n\right)\right)}{g\left(f+gx^2\right)^2}+\frac{a+b\log\left(c(d+ex)^n\right)}{g\left(f+gx^2\right)}\right)dx$$

$$=\frac{\int\frac{a+b\log(c(d+ex)^n)}{f+gx^2}\,dx}{g}-\frac{f\int\frac{a+b\log(c(d+ex)^n)}{\left(f+gx^2\right)^2}\,dx}{g}$$

$$=\frac{\int\left(\frac{\sqrt{-f}\left(a+b\log(c(d+ex)^n)\right)}{2f\left(\sqrt{-f}-\sqrt{g}\,x\right)}+\frac{\sqrt{-f}\left(a+b\log(c(d+ex)^n)\right)}{2f\left(\sqrt{-f}+\sqrt{g}\,x\right)}\right)dx}{g}-\frac{f\int\left(-\frac{g\left(a+b\log(c(d+ex)^n)\right)}{4f\left(\sqrt{-f}\sqrt{g}-gx\right)^2}\right.}{}$$

$$=\frac{1}{4}\int\frac{a+b\log\left(c(d+ex)^n\right)}{\left(\sqrt{-f}\sqrt{g}-gx\right)^2}\,dx+\frac{1}{4}\int\frac{a+b\log\left(c(d+ex)^n\right)}{\left(\sqrt{-f}\sqrt{g}+gx\right)^2}\,dx+\frac{1}{2}\int\frac{a+b}{}$$

$$=\frac{a+b\log\left(c(d+ex)^n\right)}{4g^{3/2}\left(\sqrt{-f}-\sqrt{g}\,x\right)}-\frac{a+b\log\left(c(d+ex)^n\right)}{4g^{3/2}\left(\sqrt{-f}+\sqrt{g}\,x\right)}+\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log}{2\sqrt{-f}\,g^{3/2}}$$

$$=\frac{a+b\log\left(c(d+ex)^n\right)}{4g^{3/2}\left(\sqrt{-f}-\sqrt{g}\,x\right)}-\frac{a+b\log\left(c(d+ex)^n\right)}{4g^{3/2}\left(\sqrt{-f}+\sqrt{g}\,x\right)}+\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log}{2\sqrt{-f}\,g^{3/2}}$$

$$=\frac{ben\log(d+ex)}{4\left(e\sqrt{-f}-d\sqrt{g}\right)g^{3/2}}-\frac{ben\log(d+ex)}{4\left(e\sqrt{-f}+d\sqrt{g}\right)g^{3/2}}+\frac{a+b\log\left(c(d+ex)^n\right)}{4g^{3/2}\left(\sqrt{-f}-\sqrt{g}\,x\right)}-$$

$$=\frac{ben\log(d+ex)}{4\left(e\sqrt{-f}-d\sqrt{g}\right)g^{3/2}}-\frac{ben\log(d+ex)}{4\left(e\sqrt{-f}+d\sqrt{g}\right)g^{3/2}}+\frac{a+b\log\left(c(d+ex)^n\right)}{4g^{3/2}\left(\sqrt{-f}-\sqrt{g}\,x\right)}-$$

$$=\frac{ben\log(d+ex)}{4\left(e\sqrt{-f}-d\sqrt{g}\right)g^{3/2}}-\frac{ben\log(d+ex)}{4\left(e\sqrt{-f}+d\sqrt{g}\right)g^{3/2}}+\frac{a+b\log\left(c(d+ex)^n\right)}{4g^{3/2}\left(\sqrt{-f}-\sqrt{g}\,x\right)}-$$

Mathematica [A] time = 0.67, size = 383, normalized size = 0.78

$$\frac{\frac{\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\log(c(d+ex)^n)\right)}{\sqrt{-f}}+\frac{f\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)\left(a+b\log(c(d+ex)^n)\right)}{(-f)^{3/2}}+\frac{a+b\log(c(d+ex)^n)}{\sqrt{-f}-\sqrt{g}x}-\frac{a+b\log(c(d+ex)^n)}{\sqrt{-f}+\sqrt{g}x}+\frac{bfn\text{Li}_2\left(-\frac{\sqrt{g}}{e\sqrt{-}}\right.}{(-f)^{3/}}}{4g^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(a + b*Log[c*(d + e*x)^n]))/(f + g*x^2)^2,x]
```

```
[Out] ((a + b*Log[c*(d + e*x)^n])/(Sqrt[-f] - Sqrt[g]*x) - (a + b*Log[c*(d + e*x)
^n])/(Sqrt[-f] + Sqrt[g]*x) - (b*e*n*(Log[d + e*x] - Log[Sqrt[-f] - Sqrt[g]
*x]))/(e*Sqrt[-f] + d*Sqrt[g]) + ((a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-
f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/Sqrt[-f] + (b*e*n*(Log[d + e*x]
 - Log[Sqrt[-f] + Sqrt[g]*x]))/(e*Sqrt[-f] - d*Sqrt[g]) + (f*(a + b*Log[c*(
d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(-f)
^(3/2) + (b*f*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))]
)/(-f)^(3/2) + (b*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])
])/Sqrt[-f])/(4*g^(3/2))
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{bx^2\log\left((ex+d)^nc\right)+ax^2}{g^2x^4+2\,fgx^2+f^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))/(g*x^2+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b*x^2*log((e*x + d)^n*c) + a*x^2)/(g^2*x^4 + 2*f*g*x^2 + f^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(b\log\left((ex+d)^nc\right)+a\right)x^2}{\left(gx^2+f\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))/(g*x^2+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*x^2/(g*x^2 + f)^2, x)
```

maple [C] time = 0.45, size = 1781, normalized size = 3.63

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(b*ln(c*(e*x+d)^n)+a)/(g*x^2+f)^2,x)
```

```
[Out] -1/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/g*x/(g*x^2+f)-1/2*a/g*x/(g*x^2+
f)+1/2*a/g/(f*g)^(1/2)*arctan(1/(f*g)^(1/2)*g*x)-1/2*b*e^4*n*f/g*ln(e*x+d)/
(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)*x-1/2*b*e^2*n*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*
g*x^2+e^2*f)*d^2*x+1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/g/(f*
g)^(1/2)*arctan(1/(f*g)^(1/2)*g*x)-1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e
*x+d)^n)^2/g*x/(g*x^2+f)+1/4*b*e^2*n*g*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e
^2*f)/(-f*g)^(1/2)*ln((-d*g+(-f*g)^(1/2)*e+(e*x+d)*g)/(-d*g+(-f*g)^(1/2)*e)
)*d^2*x^2+1/2*b*e^2*n*f/g/(d^2*g+e^2*f)/(f*g)^(1/2)*arctan(1/2*(-2*d*g+2*(e
*x+d)*g)/(f*g)^(1/2)/e)-1/2*b*e^3*n*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*
f)*d*x^2-1/4*b*n/g/(-f*g)^(1/2)*dilog((-d*g+(-f*g)^(1/2)*e+(e*x+d)*g)/(-d*g
+(-f*g)^(1/2)*e))+1/2*b*e^2/(e^2*g*x^2+e^2*f)/g*x*n*ln(e*x+d)+1/4*b*e*n/g/(
d^2*g+e^2*f)*d*ln(d^2*g+e^2*f-2*(e*x+d)*d*g+(e*x+d)^2*g)+1/4*I*b*Pi*csgn(I*
c)*csgn(I*c*(e*x+d)^n)^2/g/(f*g)^(1/2)*arctan(1/(f*g)^(1/2)*g*x)-1/4*b*e^2*
n*g*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*g)^(1/2)*ln((d*g+(-f*g)^(
1/2)*e-(e*x+d)*g)/(d*g+(-f*g)^(1/2)*e))*d^2*x^2-1/4*b*e^4*n*f^2/g*ln(e*x+d)
/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*g)^(1/2)*ln((d*g+(-f*g)^(1/2)*e-(e*x+d
)*g)/(d*g+(-f*g)^(1/2)*e))-1/4*b*e^4*n*f*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2
+e^2*f)/(-f*g)^(1/2)*ln((d*g+(-f*g)^(1/2)*e-(e*x+d)*g)/(d*g+(-f*g)^(1/2)*e)
)*x^2+1/4*b*e^2*n*f*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*g)^(1/2)*
ln((-d*g+(-f*g)^(1/2)*e+(e*x+d)*g)/(-d*g+(-f*g)^(1/2)*e))*d^2-1/4*b*e^2*n*f
*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*g)^(1/2)*ln((d*g+(-f*g)^(1/2
)*e-(e*x+d)*g)/(d*g+(-f*g)^(1/2)*e))*d^2+1/4*b*e^4*n*f*ln(e*x+d)/(d^2*g+e^2
*f)/(e^2*g*x^2+e^2*f)/(-f*g)^(1/2)*ln((-d*g+(-f*g)^(1/2)*e+(e*x+d)*g)/(-d*g
+(-f*g)^(1/2)*e))*x^2+1/4*b*e^4*n*f^2/g*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+
e^2*f)/(-f*g)^(1/2)*ln((-d*g+(-f*g)^(1/2)*e+(e*x+d)*g)/(-d*g+(-f*g)^(1/2)*e
))+1/4*b*n/g/(-f*g)^(1/2)*dilog((d*g+(-f*g)^(1/2)*e-(e*x+d)*g)/(d*g+(-f*g)^
(1/2)*e))-1/2*b*ln(c)/g*x/(g*x^2+f)+1/2*b*ln(c)/g/(f*g)^(1/2)*arctan(1/(f*g
)^(1/2)*g*x)+1/2*b*n/g*ln(e*x+d)/(-f*g)^(1/2)*ln((d*g+(-f*g)^(1/2)*e-(e*x+d
)*g)/(d*g+(-f*g)^(1/2)*e))+1/2*b/g/(f*g)^(1/2)*arctan(1/2*(-2*d*g+2*(e*x+d)
*g)/(f*g)^(1/2)/e)*ln((e*x+d)^n)-1/2*b/g/(f*g)^(1/2)*arctan(1/2*(-2*d*g+2*(
```

```
e*x+d)*g)/(f*g)^(1/2)/e)*n*ln(e*x+d)-1/2*b*n/g*ln(e*x+d)/(-f*g)^(1/2)*ln((-
d*g+(-f*g)^(1/2)*e+(e*x+d)*g)/(-d*g+(-f*g)^(1/2)*e))-1/4*I*b*Pi*csgn(I*c*(e
*x+d)^n)^3/g/(f*g)^(1/2)*arctan(1/(f*g)^(1/2)*g*x)-1/2*b*e^2/(e^2*g*x^2+e^2
*f)/g*x*ln((e*x+d)^n)+1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+
d)^n)/g*x/(g*x^2+f)-1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)
^n)/g/(f*g)^(1/2)*arctan(1/(f*g)^(1/2)*g*x)+1/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^
3/g*x/(g*x^2+f)-1/2*b*e^3*n*f/g*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)*d
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{2}\,a\left(\frac{x}{g^2x^2+fg}-\frac{\arctan\left(\frac{gx}{\sqrt{fg}}\right)}{\sqrt{fg}\,g}\right)+b\int\frac{x^2\log\left((ex+d)^n\right)+x^2\log(c)}{g^2x^4+2\,fgx^2+f^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))/(g*x^2+f)^2,x, algorithm="maxima")
```

```
[Out] -1/2*a*(x/(g^2*x^2 + f*g) - arctan(g*x/sqrt(f*g))/(sqrt(f*g)*g)) + b*integr
ate((x^2*log((e*x + d)^n) + x^2*log(c))/(g^2*x^4 + 2*f*g*x^2 + f^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{x^2\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}{{\left(g\,x^2+f\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(a + b*log(c*(d + e*x)^n)))/(f + g*x^2)^2,x)
```

```
[Out] int((x^2*(a + b*log(c*(d + e*x)^n)))/(f + g*x^2)^2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(a+b*ln(c*(e*x+d)**n))/(g*x**2+f)**2,x)
```

```
[Out] Timed out
```

3.273 $\int \frac{a+b\log(c(d+ex)^n)}{(f+gx^2)^2}\,dx$

Optimal. Leaf size=503

$$-\frac{a+b\log\left(c(d+ex)^n\right)}{4f\sqrt{g}\left(\sqrt{-f}-\sqrt{g}x\right)}+\frac{a+b\log\left(c(d+ex)^n\right)}{4f\sqrt{g}\left(\sqrt{-f}+\sqrt{g}x\right)}-\frac{\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{4(-f)^{3/2}\sqrt{g}}+\frac{\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)(a\cdots}{4(-f)^{3\cdots}}$$

```
[Out] -1/4*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(1
/2)))/(-f)^(3/2)/g^(1/2)+1/4*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)+x*g^(1/
2))/(e*(-f)^(1/2)-d*g^(1/2)))/(-f)^(3/2)/g^(1/2)+1/4*b*n*polylog(2,-(e*x+d)
*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))/(-f)^(3/2)/g^(1/2)-1/4*b*n*polylog(2,(e*
x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))/(-f)^(3/2)/g^(1/2)+1/4*b*e*n*ln(e*x+
d)/f/g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2))-1/4*b*e*n*ln((-f)^(1/2)-x*g^(1/2))/f/
g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2))+1/4*b*e*n*ln(e*x+d)/g^(1/2)/(e*(-f)^(3/2)+
d*f*g^(1/2))-1/4*b*e*n*ln((-f)^(1/2)+x*g^(1/2))/g^(1/2)/(e*(-f)^(3/2)+d*f*g
^(1/2))+1/4*(-a-b*ln(c*(e*x+d)^n))/f/g^(1/2)/((-f)^(1/2)-x*g^(1/2))+1/4*(a+
b*ln(c*(e*x+d)^n))/f/g^(1/2)/((-f)^(1/2)+x*g^(1/2))
```

Rubi [A] time = 0.39, antiderivative size = 503, normalized size of antiderivative = 1.00, number of steps used = 18, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.292, Rules used = {2409, 2395, 36, 31, 2394, 2393, 2391}

$$\frac{bn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{4(-f)^{3/2}\sqrt{g}}-\frac{bn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{4(-f)^{3/2}\sqrt{g}}-\frac{a+b\log\left(c(d+ex)^n\right)}{4f\sqrt{g}\left(\sqrt{-f}-\sqrt{g}x\right)}+\frac{a+b\log\left(c(d+ex)^n\right)}{4f\sqrt{g}\left(\sqrt{-f}+\sqrt{g}x\right)}-\frac{\log\left(\frac{e(\cdots}{d\cdots}\right)\cdots}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(f + g*x^2)^2,x]
```

```
[Out] (b*e*n*Log[d + e*x])/(4*f*(e*Sqrt[-f] + d*Sqrt[g])*Sqrt[g]) + (b*e*n*Log[d
+ e*x])/(4*(e*(-f)^(3/2) + d*f*Sqrt[g])*Sqrt[g]) - (a + b*Log[c*(d + e*x)^n
])/(4*f*Sqrt[g]*(Sqrt[-f] - Sqrt[g]*x)) + (a + b*Log[c*(d + e*x)^n])/(4*f*S
qrt[g]*(Sqrt[-f] + Sqrt[g]*x)) - (b*e*n*Log[Sqrt[-f] - Sqrt[g]*x])/(4*f*(e*
Sqrt[-f] + d*Sqrt[g])*Sqrt[g]) - ((a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-
f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(4*(-f)^(3/2)*Sqrt[g]) - (b*e*n
*Log[Sqrt[-f] + Sqrt[g]*x])/(4*(e*(-f)^(3/2) + d*f*Sqrt[g])*Sqrt[g]) + ((a
+ b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt
[g])])/(4*(-f)^(3/2)*Sqrt[g]) + (b*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sq
rt[-f] - d*Sqrt[g]))])/(4*(-f)^(3/2)*Sqrt[g]) - (b*n*PolyLog[2, (Sqrt[g]*(d
 + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(4*(-f)^(3/2)*Sqrt[g])
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rubi steps

$$\int \frac{a+b\log\left(c(d+ex)^n\right)}{\left(f+gx^2\right)^2}\,dx = \int \left(-\frac{g\left(a+b\log\left(c(d+ex)^n\right)\right)}{4f\left(\sqrt{-f}\sqrt{g}-gx\right)^2}-\frac{g\left(a+b\log\left(c(d+ex)^n\right)\right)}{4f\left(\sqrt{-f}\sqrt{g}+gx\right)^2}-\frac{g\left(a+b\log\left(c(d+\right.\right.}{2f\left(-fg-g^2\right.}$$

$$= -\frac{g\int \frac{a+b\log(c(d+ex)^n)}{\left(\sqrt{-f}\sqrt{g}-gx\right)^2}\,dx}{4f}-\frac{g\int \frac{a+b\log(c(d+ex)^n)}{\left(\sqrt{-f}\sqrt{g}+gx\right)^2}\,dx}{4f}-\frac{g\int \frac{a+b\log(c(d+ex)^n)}{-fg-g^2x^2}\,dx}{2f}$$

$$= -\frac{a+b\log\left(c(d+ex)^n\right)}{4f\sqrt{g}\left(\sqrt{-f}-\sqrt{g}\,x\right)}+\frac{a+b\log\left(c(d+ex)^n\right)}{4f\sqrt{g}\left(\sqrt{-f}+\sqrt{g}\,x\right)}-\frac{g\int\left(-\frac{\sqrt{-f}\left(a+b\log(c(d+ex)^n)\right)}{2fg\left(\sqrt{-f}-\sqrt{g}\,x\right)}-\right.}{2f}$$

$$= -\frac{a+b\log\left(c(d+ex)^n\right)}{4f\sqrt{g}\left(\sqrt{-f}-\sqrt{g}\,x\right)}+\frac{a+b\log\left(c(d+ex)^n\right)}{4f\sqrt{g}\left(\sqrt{-f}+\sqrt{g}\,x\right)}+\frac{\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{-f}-\sqrt{g}\,x}\,dx}{4(-f)^{3/2}}+\frac{\int \frac{a+b}{\sqrt{}}}{4}$$

$$= \frac{ben\log(d+ex)}{4f\left(e\sqrt{-f}+d\sqrt{g}\right)\sqrt{g}}+\frac{ben\log(d+ex)}{4\left(e(-f)^{3/2}+df\sqrt{g}\right)\sqrt{g}}-\frac{a+b\log\left(c(d+ex)^n\right)}{4f\sqrt{g}\left(\sqrt{-f}-\sqrt{g}\,x\right)}+\frac{a}{4}$$

$$= \frac{ben\log(d+ex)}{4f\left(e\sqrt{-f}+d\sqrt{g}\right)\sqrt{g}}+\frac{ben\log(d+ex)}{4\left(e(-f)^{3/2}+df\sqrt{g}\right)\sqrt{g}}-\frac{a+b\log\left(c(d+ex)^n\right)}{4f\sqrt{g}\left(\sqrt{-f}-\sqrt{g}\,x\right)}+\frac{a}{4}$$

$$= \frac{ben\log(d+ex)}{4f\left(e\sqrt{-f}+d\sqrt{g}\right)\sqrt{g}}+\frac{ben\log(d+ex)}{4\left(e(-f)^{3/2}+df\sqrt{g}\right)\sqrt{g}}-\frac{a+b\log\left(c(d+ex)^n\right)}{4f\sqrt{g}\left(\sqrt{-f}-\sqrt{g}\,x\right)}+\frac{a}{4}$$

Mathematica [A] time = 1.06, size = 407, normalized size = 0.81

$$\frac{1}{4}\left(\frac{f\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{(-f)^{5/2}\sqrt{g}}+\frac{\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{(-f)^{3/2}\sqrt{g}}+\frac{a+b\log\left(c(d+ex\right.}{f\left(\sqrt{-f}\sqrt{g}+gx\right.}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(f + g*x^2)^2,x]
```

```
[Out] ((a + b*Log[c*(d + e*x)^n])/(f*(Sqrt[-f]*Sqrt[g] + g*x)) + (a + b*Log[c*(d
+ e*x)^n])/((-f)^(3/2)*Sqrt[g] + f*g*x) + (b*e*n*(Log[d + e*x] - Log[Sqrt[-
f] - Sqrt[g]*x]))/(e*Sqrt[-f]*f*Sqrt[g] + d*f*g) + (f*(a + b*Log[c*(d + e*x
)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/((-f)^(5/2)
*Sqrt[g]) + (b*e*n*(Log[d + e*x] - Log[Sqrt[-f] + Sqrt[g]*x]))/(e*(-f)^(3/2
)*Sqrt[g] + d*f*g) + ((a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]
*x))/(e*Sqrt[-f] - d*Sqrt[g])])/((-f)^(3/2)*Sqrt[g]) + (b*n*PolyLog[2, -((S
qrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/((-f)^(3/2)*Sqrt[g]) + (b*f*n
*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/((-f)^(5/2)*Sqrt
[g]))/4
```

fricas [F] time = 0.42, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(\frac{b\log\left((ex+d)^n c\right)+a}{g^2x^4+2fgx^2+f^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x^2+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b*log((e*x + d)^n*c) + a)/(g^2*x^4 + 2*f*g*x^2 + f^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{b\log\left((ex+d)^n c\right)+a}{\left(gx^2+f\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x^2+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)/(g*x^2 + f)^2, x)
```

maple [C] time = 0.43, size = 1666, normalized size = 3.31

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)/(g*x^2+f)^2,x)
```

```
[Out] 1/2*b*ln(c)*x/f/(g*x^2+f)+1/2*b*ln(c)/f/(f*g)^(1/2)*arctan(1/(f*g)^(1/2)*g*
x)+1/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f/(f*g)^(1/2)*arctan(1/(f*g)^
(1/2)*g*x)+1/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x/f/(g*x^2+f)+1/4*I*b
*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f/(f*g)^(1/2)*arctan(1/(f*g)^(1
/2)*g*x)+1/2*a*x/f/(g*x^2+f)+1/2*a/f/(f*g)^(1/2)*arctan(1/(f*g)^(1/2)*g*x)+
1/4*b*e^2*n*ln(e*x+d)/f/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*g)^(1/2)*ln((d*
g+(-f*g)^(1/2)*e-(e*x+d)*g)/(d*g+(-f*g)^(1/2)*e))*d^2*g^2*x^2-1/4*b*e^2*n*l
n(e*x+d)/f/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*g)^(1/2)*ln((-d*g+(-f*g)^(1/
2)*e+(e*x+d)*g)/(-d*g+(-f*g)^(1/2)*e))*d^2*g^2*x^2+1/2*b/f/(f*g)^(1/2)*arct
```

```
an(1/2*(-2*d*g+2*(e*x+d)*g)/(f*g)^(1/2)/e)*ln((e*x+d)^n)+1/4*I*b*Pi*csgn(I*
(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*x/f/(g*x^2+f)+1/4*b*n/f/(-f*g)^(1/2)*dilog
((d*g+(-f*g)^(1/2)*e-(e*x+d)*g)/(d*g+(-f*g)^(1/2)*e))-1/4*b*e^4*n*ln(e*x+d)
/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*g)^(1/2)*ln((-d*g+(-f*g)^(1/2)*e+(e*x+
d)*g)/(-d*g+(-f*g)^(1/2)*e))*g*x^2+1/4*b*e^4*n*ln(e*x+d)/(d^2*g+e^2*f)/(e^2
*g*x^2+e^2*f)/(-f*g)^(1/2)*ln((d*g+(-f*g)^(1/2)*e-(e*x+d)*g)/(d*g+(-f*g)^(1
/2)*e))*g*x^2+1/4*b*e^2*n*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*g)^
(1/2)*ln((d*g+(-f*g)^(1/2)*e-(e*x+d)*g)/(d*g+(-f*g)^(1/2)*e))*g*d^2-1/4*b*e
^2*n*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*g)^(1/2)*ln((-d*g+(-f*g)
^(1/2)*e+(e*x+d)*g)/(-d*g+(-f*g)^(1/2)*e))*g*d^2-1/4*b*n/f/(-f*g)^(1/2)*dil
og((-d*g+(-f*g)^(1/2)*e+(e*x+d)*g)/(-d*g+(-f*g)^(1/2)*e))+1/2*b*e^4*n*ln(e*
x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)*x-1/4*b*e*n/f/(d^2*g+e^2*f)*d*ln(d^2*g
+e^2*f-2*(e*x+d)*d*g+(e*x+d)^2*g)+1/2*b*e^3*n*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*
g*x^2+e^2*f)*d-1/2*b*e^2/f/(e^2*g*x^2+e^2*f)*x*n*ln(e*x+d)-1/2*b*e^2*n/(d^2
*g+e^2*f)/(f*g)^(1/2)*arctan(1/2*(-2*d*g+2*(e*x+d)*g)/(f*g)^(1/2)/e)-1/2*b/
f/(f*g)^(1/2)*arctan(1/2*(-2*d*g+2*(e*x+d)*g)/(f*g)^(1/2)/e)*n*ln(e*x+d)-1/
4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f/(f*g)^(1/2)*arctan(1/(f*g)^(1/2)*g*x)+1/2*
b*e^2/f/(e^2*g*x^2+e^2*f)*x*ln((e*x+d)^n)-1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+
d)^n)*csgn(I*c*(e*x+d)^n)*x/f/(g*x^2+f)-1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)
^n)*csgn(I*c*(e*x+d)^n)/f/(f*g)^(1/2)*arctan(1/(f*g)^(1/2)*g*x)+1/2*b*e^3*n
*ln(e*x+d)/f/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)*d*g*x^2+1/2*b*e^2*n*ln(e*x+d)/
f/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)*d^2*g*x-1/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*
x/f/(g*x^2+f)+1/4*b*e^4*n*ln(e*x+d)*f/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*g
)^(1/2)*ln((d*g+(-f*g)^(1/2)*e-(e*x+d)*g)/(d*g+(-f*g)^(1/2)*e))-1/4*b*e^4*n
*ln(e*x+d)*f/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*g)^(1/2)*ln((-d*g+(-f*g)^(
1/2)*e+(e*x+d)*g)/(-d*g+(-f*g)^(1/2)*e))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{2}\,a\left(\frac{x}{fgx^2+f^2}+\frac{\arctan\left(\frac{gx}{\sqrt{fg}}\right)}{\sqrt{fg}\,f}\right)+b\int\frac{\log\left((ex+d)^n\right)+\log(c)}{g^2x^4+2\,fgx^2+f^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x^2+f)^2,x, algorithm="maxima")
[Out] 1/2*a*(x/(f*g*x^2 + f^2) + arctan(g*x/sqrt(f*g))/(sqrt(f*g)*f)) + b*integra
te((log((e*x + d)^n) + log(c))/(g^2*x^4 + 2*f*g*x^2 + f^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{a+b\,\ln\left(c\,(d+e\,x)^n\right)}{\left(g\,x^2+f\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/(f + g*x^2)^2,x)
[Out] int((a + b*log(c*(d + e*x)^n))/(f + g*x^2)^2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(g*x**2+f)**2,x)
[Out] Timed out
```

3.274 $\int \frac{a+b\log(c(d+ex)^n)}{x^2(f+gx^2)^2} dx$

Optimal. Leaf size=560

$$\frac{\sqrt{g}\left(a+b\log\left(c(d+ex)^n\right)\right)}{4f^2\left(\sqrt{-f}-\sqrt{g}\,x\right)}-\frac{\sqrt{g}\left(a+b\log\left(c(d+ex)^n\right)\right)}{4f^2\left(\sqrt{-f}+\sqrt{g}\,x\right)}-\frac{a+b\log\left(c(d+ex)^n\right)}{f^2x}-\frac{3\sqrt{g}\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\,\mathrm{lo}\right.}{4(-f)^{5/2}}$$

```
[Out] b*e*n*ln(x)/d/f^2-b*e*n*ln(e*x+d)/d/f^2+(-a-b*ln(c*(e*x+d)^n))/f^2/x-3/4*(a
+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(1/2)))*g
^(1/2)/(-f)^(5/2)+3/4*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)+x*g^(1/2))/(e*
(-f)^(1/2)-d*g^(1/2)))*g^(1/2)/(-f)^(5/2)+3/4*b*n*polylog(2,-(e*x+d)*g^(1/2
)/(e*(-f)^(1/2)-d*g^(1/2)))*g^(1/2)/(-f)^(5/2)-3/4*b*n*polylog(2,(e*x+d)*g^
(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))*g^(1/2)/(-f)^(5/2)-1/4*b*e*n*ln(e*x+d)*g^(1
/2)/f^2/(e*(-f)^(1/2)+d*g^(1/2))+1/4*b*e*n*ln((-f)^(1/2)-x*g^(1/2))*g^(1/2)
/f^2/(e*(-f)^(1/2)+d*g^(1/2))-1/4*b*e*n*ln(e*x+d)*g^(1/2)/f/(e*(-f)^(3/2)+d
*f*g^(1/2))+1/4*b*e*n*ln((-f)^(1/2)+x*g^(1/2))*g^(1/2)/f/(e*(-f)^(3/2)+d*f*
g^(1/2))+1/4*(a+b*ln(c*(e*x+d)^n))*g^(1/2)/f^2/((-f)^(1/2)-x*g^(1/2))-1/4*(
a+b*ln(c*(e*x+d)^n))*g^(1/2)/f^2/((-f)^(1/2)+x*g^(1/2))
```

Rubi [A] time = 0.82, antiderivative size = 560, normalized size of antiderivative = 1.00, number of steps used = 32, number of rules used = 12, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.444, Rules used = {290, 325, 205, 2416, 2395, 36, 29, 31, 2409, 2394, 2393, 2391}

$$\frac{3b\sqrt{g}\,n\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{4(-f)^{5/2}}-\frac{3b\sqrt{g}\,n\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{4(-f)^{5/2}}+\frac{\sqrt{g}\left(a+b\log\left(c(d+ex)^n\right)\right)}{4f^2\left(\sqrt{-f}-\sqrt{g}\,x\right)}-\frac{\sqrt{g}\left(a+b\log\left(\right.\right.}{4f^2\left(\sqrt{-f}\right.}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(x^2*(f + g*x^2)^2),x]
```

```
[Out] (b*e*n*Log[x])/(d*f^2) - (b*e*n*Log[d + e*x])/(d*f^2) - (b*e*Sqrt[g]*n*Log[
d + e*x])/(4*f^2*(e*Sqrt[-f] + d*Sqrt[g])) - (b*e*Sqrt[g]*n*Log[d + e*x])/(
4*f*(e*(-f)^(3/2) + d*f*Sqrt[g])) - (a + b*Log[c*(d + e*x)^n])/(f^2*x) + (S
qrt[g]*(a + b*Log[c*(d + e*x)^n]))/(4*f^2*(Sqrt[-f] - Sqrt[g]*x)) - (Sqrt[g
]*(a + b*Log[c*(d + e*x)^n]))/(4*f^2*(Sqrt[-f] + Sqrt[g]*x)) + (b*e*Sqrt[g]
*n*Log[Sqrt[-f] - Sqrt[g]*x])/(4*f^2*(e*Sqrt[-f] + d*Sqrt[g])) - (3*Sqrt[g]
*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*
Sqrt[g])])/(4*(-f)^(5/2)) + (b*e*Sqrt[g]*n*Log[Sqrt[-f] + Sqrt[g]*x])/(4*f*
(e*(-f)^(3/2) + d*f*Sqrt[g])) + (3*Sqrt[g]*(a + b*Log[c*(d + e*x)^n])*Log[(
e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(4*(-f)^(5/2)) + (3*b*
Sqrt[g]*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(4*(
-f)^(5/2)) - (3*b*Sqrt[g]*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*
Sqrt[g])])/(4*(-f)^(5/2))
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 290

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> -Simp[((
c*x)^(m + 1)*(a + b*x^n)^(p + 1))/(a*c*n*(p + 1)), x] + Dist[(m + n*(p + 1)
 + 1)/(a*n*(p + 1)), Int[(c*x)^m*(a + b*x^n)^(p + 1), x], x] /; FreeQ[{a, b
, c, m}, x] && IGtQ[n, 0] && LtQ[p, -1] && IntBinomialQ[a, b, c, n, m, p, x
]
```

Rule 325

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[((c*
x)^(m + 1)*(a + b*x^n)^(p + 1))/(a*c*(m + 1)), x] - Dist[(b*(m + n*(p + 1)
+ 1))/(a*c^n*(m + 1)), Int[(c*x)^(m + n)*(a + b*x^n)^p, x], x] /; FreeQ[{a,
 b, c, p}, x] && IGtQ[n, 0] && LtQ[m, -1] && IntBinomialQ[a, b, c, n, m, p,
 x]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{a+b\log\left(c(d+ex)^n\right)}{x^2\left(f+gx^2\right)^2}\,dx = \int \left(\frac{a+b\log\left(c(d+ex)^n\right)}{f^2x^2} - \frac{g\left(a+b\log\left(c(d+ex)^n\right)\right)}{f\left(f+gx^2\right)^2} - \frac{g\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2\left(f+gx^2\right)}\right.$$

$$= \frac{\int \frac{a+b\log(c(d+ex)^n)}{x^2}\,dx}{f^2} - \frac{g\int \frac{a+b\log(c(d+ex)^n)}{f+gx^2}\,dx}{f^2} - \frac{g\int \frac{a+b\log(c(d+ex)^n)}{\left(f+gx^2\right)^2}\,dx}{f}$$

$$= -\frac{a+b\log\left(c(d+ex)^n\right)}{f^2x} - \frac{g\int \left(\frac{\sqrt{-f}\left(a+b\log(c(d+ex)^n)\right)}{2f\left(\sqrt{-f}-\sqrt{g}\,x\right)} + \frac{\sqrt{-f}\left(a+b\log(c(d+ex)^n)\right)}{2f\left(\sqrt{-f}+\sqrt{g}\,x\right)}\right)dx}{f^2} - \frac{g \ldots}{\ldots}$$

$$= -\frac{a+b\log\left(c(d+ex)^n\right)}{f^2x} + \frac{g\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{-f}-\sqrt{g}\,x}\,dx}{2(-f)^{5/2}} + \frac{g\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{-f}+\sqrt{g}\,x}\,dx}{2(-f)^{5/2}} + \frac{g^2\int \frac{a+b\ldots}{(\sqrt{\ldots}}}{\ldots}$$

$$= \frac{ben\log(x)}{df^2} - \frac{ben\log(d+ex)}{df^2} - \frac{a+b\log\left(c(d+ex)^n\right)}{f^2x} + \frac{\sqrt{g}\left(a+b\log\left(c(d+ex)^n\right)\right.}{4f^2\left(\sqrt{-f}-\sqrt{g}\,x\right)}$$

$$= \frac{ben\log(x)}{df^2} - \frac{ben\log(d+ex)}{df^2} - \frac{a+b\log\left(c(d+ex)^n\right)}{f^2x} + \frac{\sqrt{g}\left(a+b\log\left(c(d+ex)^n\right)\right.}{4f^2\left(\sqrt{-f}-\sqrt{g}\,x\right)}$$

$$= \frac{ben\log(x)}{df^2} - \frac{ben\log(d+ex)}{df^2} + \frac{be\sqrt{g}\,n\log(d+ex)}{4f^2\left(e\sqrt{-f}-d\sqrt{g}\right)} - \frac{be\sqrt{g}\,n\log(d+ex)}{4f^2\left(e\sqrt{-f}+d\sqrt{g}\right)} - \frac{a+\ldots}{\ldots}$$

$$= \frac{ben\log(x)}{df^2} - \frac{ben\log(d+ex)}{df^2} + \frac{be\sqrt{g}\,n\log(d+ex)}{4f^2\left(e\sqrt{-f}-d\sqrt{g}\right)} - \frac{be\sqrt{g}\,n\log(d+ex)}{4f^2\left(e\sqrt{-f}+d\sqrt{g}\right)} - \frac{a+\ldots}{\ldots}$$

$$= \frac{ben\log(x)}{df^2} - \frac{ben\log(d+ex)}{df^2} + \frac{be\sqrt{g}\,n\log(d+ex)}{4f^2\left(e\sqrt{-f}-d\sqrt{g}\right)} - \frac{be\sqrt{g}\,n\log(d+ex)}{4f^2\left(e\sqrt{-f}+d\sqrt{g}\right)} - \frac{a+\ldots}{\ldots}$$

Mathematica [A] time = 0.82, size = 476, normalized size = 0.85

$$\frac{1}{4}\left(\frac{\sqrt{g}\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2\left(\sqrt{-f}-\sqrt{g}\,x\right)} - \frac{\sqrt{g}\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2\left(\sqrt{-f}+\sqrt{g}\,x\right)} - \frac{4\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2x} - \frac{3\sqrt{g}\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)\ldots}{(\ldots}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(x^2*(f + g*x^2)^2),x]
```

```
[Out] ((4*b*e*n*(Log[x] - Log[d + e*x]))/(d*f^2) - (4*(a + b*Log[c*(d + e*x)^n]))
/(f^2*x) + (Sqrt[g]*(a + b*Log[c*(d + e*x)^n]))/(f^2*(Sqrt[-f] - Sqrt[g]*x)
) - (Sqrt[g]*(a + b*Log[c*(d + e*x)^n]))/(f^2*(Sqrt[-f] + Sqrt[g]*x)) - (b*
e*Sqrt[g]*n*(Log[d + e*x] - Log[Sqrt[-f] - Sqrt[g]*x]))/(f^2*(e*Sqrt[-f] +
d*Sqrt[g])) - (3*Sqrt[g]*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt
[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(-f)^(5/2) + (b*e*Sqrt[g]*n*(Log[d + e*x
] - Log[Sqrt[-f] + Sqrt[g]*x]))/(f^2*(e*Sqrt[-f] - d*Sqrt[g])) + (3*Sqrt[g]
*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*
Sqrt[g])])/(-f)^(5/2) + (3*b*Sqrt[g]*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*
Sqrt[-f] - d*Sqrt[g]))])/(-f)^(5/2) - (3*b*Sqrt[g]*n*PolyLog[2, (Sqrt[g]*(d
 + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(-f)^(5/2))/4
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b\log\left((ex+d)^{n}c\right)+a}{g^{2}x^{6}+2\,fgx^{4}+f^{2}x^{2}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^2/(g*x^2+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b*log((e*x + d)^n*c) + a)/(g^2*x^6 + 2*f*g*x^4 + f^2*x^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{b\log\left((ex+d)^{n}c\right)+a}{\left(gx^{2}+f\right)^{2}x^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^2/(g*x^2+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)/((g*x^2 + f)^2*x^2), x)
```

maple [C] time = 0.54, size = 2032, normalized size = 3.63

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)/x^2/(g*x^2+f)^2,x)
```

```
[Out] 1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f^2*g*x/(g*x^2+f
)-b/f^2/x*ln((e*x+d)^n)-b/f^2/x*ln(c)+1/4*b*e^2*n/f^2*g^3*ln(e*x+d)/(d^2*g+
e^2*f)/(e^2*g*x^2+e^2*f)/(-f*g)^(1/2)*ln((-d*g+(-f*g)^(1/2)*e+(e*x+d)*g)/(-
d*g+(-f*g)^(1/2)*e))*d^2*x^2-1/4*b*e^2*n/f^2*g^3*ln(e*x+d)/(d^2*g+e^2*f)/(e
^2*g*x^2+e^2*f)/(-f*g)^(1/2)*ln((d*g+(-f*g)^(1/2)*e-(e*x+d)*g)/(d*g+(-f*g)^
(1/2)*e))*d^2*x^2+1/2*b*n/f^2*g*ln(e*x+d)/(-f*g)^(1/2)*ln((-d*g+(-f*g)^(1/2
)*e+(e*x+d)*g)/(-d*g+(-f*g)^(1/2)*e))-1/2*b*n/f^2*g*ln(e*x+d)/(-f*g)^(1/2)*
ln((d*g+(-f*g)^(1/2)*e-(e*x+d)*g)/(d*g+(-f*g)^(1/2)*e))+3/2*b/f^2*g/(f*g)^(
1/2)*arctan(1/2*(-2*d*g+2*(e*x+d)*g)/(f*g)^(1/2)/e)*n*ln(e*x+d)+1/2*b/f^2*g
/(e^2*g*x^2+e^2*f)*x*e^2*n*ln(e*x+d)+1/4*b*e*n/f^2*g/(d^2*g+e^2*f)*d*ln(d^2
*g+e^2*f-2*(e*x+d)*d*g+(e*x+d)^2*g)+1/2*b*e^2*n/f*g/(d^2*g+e^2*f)/(f*g)^(1/
2)*arctan(1/2*(-2*d*g+2*(e*x+d)*g)/(f*g)^(1/2)/e)-a/f^2/x-b*e*n*ln(e*x+d)/d
/f^2-1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f^2/x-1/2*I*b*Pi*cs
gn(I*c)*csgn(I*c*(e*x+d)^n)^2/f^2/x+3/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*
csgn(I*c*(e*x+d)^n)/f^2*g/(f*g)^(1/2)*arctan(1/(f*g)^(1/2)*g*x)+3/4*I*b*Pi*
csgn(I*c*(e*x+d)^n)^3/f^2*g/(f*g)^(1/2)*arctan(1/(f*g)^(1/2)*g*x)+1/2*I*b*P
i*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f^2/x+1/4*I*b*Pi*csgn(I*c
*(e*x+d)^n)^3/f^2*g*x/(g*x^2+f)-3/2*b/f^2*g/(f*g)^(1/2)*arctan(1/2*(-2*d*g+
2*(e*x+d)*g)/(f*g)^(1/2)/e)*ln((e*x+d)^n)-1/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*
```

```
x+d)^n)^2/f^2*g*x/(g*x^2+f)-1/2*b*ln(c)/f^2*g*x/(g*x^2+f)-3/2*b*ln(c)/f^2*g
/(f*g)^(1/2)*arctan(1/(f*g)^(1/2)*g*x)-1/2*a/f^2*g*x/(g*x^2+f)-3/2*a/f^2*g/
(f*g)^(1/2)*arctan(1/(f*g)^(1/2)*g*x)-3/4*b*n/f^2*g/(-f*g)^(1/2)*dilog((d*g
+(-f*g)^(1/2)*e-(e*x+d)*g)/(d*g+(-f*g)^(1/2)*e))+3/4*b*n/f^2*g/(-f*g)^(1/2)
*dilog((-d*g+(-f*g)^(1/2)*e+(e*x+d)*g)/(-d*g+(-f*g)^(1/2)*e))+b*e*n/f^2/d*l
n(e*x)-1/2*b*e^4*n/f*g*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)*x+1/4*b*e^
4*n*g*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*g)^(1/2)*ln((-d*g+(-f*g
)^(1/2)*e+(e*x+d)*g)/(-d*g+(-f*g)^(1/2)*e))-1/4*b*e^4*n*g*ln(e*x+d)/(d^2*g+
e^2*f)/(e^2*g*x^2+e^2*f)/(-f*g)^(1/2)*ln((d*g+(-f*g)^(1/2)*e-(e*x+d)*g)/(d*
g+(-f*g)^(1/2)*e))-1/2*b*e^3*n/f*g*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f
)*d+1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f^2/x+1/4*b*e^4*n/f*g^2*ln(e*x+d)/(d^2
*g+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*g)^(1/2)*ln((-d*g+(-f*g)^(1/2)*e+(e*x+d)*g)
/(-d*g+(-f*g)^(1/2)*e))*x^2-1/4*b*e^4*n/f*g^2*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*
g*x^2+e^2*f)/(-f*g)^(1/2)*ln((d*g+(-f*g)^(1/2)*e-(e*x+d)*g)/(d*g+(-f*g)^(1/
2)*e))*x^2+1/4*b*e^2*n/f*g^2*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*
g)^(1/2)*ln((-d*g+(-f*g)^(1/2)*e+(e*x+d)*g)/(-d*g+(-f*g)^(1/2)*e))*d^2-1/4*
b*e^2*n/f*g^2*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*g)^(1/2)*ln((d*
g+(-f*g)^(1/2)*e-(e*x+d)*g)/(d*g+(-f*g)^(1/2)*e))*d^2-3/4*I*b*Pi*csgn(I*c)*
csgn(I*c*(e*x+d)^n)^2/f^2*g/(f*g)^(1/2)*arctan(1/(f*g)^(1/2)*g*x)-1/2*b*n/f
^2*g^2*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)*d^2*x*e^2-1/2*b*n/f^2*g^2*
ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)*d*x^2*e^3-1/4*I*b*Pi*csgn(I*(e*x+
d)^n)*csgn(I*c*(e*x+d)^n)^2/f^2*g*x/(g*x^2+f)-3/4*I*b*Pi*csgn(I*(e*x+d)^n)*
csgn(I*c*(e*x+d)^n)^2/f^2*g/(f*g)^(1/2)*arctan(1/(f*g)^(1/2)*g*x)-1/2*b/f^2
*g/(e^2*g*x^2+e^2*f)*x*e^2*ln((e*x+d)^n)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{2}a\left(\frac{3gx^2+2f}{f^2gx^3+f^3x}+\frac{3g\arctan\left(\frac{gx}{\sqrt{fg}}\right)}{\sqrt{fg}\,f^2}\right)+b\int\frac{\log\left((ex+d)^n\right)+\log(c)}{g^2x^6+2fgx^4+f^2x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^2/(g*x^2+f)^2,x, algorithm="maxima")
[Out] -1/2*a*((3*g*x^2 + 2*f)/(f^2*g*x^3 + f^3*x) + 3*g*arctan(g*x/sqrt(f*g))/(sq
rt(f*g)*f^2)) + b*integrate((log((e*x + d)^n) + log(c))/(g^2*x^6 + 2*f*g*x^
4 + f^2*x^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{a+b\ln\left(c\,(d+e\,x)^n\right)}{x^2\left(g\,x^2+f\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/(x^2*(f + g*x^2)^2),x)
[Out] int((a + b*log(c*(d + e*x)^n))/(x^2*(f + g*x^2)^2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/x**2/(g*x**2+f)**2,x)
[Out] Timed out
```

3.275 $\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{2+gx^2}}\,dx$

Optimal. Leaf size=326

$$\frac{\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{2}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{\sqrt{g}}-\frac{bn\text{Li}_2\left(-\frac{\sqrt{2}\,ee^{\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{2}}\right)}}{d\sqrt{g}-\sqrt{gd^2+2e^2}}\right)}{\sqrt{g}}-\frac{bn\text{Li}_2\left(-\frac{\sqrt{2}\,ee^{\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{2}}\right)}}{\sqrt{g}\,d+\sqrt{gd^2+2e^2}}\right)}{\sqrt{g}}-\frac{bn\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{2}}\right)\text{lo}}{}$$

```
[Out] 1/2*b*n*arcsinh(1/2*x*g^(1/2)*2^(1/2))^2/g^(1/2)+arcsinh(1/2*x*g^(1/2)*2^(1
/2))*(a+b*ln(c*(e*x+d)^n))/g^(1/2)-b*n*arcsinh(1/2*x*g^(1/2)*2^(1/2))*ln(1+
e*(1/2*x*g^(1/2)*2^(1/2)+1/2*(2*g*x^2+4)^(1/2))*2^(1/2)/(d*g^(1/2)-(d^2*g+2
*e^2)^(1/2)))/g^(1/2)-b*n*arcsinh(1/2*x*g^(1/2)*2^(1/2))*ln(1+e*(1/2*x*g^(1
/2)*2^(1/2)+1/2*(2*g*x^2+4)^(1/2))*2^(1/2)/(d*g^(1/2)+(d^2*g+2*e^2)^(1/2)))
/g^(1/2)-b*n*polylog(2,-e*(1/2*x*g^(1/2)*2^(1/2)+1/2*(2*g*x^2+4)^(1/2))*2^(
1/2)/(d*g^(1/2)-(d^2*g+2*e^2)^(1/2)))/g^(1/2)-b*n*polylog(2,-e*(1/2*x*g^(1/
2)*2^(1/2)+1/2*(2*g*x^2+4)^(1/2))*2^(1/2)/(d*g^(1/2)+(d^2*g+2*e^2)^(1/2)))/
g^(1/2)
```

Rubi [A] time = 0.42, antiderivative size = 326, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 8, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308, Rules used = {215, 2404, 12, 5799, 5561, 2190, 2279, 2391}

$$-\frac{bn\text{PolyLog}\left(2,-\frac{\sqrt{2}\,ee^{\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{2}}\right)}}{d\sqrt{g}-\sqrt{d^2g+2e^2}}\right)}{\sqrt{g}}-\frac{bn\text{PolyLog}\left(2,-\frac{\sqrt{2}\,ee^{\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{2}}\right)}}{\sqrt{d^2g+2e^2}+d\sqrt{g}}\right)}{\sqrt{g}}+\frac{\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{2}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{\sqrt{g}}-\frac{b}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/Sqrt[2 + g*x^2],x]
```

```
[Out] (b*n*ArcSinh[(Sqrt[g]*x)/Sqrt[2]]^2)/(2*Sqrt[g]) - (b*n*ArcSinh[(Sqrt[g]*x)
/Sqrt[2]]*Log[1 + (Sqrt[2]*e*E^ArcSinh[(Sqrt[g]*x)/Sqrt[2]])/(d*Sqrt[g] - S
qrt[2*e^2 + d^2*g])])/Sqrt[g] - (b*n*ArcSinh[(Sqrt[g]*x)/Sqrt[2]]*Log[1 + (
Sqrt[2]*e*E^ArcSinh[(Sqrt[g]*x)/Sqrt[2]])/(d*Sqrt[g] + Sqrt[2*e^2 + d^2*g])
])/Sqrt[g] + (ArcSinh[(Sqrt[g]*x)/Sqrt[2]]*(a + b*Log[c*(d + e*x)^n]))/Sqrt
[g] - (b*n*PolyLog[2, -((Sqrt[2]*e*E^ArcSinh[(Sqrt[g]*x)/Sqrt[2]])/(d*Sqrt[
g] - Sqrt[2*e^2 + d^2*g]))])/Sqrt[g] - (b*n*PolyLog[2, -((Sqrt[2]*e*E^ArcSi
nh[(Sqrt[g]*x)/Sqrt[2]])/(d*Sqrt[g] + Sqrt[2*e^2 + d^2*g]))])/Sqrt[g]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2404

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/Sqrt[(f_) + (g_.)*
(x_)^2], x_Symbol] :> With[{u = IntHide[1/Sqrt[f + g*x^2], x]}, Simp[u*(a +
 b*Log[c*(d + e*x)^n]), x] - Dist[b*e*n, Int[SimplifyIntegrand[u/(d + e*x),
 x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && GtQ[f, 0]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5799

```
Int[((a_.) + ArcSinh[(c_.)*(x_)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbo
l] :> Subst[Int[((a + b*x)^n*Cosh[x])/(c*d + e*Sinh[x]), x], x, ArcSinh[c*x
]] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{a+b\log\left(c(d+ex)^n\right)}{\sqrt{2+gx^2}}\,dx = \frac{\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{2}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{\sqrt{g}} - (ben)\int \frac{\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{2}}\right)}{\sqrt{g}\,(d+ex)}\,dx$$

$$= \frac{\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{2}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{\sqrt{g}} - \frac{(ben)\int \frac{\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{2}}\right)}{d+ex}\,dx}{\sqrt{g}}$$

$$= \frac{\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{2}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{\sqrt{g}} - \frac{(ben)\,\mathrm{Subst}\left(\int \frac{x\cosh(x)}{\frac{d\sqrt{g}}{\sqrt{2}}+e\sinh(x)}\,dx, x, \sinh^{-}\right.}{\sqrt{g}}$$

$$= \frac{bn\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{2}}\right)^2}{2\sqrt{g}} + \frac{\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{2}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{\sqrt{g}} - \frac{(ben)\,\mathrm{Subst}\left(\int \frac{}{ee^x\ldots}\right.}{}$$

$$= \frac{bn\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{2}}\right)^2}{2\sqrt{g}} - \frac{bn\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{2}}\right)\log\left(1+\frac{\sqrt{2}\,ee^{\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{2}}\right)}}{d\sqrt{g}-\sqrt{2e^2+d^2g}}\right)}{\sqrt{g}} - \frac{bn\sinh^{-1}\left(\frac{\sqrt{g}}{\sqrt{2}}\right.}{}$$

$$= \frac{bn\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{2}}\right)^2}{2\sqrt{g}} - \frac{bn\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{2}}\right)\log\left(1+\frac{\sqrt{2}\,ee^{\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{2}}\right)}}{d\sqrt{g}-\sqrt{2e^2+d^2g}}\right)}{\sqrt{g}} - \frac{bn\sinh^{-1}\left(\frac{\sqrt{g}}{\sqrt{2}}\right.}{}$$

$$= \frac{bn\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{2}}\right)^2}{2\sqrt{g}} - \frac{bn\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{2}}\right)\log\left(1+\frac{\sqrt{2}\,ee^{\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{2}}\right)}}{d\sqrt{g}-\sqrt{2e^2+d^2g}}\right)}{\sqrt{g}} - \frac{bn\sinh^{-1}\left(\frac{\sqrt{g}}{\sqrt{2}}\right.}{}$$

Mathematica [A] time = 0.25, size = 275, normalized size = 0.84

$$\frac{\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{2}}\right)\left(2a+2b\log\left(c(d+ex)^n\right)-2bn\log\left(\frac{\sqrt{2}\,ee^{\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{2}}\right)}}{d\sqrt{g}-\sqrt{d^2g+2e^2}}+1\right)-2bn\log\left(\frac{\sqrt{2}\,ee^{\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{2}}\right)}}{\sqrt{d^2g+2e^2}+d\sqrt{g}}+1\right)+bn\sin\ldots\right.}{2\sqrt{g}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/Sqrt[2 + g*x^2],x]
```

```
[Out] (ArcSinh[(Sqrt[g]*x)/Sqrt[2]]*(2*a + b*n*ArcSinh[(Sqrt[g]*x)/Sqrt[2]] - 2*b
*n*Log[1 + (Sqrt[2]*e*E^ArcSinh[(Sqrt[g]*x)/Sqrt[2]])/(d*Sqrt[g] - Sqrt[2*e
^2 + d^2*g])] - 2*b*n*Log[1 + (Sqrt[2]*e*E^ArcSinh[(Sqrt[g]*x)/Sqrt[2]])/(d
*Sqrt[g] + Sqrt[2*e^2 + d^2*g])] + 2*b*Log[c*(d + e*x)^n]) - 2*b*n*PolyLog[
2, (Sqrt[2]*e*E^ArcSinh[(Sqrt[g]*x)/Sqrt[2]])/(-(d*Sqrt[g]) + Sqrt[2*e^2 +
d^2*g])] - 2*b*n*PolyLog[2, -((Sqrt[2]*e*E^ArcSinh[(Sqrt[g]*x)/Sqrt[2]])/(d
*Sqrt[g] + Sqrt[2*e^2 + d^2*g]))])/(2*Sqrt[g])
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\sqrt{gx^2+2}\,b\log\left((ex+d)^n c\right)+\sqrt{gx^2+2}\,a}{gx^2+2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x^2+2)^(1/2),x, algorithm="fricas")
```

```
[Out] integral((sqrt(g*x^2 + 2)*b*log((e*x + d)^n*c) + sqrt(g*x^2 + 2)*a)/(g*x^2
+ 2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b\log\left((ex+d)^n c\right)+a}{\sqrt{gx^2+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x^2+2)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)/sqrt(g*x^2 + 2), x)
```

maple [F] time = 0.45, size = 0, normalized size = 0.00

$$\int \frac{b\ln\left(c\,(ex+d)^n\right)+a}{\sqrt{g\,x^2+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)/(g*x^2+2)^(1/2),x)
```

```
[Out] int((b*ln(c*(e*x+d)^n)+a)/(g*x^2+2)^(1/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$b\int \frac{\log\left((ex+d)^n\right)+\log(c)}{\sqrt{gx^2+2}}\,dx+\frac{a\,\mathrm{arsinh}\left(\frac{1}{2}\,\sqrt{2}\,\sqrt{g}\,x\right)}{\sqrt{g}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x^2+2)^(1/2),x, algorithm="maxima")
```

```
[Out] b*integrate((log((e*x + d)^n) + log(c))/sqrt(g*x^2 + 2), x) + a*arcsinh(1/2
*sqrt(2)*sqrt(g)*x)/sqrt(g)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,\ln\left(c\,(d+e\,x)^n\right)}{\sqrt{g\,x^2+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/(g*x^2 + 2)^(1/2),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))/(g*x^2 + 2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a+b\log\left(c\,(d+ex)^n\right)}{\sqrt{gx^2+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(g*x**2+2)**(1/2),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))/sqrt(g*x**2 + 2), x)
```

3.276 $\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{f+gx^2}}\,dx$

Optimal. Leaf size=506

$$\frac{\sqrt{f}\sqrt{\frac{gx^2}{f}+1}\,\sinh^{-1}\left(\frac{\sqrt{g}x}{\sqrt{f}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{\sqrt{g}\sqrt{f+gx^2}}-\frac{b\sqrt{f}n\sqrt{\frac{gx^2}{f}+1}\,\mathrm{Li}_2\left(-\frac{ee^{\sinh^{-1}\left(\frac{\sqrt{g}x}{\sqrt{f}}\right)}\sqrt{f}}{d\sqrt{g}-\sqrt{gd^2+e^2f}}\right)}{\sqrt{g}\sqrt{f+gx^2}}-\frac{b\sqrt{f}n\sqrt{\frac{gx^2}{f}+1}\,\mathrm{L}}{\sqrt{g}\,\sqrt{}}$$

```
[Out] 1/2*b*n*arcsinh(x*g^(1/2)/f^(1/2))^2*f^(1/2)*(1+g*x^2/f)^(1/2)/g^(1/2)/(g*x
^2+f)^(1/2)+arcsinh(x*g^(1/2)/f^(1/2))*(a+b*ln(c*(e*x+d)^n))*f^(1/2)*(1+g*x
^2/f)^(1/2)/g^(1/2)/(g*x^2+f)^(1/2)-b*n*arcsinh(x*g^(1/2)/f^(1/2))*ln(1+e*(
x*g^(1/2)/f^(1/2)+(1+g*x^2/f)^(1/2))*f^(1/2)/(d*g^(1/2)-(d^2*g+e^2*f)^(1/2)
))*f^(1/2)*(1+g*x^2/f)^(1/2)/g^(1/2)/(g*x^2+f)^(1/2)-b*n*arcsinh(x*g^(1/2)/
f^(1/2))*ln(1+e*(x*g^(1/2)/f^(1/2)+(1+g*x^2/f)^(1/2))*f^(1/2)/(d*g^(1/2)+(d
^2*g+e^2*f)^(1/2)))*f^(1/2)*(1+g*x^2/f)^(1/2)/g^(1/2)/(g*x^2+f)^(1/2)-b*n*p
olylog(2,-e*(x*g^(1/2)/f^(1/2)+(1+g*x^2/f)^(1/2))*f^(1/2)/(d*g^(1/2)-(d^2*g
+e^2*f)^(1/2)))*f^(1/2)*(1+g*x^2/f)^(1/2)/g^(1/2)/(g*x^2+f)^(1/2)-b*n*polyl
og(2,-e*(x*g^(1/2)/f^(1/2)+(1+g*x^2/f)^(1/2))*f^(1/2)/(d*g^(1/2)+(d^2*g+e^2
*f)^(1/2)))*f^(1/2)*(1+g*x^2/f)^(1/2)/g^(1/2)/(g*x^2+f)^(1/2)
```

Rubi [A] time = 0.56, antiderivative size = 506, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 9, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.346, Rules used = {2406, 215, 2404, 12, 5799, 5561, 2190, 2279, 2391}

$$-\frac{b\sqrt{f}n\sqrt{\frac{gx^2}{f}+1}\,\text{PolyLog}\left(2,-\frac{e\sqrt{f}e^{\sinh^{-1}\left(\frac{\sqrt{g}x}{\sqrt{f}}\right)}}{d\sqrt{g}-\sqrt{d^2g+e^2f}}\right)}{\sqrt{g}\sqrt{f+gx^2}}-\frac{b\sqrt{f}n\sqrt{\frac{gx^2}{f}+1}\,\text{PolyLog}\left(2,-\frac{e\sqrt{f}e^{\sinh^{-1}\left(\frac{\sqrt{g}x}{\sqrt{f}}\right)}}{\sqrt{d^2g+e^2f}+d\sqrt{g}}\right)}{\sqrt{g}\sqrt{f+gx^2}}+\frac{\sqrt{f}\sqrt{\frac{gx^2}{f}+}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/Sqrt[f + g*x^2],x]
```

```
[Out] (b*Sqrt[f]*n*Sqrt[1 + (g*x^2)/f]*ArcSinh[(Sqrt[g]*x)/Sqrt[f]]^2)/(2*Sqrt[g]
*Sqrt[f + g*x^2]) - (b*Sqrt[f]*n*Sqrt[1 + (g*x^2)/f]*ArcSinh[(Sqrt[g]*x)/Sq
rt[f]]*Log[1 + (e*E^ArcSinh[(Sqrt[g]*x)/Sqrt[f]]*Sqrt[f])/(d*Sqrt[g] - Sqrt
[e^2*f + d^2*g])]])/(Sqrt[g]*Sqrt[f + g*x^2]) - (b*Sqrt[f]*n*Sqrt[1 + (g*x^2
)/f]*ArcSinh[(Sqrt[g]*x)/Sqrt[f]]*Log[1 + (e*E^ArcSinh[(Sqrt[g]*x)/Sqrt[f]]
*Sqrt[f])/(d*Sqrt[g] + Sqrt[e^2*f + d^2*g])]])/(Sqrt[g]*Sqrt[f + g*x^2]) + (
Sqrt[f]*Sqrt[1 + (g*x^2)/f]*ArcSinh[(Sqrt[g]*x)/Sqrt[f]]*(a + b*Log[c*(d +
e*x)^n]))/(Sqrt[g]*Sqrt[f + g*x^2]) - (b*Sqrt[f]*n*Sqrt[1 + (g*x^2)/f]*Poly
Log[2, -((e*E^ArcSinh[(Sqrt[g]*x)/Sqrt[f]]*Sqrt[f])/(d*Sqrt[g] - Sqrt[e^2*f
 + d^2*g]))]])/(Sqrt[g]*Sqrt[f + g*x^2]) - (b*Sqrt[f]*n*Sqrt[1 + (g*x^2)/f]*
PolyLog[2, -((e*E^ArcSinh[(Sqrt[g]*x)/Sqrt[f]]*Sqrt[f])/(d*Sqrt[g] + Sqrt[e
^2*f + d^2*g]))]])/(Sqrt[g]*Sqrt[f + g*x^2])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] && !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2404

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/Sqrt[(f_) + (g_.)*
(x_)^2], x_Symbol] :> With[{u = IntHide[1/Sqrt[f + g*x^2], x]}, Simp[u*(a +
 b*Log[c*(d + e*x)^n]), x] - Dist[b*e*n, Int[SimplifyIntegrand[u/(d + e*x),
 x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && GtQ[f, 0]
```

Rule 2406

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/Sqrt[(f_) + (g_.)*
(x_)^2], x_Symbol] :> Dist[Sqrt[1 + (g*x^2)/f]/Sqrt[f + g*x^2], Int[(a + b*
Log[c*(d + e*x)^n])/Sqrt[1 + (g*x^2)/f], x], x] /; FreeQ[{a, b, c, d, e, f,
 g, n}, x] &&  !GtQ[f, 0]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5799

```
Int[((a_.) + ArcSinh[(c_.)*(x_)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbo
l] :> Subst[Int[((a + b*x)^n*Cosh[x])/(c*d + e*Sinh[x]), x], x, ArcSinh[c*x
]] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{f+gx^2}}\,dx = \frac{\sqrt{1+\frac{gx^2}{f}}\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{1+\frac{gx^2}{f}}}\,dx}{\sqrt{f+gx^2}}$$

$$= \frac{\sqrt{f}\sqrt{1+\frac{gx^2}{f}}\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{f}}\right)\left(a+b\log(c(d+ex)^n)\right)}{\sqrt{g}\sqrt{f+gx^2}} - \frac{\left(ben\sqrt{1+\frac{gx^2}{f}}\right)\int \frac{\sqrt{f}\,\sinh}{\sqrt{g}\,(}}{\sqrt{f+gx^2}}$$

$$= \frac{\sqrt{f}\sqrt{1+\frac{gx^2}{f}}\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{f}}\right)\left(a+b\log(c(d+ex)^n)\right)}{\sqrt{g}\sqrt{f+gx^2}} - \frac{\left(be\sqrt{f}\,n\sqrt{1+\frac{gx^2}{f}}\right)\int \frac{\sinh}{}}{\sqrt{g}\sqrt{f+gx^2}}$$

$$= \frac{\sqrt{f}\sqrt{1+\frac{gx^2}{f}}\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{f}}\right)\left(a+b\log(c(d+ex)^n)\right)}{\sqrt{g}\sqrt{f+gx^2}} - \frac{\left(be\sqrt{f}\,n\sqrt{1+\frac{gx^2}{f}}\right)\text{Subs}}{}$$

$$= \frac{b\sqrt{f}\,n\sqrt{1+\frac{gx^2}{f}}\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{f}}\right)^2}{2\sqrt{g}\sqrt{f+gx^2}} + \frac{\sqrt{f}\sqrt{1+\frac{gx^2}{f}}\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{f}}\right)\left(a+b\log(c(d+\right.}{\sqrt{g}\sqrt{f+gx^2}}$$

$$= \frac{b\sqrt{f}\,n\sqrt{1+\frac{gx^2}{f}}\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{f}}\right)^2}{2\sqrt{g}\sqrt{f+gx^2}} - \frac{b\sqrt{f}\,n\sqrt{1+\frac{gx^2}{f}}\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{f}}\right)\log\left(1+\frac{ee^{\sinh^{-}}}{d\sqrt{g}-}\right.}{\sqrt{g}\sqrt{f+gx^2}}$$

$$= \frac{b\sqrt{f}\,n\sqrt{1+\frac{gx^2}{f}}\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{f}}\right)^2}{2\sqrt{g}\sqrt{f+gx^2}} - \frac{b\sqrt{f}\,n\sqrt{1+\frac{gx^2}{f}}\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{f}}\right)\log\left(1+\frac{ee^{\sinh^{-}}}{d\sqrt{g}-}\right.}{\sqrt{g}\sqrt{f+gx^2}}$$

$$= \frac{b\sqrt{f}\,n\sqrt{1+\frac{gx^2}{f}}\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{f}}\right)^2}{2\sqrt{g}\sqrt{f+gx^2}} - \frac{b\sqrt{f}\,n\sqrt{1+\frac{gx^2}{f}}\sinh^{-1}\left(\frac{\sqrt{g}\,x}{\sqrt{f}}\right)\log\left(1+\frac{ee^{\sinh^{-}}}{d\sqrt{g}-}\right.}{\sqrt{g}\sqrt{f+gx^2}}$$

Mathematica [F] time = 3.77, size = 0, normalized size = 0.00

$$\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{f+gx^2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/Sqrt[f + g*x^2],x]
[Out] Integrate[(a + b*Log[c*(d + e*x)^n])/Sqrt[f + g*x^2], x]
```

fricas [F] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{gx^2+f}\,b\log\left((ex+d)^n c\right)+\sqrt{gx^2+f}\,a}{gx^2+f},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x^2+f)^(1/2),x, algorithm="fricas")
```

```
[Out] integral((sqrt(g*x^2 + f)*b*log((e*x + d)^n*c) + sqrt(g*x^2 + f)*a)/(g*x^2
+ f), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b \log \left((ex+d)^n c\right) + a}{\sqrt{gx^2 + f}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x^2+f)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)/sqrt(g*x^2 + f), x)
```

maple [F] time = 0.44, size = 0, normalized size = 0.00

$$\int \frac{b \ln \left(c\, (ex+d)^n\right) + a}{\sqrt{g\, x^2 + f}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)/(g*x^2+f)^(1/2),x)
```

```
[Out] int((b*ln(c*(e*x+d)^n)+a)/(g*x^2+f)^(1/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$b \int \frac{\log \left((ex+d)^n\right) + \log(c)}{\sqrt{gx^2 + f}}\, dx + \frac{a\, \mathrm{arsinh}\left(\frac{gx}{\sqrt{fg}}\right)}{\sqrt{g}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x^2+f)^(1/2),x, algorithm="maxima")
```

```
[Out] b*integrate((log((e*x + d)^n) + log(c))/sqrt(g*x^2 + f), x) + a*arcsinh(g*x
/sqrt(f*g))/sqrt(g)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a + b\, \ln \left(c\, (d + e\, x)^n\right)}{\sqrt{g\, x^2 + f}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/(f + g*x^2)^(1/2),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))/(f + g*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a + b \log \left(c\, (d + ex)^n\right)}{\sqrt{f + gx^2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(g*x**2+f)**(1/2),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))/sqrt(f + g*x**2), x)
```

3.277 $\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{2-gx}\sqrt{2+gx}}\,dx$

Optimal. Leaf size=278

$$\frac{\sin^{-1}\left(\frac{gx}{2}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g}+\frac{ibn\text{Li}_2\left(-\frac{2ee^{i\sin^{-1}\left(\frac{gx}{2}\right)}}{idg-\sqrt{4e^2-d^2g^2}}\right)}{g}+\frac{ibn\text{Li}_2\left(-\frac{2ee^{i\sin^{-1}\left(\frac{gx}{2}\right)}}{idg+\sqrt{4e^2-d^2g^2}}\right)}{g}-\frac{bn\sin^{-1}\left(\frac{gx}{2}\right)\log\left(1+\right.}{g}$$

```
[Out] 1/2*I*b*n*arcsin(1/2*g*x)^2/g+arcsin(1/2*g*x)*(a+b*ln(c*(e*x+d)^n))/g-b*n*a
rcsin(1/2*g*x)*ln(1+2*e*(1/2*I*g*x+1/2*(-g^2*x^2+4)^(1/2))/(I*d*g-(-d^2*g^2
+4*e^2)^(1/2)))/g-b*n*arcsin(1/2*g*x)*ln(1+2*e*(1/2*I*g*x+1/2*(-g^2*x^2+4)^
(1/2))/(I*d*g+(-d^2*g^2+4*e^2)^(1/2)))/g+I*b*n*polylog(2,-2*e*(1/2*I*g*x+1/
2*(-g^2*x^2+4)^(1/2))/(I*d*g-(-d^2*g^2+4*e^2)^(1/2)))/g+I*b*n*polylog(2,-2*
e*(1/2*I*g*x+1/2*(-g^2*x^2+4)^(1/2))/(I*d*g+(-d^2*g^2+4*e^2)^(1/2)))/g
```

Rubi [A] time = 0.47, antiderivative size = 278, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.206, Rules used = {216, 2405, 4741, 4521, 2190, 2279, 2391}

$$\frac{ibn\text{PolyLog}\left(2,-\frac{2ee^{i\sin^{-1}\left(\frac{gx}{2}\right)}}{-\sqrt{4e^2-d^2g^2}+idg}\right)}{g}+\frac{ibn\text{PolyLog}\left(2,-\frac{2ee^{i\sin^{-1}\left(\frac{gx}{2}\right)}}{\sqrt{4e^2-d^2g^2}+idg}\right)}{g}+\frac{\sin^{-1}\left(\frac{gx}{2}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g}-\frac{bn\sin}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(Sqrt[2 - g*x]*Sqrt[2 + g*x]),x]
```

```
[Out] ((I/2)*b*n*ArcSin[(g*x)/2]^2)/g - (b*n*ArcSin[(g*x)/2]*Log[1 + (2*e*E^(I*Ar
cSin[(g*x)/2]))/(I*d*g - Sqrt[4*e^2 - d^2*g^2])])/g - (b*n*ArcSin[(g*x)/2]*
Log[1 + (2*e*E^(I*ArcSin[(g*x)/2]))/(I*d*g + Sqrt[4*e^2 - d^2*g^2])])/g + (
ArcSin[(g*x)/2]*(a + b*Log[c*(d + e*x)^n]))/g + (I*b*n*PolyLog[2, (-2*e*E^(
I*ArcSin[(g*x)/2]))/(I*d*g - Sqrt[4*e^2 - d^2*g^2])])/g + (I*b*n*PolyLog[2,
 (-2*e*E^(I*ArcSin[(g*x)/2]))/(I*d*g + Sqrt[4*e^2 - d^2*g^2])])/g
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2405

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/(Sqrt[(f1_) + (g1_
.)*(x_)]*Sqrt[(f2_) + (g2_.)*(x_)]), x_Symbol] :> With[{u = IntHide[1/Sqrt[
f1*f2 + g1*g2*x^2], x]}, Simp[u*(a + b*Log[c*(d + e*x)^n]), x] - Dist[b*e*n
, Int[SimplifyIntegrand[u/(d + e*x), x], x], x]] /; FreeQ[{a, b, c, d, e, f
1, g1, f2, g2, n}, x] && EqQ[f2*g1 + f1*g2, 0] && GtQ[f1, 0] && GtQ[f2, 0]
```

Rule 4521

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(I*a - Rt[-a^2 + b^2, 2]
 + b*E^(I*(c + d*x))), x], x] + Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(
I*a + Rt[-a^2 + b^2, 2] + b*E^(I*(c + d*x))), x], x]) /; FreeQ[{a, b, c, d,
 e, f}, x] && IGtQ[m, 0] && NegQ[a^2 - b^2]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[((a + b*x)^n*Cos[x])/(c*d + e*Sin[x]), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{2-gx}\sqrt{2+gx}}\,dx = \frac{\sin^{-1}\left(\frac{gx}{2}\right)\left(a+b\log(c(d+ex)^n)\right)}{g} - (ben)\int \frac{\sin^{-1}\left(\frac{gx}{2}\right)}{dg+egx}\,dx$$

$$= \frac{\sin^{-1}\left(\frac{gx}{2}\right)\left(a+b\log(c(d+ex)^n)\right)}{g} - (ben)\,\text{Subst}\left(\int \frac{x\cos(x)}{\frac{dg^2}{2}+eg\sin(x)}\,dx, x, \sin^{-1}\left(\frac{g}{2}\right.\right.$$

$$= \frac{ibn\sin^{-1}\left(\frac{gx}{2}\right)^2}{2g} + \frac{\sin^{-1}\left(\frac{gx}{2}\right)\left(a+b\log(c(d+ex)^n)\right)}{g} - (iben)\,\text{Subst}\left(\int \frac{}{ee^{ix}g+\frac{1}{2}id}\right.$$

$$= \frac{ibn\sin^{-1}\left(\frac{gx}{2}\right)^2}{2g} - \frac{bn\sin^{-1}\left(\frac{gx}{2}\right)\log\left(1+\frac{2ee^{i\sin^{-1}\left(\frac{gx}{2}\right)}}{idg-\sqrt{4e^2-d^2g^2}}\right)}{g} - \frac{bn\sin^{-1}\left(\frac{gx}{2}\right)\log\left(1+\frac{2e}{idg}\right.}{g}$$

$$= \frac{ibn\sin^{-1}\left(\frac{gx}{2}\right)^2}{2g} - \frac{bn\sin^{-1}\left(\frac{gx}{2}\right)\log\left(1+\frac{2ee^{i\sin^{-1}\left(\frac{gx}{2}\right)}}{idg-\sqrt{4e^2-d^2g^2}}\right)}{g} - \frac{bn\sin^{-1}\left(\frac{gx}{2}\right)\log\left(1+\frac{2e}{idg}\right.}{g}$$

$$= \frac{ibn\sin^{-1}\left(\frac{gx}{2}\right)^2}{2g} - \frac{bn\sin^{-1}\left(\frac{gx}{2}\right)\log\left(1+\frac{2ee^{i\sin^{-1}\left(\frac{gx}{2}\right)}}{idg-\sqrt{4e^2-d^2g^2}}\right)}{g} - \frac{bn\sin^{-1}\left(\frac{gx}{2}\right)\log\left(1+\frac{2e}{idg}\right.}{g}$$

Mathematica [A] time = 0.03, size = 307, normalized size = 1.10

$$\frac{a\sin^{-1}\left(\frac{gx}{2}\right)}{g}+\frac{b\sin^{-1}\left(\frac{gx}{2}\right)\log(c(d+ex)^n)}{g}+\frac{ibn\text{Li}_2\left(\frac{2iee^{i\sin^{-1}\left(\frac{gx}{2}\right)}}{dg-i\sqrt{4e^2-d^2g^2}}\right)}{g}+\frac{ibn\text{Li}_2\left(\frac{2iee^{i\sin^{-1}\left(\frac{gx}{2}\right)}}{dg+i\sqrt{4e^2-d^2g^2}}\right)}{g}-\frac{bn\sin^{-1}\left(\frac{gx}{2}\right)\log\left(1+\right.}{g}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(Sqrt[2 - g*x]*Sqrt[2 + g*x]),x]
```

```
[Out] (a*ArcSin[(g*x)/2])/g + ((I/2)*b*n*ArcSin[(g*x)/2]^2)/g - (b*n*ArcSin[(g*x)
/2]*Log[1 + (e*E^(I*ArcSin[(g*x)/2])*g)/((I/2)*d*g^2 - (g*Sqrt[4*e^2 - d^2*
g^2])/2)])/g - (b*n*ArcSin[(g*x)/2]*Log[1 + (e*E^(I*ArcSin[(g*x)/2])*g)/((I
/2)*d*g^2 + (g*Sqrt[4*e^2 - d^2*g^2])/2)])/g + (b*ArcSin[(g*x)/2]*Log[c*(d
+ e*x)^n])/g + (I*b*n*PolyLog[2, ((2*I)*e*E^(I*ArcSin[(g*x)/2]))/(d*g - I*S
qrt[4*e^2 - d^2*g^2])])/g + (I*b*n*PolyLog[2, ((2*I)*e*E^(I*ArcSin[(g*x)/2]
))/(d*g + I*Sqrt[4*e^2 - d^2*g^2])])/g
```

fricas [F] time = 0.43, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\frac{\sqrt{gx+2}\,\sqrt{-gx+2}\,b\log\left((ex+d)^n c\right)+\sqrt{gx+2}\,\sqrt{-gx+2}\,a}{g^2x^2-4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(-g*x+2)^(1/2)/(g*x+2)^(1/2),x, algorithm=
"fricas")
```

```
[Out] integral(-(sqrt(g*x + 2)*sqrt(-g*x + 2)*b*log((e*x + d)^n*c) + sqrt(g*x + 2
)*sqrt(-g*x + 2)*a)/(g^2*x^2 - 4), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b\log\left((ex+d)^n c\right)+a}{\sqrt{gx+2}\,\sqrt{-gx+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(-g*x+2)^(1/2)/(g*x+2)^(1/2),x, algorithm=
"giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)/(sqrt(g*x + 2)*sqrt(-g*x + 2)), x)
```

maple [F] time = 0.71, size = 0, normalized size = 0.00

$$\int \frac{b\ln\left(c\,(ex+d)^n\right)+a}{\sqrt{-gx+2}\,\sqrt{gx+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)/(-g*x+2)^(1/2)/(g*x+2)^(1/2),x)
```

```
[Out] int((b*ln(c*(e*x+d)^n)+a)/(-g*x+2)^(1/2)/(g*x+2)^(1/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$b\int \frac{\log\left((ex+d)^n\right)+\log(c)}{\sqrt{gx+2}\,\sqrt{-gx+2}}\,dx+\frac{a\arcsin\left(\frac{1}{2}\,gx\right)}{g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(-g*x+2)^(1/2)/(g*x+2)^(1/2),x, algorithm=
"maxima")
```

```
[Out] b*integrate((log((e*x + d)^n) + log(c))/(sqrt(g*x + 2)*sqrt(-g*x + 2)), x)
+ a*arcsin(1/2*g*x)/g
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}{\sqrt{2-g\,x}\,\sqrt{g\,x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/((2 - g*x)^(1/2)*(g*x + 2)^(1/2)),x)
[Out] int((a + b*log(c*(d + e*x)^n))/((2 - g*x)^(1/2)*(g*x + 2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a + b \log \left(c \left(d + ex\right)^{n}\right)}{\sqrt{-gx + 2}\,\sqrt{gx + 2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(-g*x+2)**(1/2)/(g*x+2)**(1/2),x)
[Out] Integral((a + b*log(c*(d + e*x)**n))/(sqrt(-g*x + 2)*sqrt(g*x + 2)), x)
```

3.278 $\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{f-gx}\sqrt{f+gx}}\,dx$

Optimal. Leaf size=510

$$\frac{f\sqrt{1-\frac{g^2x^2}{f^2}}\sin^{-1}\left(\frac{gx}{f}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g\sqrt{f-gx}\sqrt{f+gx}}+\frac{ibfn\sqrt{1-\frac{g^2x^2}{f^2}}\,\text{Li}_2\left(-\frac{ee^{i\sin^{-1}\left(\frac{gx}{f}\right)}f}{idg-\sqrt{e^2f^2-d^2g^2}}\right)}{g\sqrt{f-gx}\sqrt{f+gx}}+\frac{ibfn\sqrt{1-\frac{g^2x^2}{f^2}}\,\text{Li}_2\left(-\cdots\right.}{g\sqrt{f-gx}\sqrt{f\cdots}}$$

```
[Out] 1/2*I*b*f*n*arcsin(g*x/f)^2*(1-g^2*x^2/f^2)^(1/2)/g/(-g*x+f)^(1/2)/(g*x+f)^
(1/2)+f*arcsin(g*x/f)*(a+b*ln(c*(e*x+d)^n))*(1-g^2*x^2/f^2)^(1/2)/g/(-g*x+f
)^(1/2)/(g*x+f)^(1/2)-b*f*n*arcsin(g*x/f)*ln(1+e*(I*g*x/f+(1-g^2*x^2/f^2)^(
1/2))*f/(I*d*g-(-d^2*g^2+e^2*f^2)^(1/2)))*(1-g^2*x^2/f^2)^(1/2)/g/(-g*x+f)^
(1/2)/(g*x+f)^(1/2)-b*f*n*arcsin(g*x/f)*ln(1+e*(I*g*x/f+(1-g^2*x^2/f^2)^(1/
2))*f/(I*d*g+(-d^2*g^2+e^2*f^2)^(1/2)))*(1-g^2*x^2/f^2)^(1/2)/g/(-g*x+f)^(1
/2)/(g*x+f)^(1/2)+I*b*f*n*polylog(2,-e*(I*g*x/f+(1-g^2*x^2/f^2)^(1/2))*f/(I
*d*g-(-d^2*g^2+e^2*f^2)^(1/2)))*(1-g^2*x^2/f^2)^(1/2)/g/(-g*x+f)^(1/2)/(g*x
+f)^(1/2)+I*b*f*n*polylog(2,-e*(I*g*x/f+(1-g^2*x^2/f^2)^(1/2))*f/(I*d*g+(-d
^2*g^2+e^2*f^2)^(1/2)))*(1-g^2*x^2/f^2)^(1/2)/g/(-g*x+f)^(1/2)/(g*x+f)^(1/2
)
```

Rubi [A] time = 0.64, antiderivative size = 510, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 9, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.265, Rules used = {2407, 216, 2404, 12, 4741, 4521, 2190, 2279, 2391}

$$\frac{ibfn\sqrt{1-\frac{g^2x^2}{f^2}}\,\text{PolyLog}\left(2,-\frac{efe^{i\sin^{-1}\left(\frac{gx}{f}\right)}}{-\sqrt{e^2f^2-d^2g^2}+idg}\right)}{g\sqrt{f-gx}\sqrt{f+gx}}+\frac{ibfn\sqrt{1-\frac{g^2x^2}{f^2}}\,\text{PolyLog}\left(2,-\frac{efe^{i\sin^{-1}\left(\frac{gx}{f}\right)}}{\sqrt{e^2f^2-d^2g^2}+idg}\right)}{g\sqrt{f-gx}\sqrt{f+gx}}+\frac{f\sqrt{1-\frac{g^2x^2}{f^2}}\sin\cdots}{g\cdots}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(Sqrt[f - g*x]*Sqrt[f + g*x]),x]
```

```
[Out] ((I/2)*b*f*n*Sqrt[1 - (g^2*x^2)/f^2]*ArcSin[(g*x)/f]^2)/(g*Sqrt[f - g*x]*Sq
rt[f + g*x]) - (b*f*n*Sqrt[1 - (g^2*x^2)/f^2]*ArcSin[(g*x)/f]*Log[1 + (e*E^
(I*ArcSin[(g*x)/f])*f)/(I*d*g - Sqrt[e^2*f^2 - d^2*g^2])])/(g*Sqrt[f - g*x]
*Sqrt[f + g*x]) - (b*f*n*Sqrt[1 - (g^2*x^2)/f^2]*ArcSin[(g*x)/f]*Log[1 + (e
*E^(I*ArcSin[(g*x)/f])*f)/(I*d*g + Sqrt[e^2*f^2 - d^2*g^2])])/(g*Sqrt[f - g
*x]*Sqrt[f + g*x]) + (f*Sqrt[1 - (g^2*x^2)/f^2]*ArcSin[(g*x)/f]*(a + b*Log[
c*(d + e*x)^n]))/(g*Sqrt[f - g*x]*Sqrt[f + g*x]) + (I*b*f*n*Sqrt[1 - (g^2*x
^2)/f^2]*PolyLog[2, -((e*E^(I*ArcSin[(g*x)/f])*f)/(I*d*g - Sqrt[e^2*f^2 - d
^2*g^2]))])/(g*Sqrt[f - g*x]*Sqrt[f + g*x]) + (I*b*f*n*Sqrt[1 - (g^2*x^2)/f
^2]*PolyLog[2, -((e*E^(I*ArcSin[(g*x)/f])*f)/(I*d*g + Sqrt[e^2*f^2 - d^2*g^
2]))])/(g*Sqrt[f - g*x]*Sqrt[f + g*x])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
```

```
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2404

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/Sqrt[(f_) + (g_.)*
(x_)^2], x_Symbol] :> With[{u = IntHide[1/Sqrt[f + g*x^2], x]}, Simp[u*(a +
 b*Log[c*(d + e*x)^n]), x] - Dist[b*e*n, Int[SimplifyIntegrand[u/(d + e*x),
 x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && GtQ[f, 0]
```

Rule 2407

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/(Sqrt[(f1_) + (g1_
.)*(x_)]*Sqrt[(f2_) + (g2_.)*(x_)]), x_Symbol] :> Dist[Sqrt[1 + (g1*g2*x^2)
/(f1*f2)]/(Sqrt[f1 + g1*x]*Sqrt[f2 + g2*x]), Int[(a + b*Log[c*(d + e*x)^n])
/Sqrt[1 + (g1*g2*x^2)/(f1*f2)], x], x] /; FreeQ[{a, b, c, d, e, f1, g1, f2,
 g2, n}, x] && EqQ[f2*g1 + f1*g2, 0]
```

Rule 4521

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(I*a - Rt[-a^2 + b^2, 2]
 + b*E^(I*(c + d*x))), x], x] + Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(
I*a + Rt[-a^2 + b^2, 2] + b*E^(I*(c + d*x))), x], x]) /; FreeQ[{a, b, c, d,
 e, f}, x] && IGtQ[m, 0] && NegQ[a^2 - b^2]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[((a + b*x)^n*Cos[x])/(c*d + e*Sin[x]), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{f-gx}\sqrt{f+gx}}\,dx = \frac{\sqrt{1-\frac{g^2x^2}{f^2}}\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{1-\frac{g^2x^2}{f^2}}}dx}{\sqrt{f-gx}\sqrt{f+gx}}$$

$$= \frac{f\sqrt{1-\frac{g^2x^2}{f^2}}\sin^{-1}\left(\frac{gx}{f}\right)\left(a+b\log(c(d+ex)^n)\right)}{g\sqrt{f-gx}\sqrt{f+gx}} - \frac{\left(ben\sqrt{1-\frac{g^2x^2}{f^2}}\right)\int \frac{f\sin^{-1}\left(\frac{gx}{f}\right)}{dg+egx}d}{\sqrt{f-gx}\sqrt{f+gx}}$$

$$= \frac{f\sqrt{1-\frac{g^2x^2}{f^2}}\sin^{-1}\left(\frac{gx}{f}\right)\left(a+b\log(c(d+ex)^n)\right)}{g\sqrt{f-gx}\sqrt{f+gx}} - \frac{\left(befn\sqrt{1-\frac{g^2x^2}{f^2}}\right)\int \frac{\sin^{-1}\left(\frac{gx}{f}\right)}{dg+egx}d}{\sqrt{f-gx}\sqrt{f+gx}}$$

$$= \frac{f\sqrt{1-\frac{g^2x^2}{f^2}}\sin^{-1}\left(\frac{gx}{f}\right)\left(a+b\log(c(d+ex)^n)\right)}{g\sqrt{f-gx}\sqrt{f+gx}} - \frac{\left(befn\sqrt{1-\frac{g^2x^2}{f^2}}\right)\text{Subst}\left(\int \frac{}{\frac{dg}{f}}\right.}{\sqrt{f-gx}\sqrt{}}$$

$$= \frac{ibfn\sqrt{1-\frac{g^2x^2}{f^2}}\sin^{-1}\left(\frac{gx}{f}\right)^2}{2g\sqrt{f-gx}\sqrt{f+gx}} + \frac{f\sqrt{1-\frac{g^2x^2}{f^2}}\sin^{-1}\left(\frac{gx}{f}\right)\left(a+b\log(c(d+ex)^n)\right)}{g\sqrt{f-gx}\sqrt{f+gx}} -$$

$$= \frac{ibfn\sqrt{1-\frac{g^2x^2}{f^2}}\sin^{-1}\left(\frac{gx}{f}\right)^2}{2g\sqrt{f-gx}\sqrt{f+gx}} - \frac{bfn\sqrt{1-\frac{g^2x^2}{f^2}}\sin^{-1}\left(\frac{gx}{f}\right)\log\left(1+\frac{ee^{i\sin^{-1}\left(\frac{gx}{f}\right)}f}{idg-\sqrt{e^2f^2-d^2g^2}}\right)}{g\sqrt{f-gx}\sqrt{f+gx}}$$

$$= \frac{ibfn\sqrt{1-\frac{g^2x^2}{f^2}}\sin^{-1}\left(\frac{gx}{f}\right)^2}{2g\sqrt{f-gx}\sqrt{f+gx}} - \frac{bfn\sqrt{1-\frac{g^2x^2}{f^2}}\sin^{-1}\left(\frac{gx}{f}\right)\log\left(1+\frac{ee^{i\sin^{-1}\left(\frac{gx}{f}\right)}f}{idg-\sqrt{e^2f^2-d^2g^2}}\right)}{g\sqrt{f-gx}\sqrt{f+gx}}$$

$$= \frac{ibfn\sqrt{1-\frac{g^2x^2}{f^2}}\sin^{-1}\left(\frac{gx}{f}\right)^2}{2g\sqrt{f-gx}\sqrt{f+gx}} - \frac{bfn\sqrt{1-\frac{g^2x^2}{f^2}}\sin^{-1}\left(\frac{gx}{f}\right)\log\left(1+\frac{ee^{i\sin^{-1}\left(\frac{gx}{f}\right)}f}{idg-\sqrt{e^2f^2-d^2g^2}}\right)}{g\sqrt{f-gx}\sqrt{f+gx}}$$

Mathematica [B] time = 4.78, size = 1077, normalized size = 2.11

$$\frac{\tan^{-1}\left(\frac{gx}{\sqrt{f-gx}\sqrt{f+gx}}\right)\left(a-bn\log(d+ex)+b\log(c(d+ex)^n)\right)}{g} - \frac{ibn\sqrt{f-gx}\sqrt{\frac{f+gx}{f-gx}}\left(\log^2\left(i-\sqrt{\frac{f+gx}{f-gx}}\right)+2\log\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(Sqrt[f - g*x]*Sqrt[f + g*x]),x]
```

```
[Out] (ArcTan[(g*x)/(Sqrt[f - g*x]*Sqrt[f + g*x])]*(a - b*n*Log[d + e*x] + b*Log[
c*(d + e*x)^n]))/g - ((I/2)*b*n*Sqrt[f - g*x]*Sqrt[(f + g*x)/(f - g*x)]*(2*
Log[d + e*x]*Log[I - Sqrt[(f + g*x)/(f - g*x)]] + Log[I - Sqrt[(f + g*x)/(f
 - g*x)]]^2 + 2*Log[I - Sqrt[(f + g*x)/(f - g*x)]]*Log[(1 - I*Sqrt[(f + g*x
)/(f - g*x)])/2] - 2*Log[d + e*x]*Log[I + Sqrt[(f + g*x)/(f - g*x)]] - 2*Lo
```

```
g[(1 + I*Sqrt[(f + g*x)/(f - g*x)])/2]*Log[I + Sqrt[(f + g*x)/(f - g*x)]] -
 Log[I + Sqrt[(f + g*x)/(f - g*x)]]^2 - 2*Log[I - Sqrt[(f + g*x)/(f - g*x)]
]*Log[(Sqrt[e*f - d*g] - Sqrt[e*f + d*g]*Sqrt[(f + g*x)/(f - g*x)])/(Sqrt[e
*f - d*g] - I*Sqrt[e*f + d*g])] + 2*Log[I + Sqrt[(f + g*x)/(f - g*x)]]*Log[
(Sqrt[e*f - d*g] - Sqrt[e*f + d*g]*Sqrt[(f + g*x)/(f - g*x)])/(Sqrt[e*f - d
*g] + I*Sqrt[e*f + d*g])] + 2*Log[I + Sqrt[(f + g*x)/(f - g*x)]]*Log[(Sqrt[
e*f - d*g] + Sqrt[e*f + d*g]*Sqrt[(f + g*x)/(f - g*x)])/(Sqrt[e*f - d*g] -
I*Sqrt[e*f + d*g])] - 2*Log[I - Sqrt[(f + g*x)/(f - g*x)]]*Log[(Sqrt[e*f -
d*g] + Sqrt[e*f + d*g]*Sqrt[(f + g*x)/(f - g*x)])/(Sqrt[e*f - d*g] + I*Sqrt
[e*f + d*g])] - 2*PolyLog[2, 1/2 - (I/2)*Sqrt[(f + g*x)/(f - g*x)]] + 2*Pol
yLog[2, 1/2 + (I/2)*Sqrt[(f + g*x)/(f - g*x)]] + 2*PolyLog[2, (Sqrt[e*f + d
*g]*(1 - I*Sqrt[(f + g*x)/(f - g*x)]))/(I*Sqrt[e*f - d*g] + Sqrt[e*f + d*g]
)] - 2*PolyLog[2, (Sqrt[e*f + d*g]*(1 + I*Sqrt[(f + g*x)/(f - g*x)]))/((-I)
*Sqrt[e*f - d*g] + Sqrt[e*f + d*g])] - 2*PolyLog[2, (Sqrt[e*f + d*g]*(1 + I
*Sqrt[(f + g*x)/(f - g*x)]))/(I*Sqrt[e*f - d*g] + Sqrt[e*f + d*g])] + 2*Pol
yLog[2, (Sqrt[e*f + d*g]*(I + Sqrt[(f + g*x)/(f - g*x)]))/(Sqrt[e*f - d*g]
+ I*Sqrt[e*f + d*g])]))/(g*Sqrt[f + g*x])
```

fricas [F] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{gx+f}\,\sqrt{-gx+f}\,b\log\left((ex+d)^{n}c\right)+\sqrt{gx+f}\,\sqrt{-gx+f}\,a}{g^{2}x^{2}-f^{2}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(-g*x+f)^(1/2)/(g*x+f)^(1/2),x, algorithm=
"fricas")
```

```
[Out] integral(-(sqrt(g*x + f)*sqrt(-g*x + f)*b*log((e*x + d)^n*c) + sqrt(g*x + f
)*sqrt(-g*x + f)*a)/(g^2*x^2 - f^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{b\log\left((ex+d)^{n}c\right)+a}{\sqrt{gx+f}\,\sqrt{-gx+f}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(-g*x+f)^(1/2)/(g*x+f)^(1/2),x, algorithm=
"giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)/(sqrt(g*x + f)*sqrt(-g*x + f)), x)
```

maple [F] time = 0.65, size = 0, normalized size = 0.00

$$\int\frac{b\ln\left(c\,(ex+d)^{n}\right)+a}{\sqrt{-gx+f}\,\sqrt{gx+f}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)/(-g*x+f)^(1/2)/(g*x+f)^(1/2),x)
```

```
[Out] int((b*ln(c*(e*x+d)^n)+a)/(-g*x+f)^(1/2)/(g*x+f)^(1/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$b\int\frac{\log\left((ex+d)^{n}\right)+\log(c)}{\sqrt{gx+f}\,\sqrt{-gx+f}}\,dx+\frac{a\arcsin\left(\frac{gx}{f}\right)}{g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(-g*x+f)^(1/2)/(g*x+f)^(1/2),x, algorithm=
"maxima")
```

```
[Out] b*integrate((log((e*x + d)^n) + log(c))/(sqrt(g*x + f)*sqrt(-g*x + f)), x)
+ a*arcsin(g*x/f)/g
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,\ln\left(c\,(d+e\,x)^n\right)}{\sqrt{f+g\,x}\,\sqrt{f-g\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/((f + g*x)^(1/2)*(f - g*x)^(1/2)),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))/((f + g*x)^(1/2)*(f - g*x)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a+b\log\left(c\,(d+ex)^n\right)}{\sqrt{f-gx}\,\sqrt{f+gx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(-g*x+f)**(1/2)/(g*x+f)**(1/2),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))/(sqrt(f - g*x)*sqrt(f + g*x)), x)
```

3.279 $\int \frac{\log\left(\frac{2e}{e+fx}\right)}{e^2-f^2x^2}\,dx$

Optimal. Leaf size=24

$$\frac{\text{Li}_2\left(1-\frac{2e}{e+fx}\right)}{2ef}$$

```
[Out] 1/2*polylog(2,1-2*e/(f*x+e))/e/f
```

Rubi [A] time = 0.03, antiderivative size = 24, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.077$, Rules used = {2402, 2315}

$$\frac{\text{PolyLog}\left(2,1-\frac{2e}{e+fx}\right)}{2ef}$$

Antiderivative was successfully verified.

```
[In] Int[Log[(2*e)/(e + f*x)]/(e^2 - f^2*x^2),x]
```

```
[Out] PolyLog[2, 1 - (2*e)/(e + f*x)]/(2*e*f)
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{\log\left(\frac{2e}{e+fx}\right)}{e^2-f^2x^2}\,dx &= \frac{\text{Subst}\left(\int \frac{\log(2ex)}{1-2ex}\,dx,x,\frac{1}{e+fx}\right)}{f}\\ &= \frac{\text{Li}_2\left(1-\frac{2e}{e+fx}\right)}{2ef}\end{aligned}$$

Mathematica [A] time = 0.01, size = 27, normalized size = 1.12

$$\frac{\text{Li}_2\left(\frac{fx-e}{e+fx}\right)}{2ef}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[(2*e)/(e + f*x)]/(e^2 - f^2*x^2),x]
```

```
[Out] PolyLog[2, (-e + f*x)/(e + f*x)]/(2*e*f)
```

fricas [A] time = 0.41, size = 21, normalized size = 0.88

$$\frac{\text{Li}_2\left(-\frac{2\,e}{fx+e}+1\right)}{2\,ef}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(2*e/(f*x+e))/(-f^2*x^2+e^2),x, algorithm="fricas")
```

```
[Out] 1/2*dilog(-2*e/(f*x + e) + 1)/(e*f)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{\log\left(\frac{2e}{fx+e}\right)}{f^2x^2 - e^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(2*e/(f*x+e))/(-f^2*x^2+e^2),x, algorithm="giac")
```

```
[Out] integrate(-log(2*e/(f*x + e))/(f^2*x^2 - e^2), x)
```

maple [A] time = 0.05, size = 20, normalized size = 0.83

$$\frac{\operatorname{dilog}\left(\frac{2e}{fx+e}\right)}{2ef}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(2*e/(f*x+e))/(-f^2*x^2+e^2),x)
```

```
[Out] 1/2/f/e*dilog(2*e/(f*x+e))
```

maxima [B] time = 0.64, size = 120, normalized size = 5.00

$$\frac{1}{4}f\left(\frac{\log\left(fx+e\right)^2 - 2\log\left(fx+e\right)\log\left(fx-e\right)}{ef^2} + \frac{2\left(\log\left(fx+e\right)\log\left(-\frac{fx+e}{2e}+1\right) + \operatorname{Li}_2\left(\frac{fx+e}{2e}\right)\right)}{ef^2}\right) + \frac{1}{2}\left(\frac{\log\left(fx\right.}{ef}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(2*e/(f*x+e))/(-f^2*x^2+e^2),x, algorithm="maxima")
```

```
[Out] 1/4*f*((log(f*x + e)^2 - 2*log(f*x + e)*log(f*x - e))/(e*f^2) + 2*(log(f*x
+ e)*log(-1/2*(f*x + e)/e + 1) + dilog(1/2*(f*x + e)/e))/(e*f^2)) + 1/2*(lo
g(f*x + e)/(e*f) - log(f*x - e)/(e*f))*log(2*e/(f*x + e))
```

mupad [B] time = 0.29, size = 19, normalized size = 0.79

$$\frac{\operatorname{Li}_2\left(\frac{2\,e}{e+f\,x}\right)}{2\,e\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log((2*e)/(e + f*x))/(e^2 - f^2*x^2),x)
```

```
[Out] dilog((2*e)/(e + f*x))/(2*e*f)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{\log\left(2\right)}{-e^2 + f^2x^2}\,dx - \int \frac{\log\left(\frac{e}{e+fx}\right)}{-e^2 + f^2x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(2*e/(f*x+e))/(-f**2*x**2+e**2),x)
```

```
[Out] -Integral(log(2)/(-e**2 + f**2*x**2), x) - Integral(log(e/(e + f*x))/(-e**2
 + f**2*x**2), x)
```

3.280 $\int \frac{\log\left(\frac{e}{e+fx}\right)}{e^2-f^2x^2}\,dx$

Optimal. Leaf size=42

$$\frac{\text{Li}_2\left(1-\frac{2e}{e+fx}\right)}{2ef}-\frac{\log(2)\tanh^{-1}\left(\frac{fx}{e}\right)}{ef}$$

[Out] -arctanh(f*x/e)*ln(2)/e/f+1/2*polylog(2,1-2*e/(f*x+e))/e/f

Rubi [A] time = 0.05, antiderivative size = 42, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.160, Rules used = {2403, 208, 2402, 2315}

$$\frac{\text{PolyLog}\left(2,1-\frac{2e}{e+fx}\right)}{2ef}-\frac{\log(2)\tanh^{-1}\left(\frac{fx}{e}\right)}{ef}$$

Antiderivative was successfully verified.

[In] Int[Log[e/(e + f*x)]/(e^2 - f^2*x^2),x]

[Out] -((ArcTanh[(f*x)/e]*Log[2])/(e*f)) + PolyLog[2, 1 - (2*e)/(e + f*x)]/(2*e*f
)

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2403

```
Int[((a_.) + Log[(c_.)/((d_) + (e_.)*(x_))]*(b_.))/((f_) + (g_.)*(x_)^2), x
_Symbol] :> Dist[a + b*Log[c/(2*d)], Int[1/(f + g*x^2), x], x] + Dist[b, In
t[Log[(2*d)/(d + e*x)]/(f + g*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && EqQ[e^2*f + d^2*g, 0] && GtQ[c/(2*d), 0]
```

Rubi steps

$$\int \frac{\log\left(\frac{e}{e+fx}\right)}{e^2-f^2x^2}\,dx = -\left(\log(2)\int \frac{1}{e^2-f^2x^2}\,dx\right) + \int \frac{\log\left(\frac{2e}{e+fx}\right)}{e^2-f^2x^2}\,dx$$
$$= -\frac{\tanh^{-1}\left(\frac{fx}{e}\right)\log(2)}{ef} + \frac{\text{Subst}\left(\int \frac{\log(2ex)}{1-2ex}\,dx, x, \frac{1}{e+fx}\right)}{f}$$
$$= -\frac{\tanh^{-1}\left(\frac{fx}{e}\right)\log(2)}{ef} + \frac{\text{Li}_2\left(1-\frac{2e}{e+fx}\right)}{2ef}$$

Mathematica [**A**] time = 0.02, size = 81, normalized size = 1.93

$$\frac{\text{Li}_2\left(\frac{e+fx}{2e}\right)}{2ef} - \frac{\log^2\left(\frac{e}{e+fx}\right)}{4ef} - \frac{\log\left(\frac{e-fx}{2e}\right)\log\left(\frac{e}{e+fx}\right)}{2ef}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[e/(e + f*x)]/(e^2 - f^2*x^2),x]
```

```
[Out] -1/2*(Log[(e - f*x)/(2*e)]*Log[e/(e + f*x)])/(e*f) - Log[e/(e + f*x)]^2/(4*
e*f) + PolyLog[2, (e + f*x)/(2*e)]/(2*e*f)
```

fricas [**F**] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\log\left(\frac{e}{fx+e}\right)}{f^2x^2-e^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e/(f*x+e))/(-f^2*x^2+e^2),x, algorithm="fricas")
```

```
[Out] integral(-log(e/(f*x + e))/(f^2*x^2 - e^2), x)
```

giac [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{\log\left(\frac{e}{fx+e}\right)}{f^2x^2-e^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e/(f*x+e))/(-f^2*x^2+e^2),x, algorithm="giac")
```

```
[Out] integrate(-log(e/(f*x + e))/(f^2*x^2 - e^2), x)
```

maple [**B**] time = 0.05, size = 84, normalized size = 2.00

$$-\frac{\ln\left(\frac{e}{fx+e}\right)\ln\left(-\frac{2e}{fx+e}+1\right)}{2ef} + \frac{\ln\left(\frac{2e}{fx+e}\right)\ln\left(-\frac{2e}{fx+e}+1\right)}{2ef} + \frac{\text{dilog}\left(\frac{2e}{fx+e}\right)}{2ef}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(1/(f*x+e)*e)/(-f^2*x^2+e^2),x)
```

```
[Out] -1/2/f/e*ln(1-2/(f*x+e)*e)*ln(1/(f*x+e)*e)+1/2/f/e*ln(1-2/(f*x+e)*e)*ln(2/(
f*x+e)*e)+1/2/f/e*dilog(2/(f*x+e)*e)
```

maxima [B] time = 0.58, size = 119, normalized size = 2.83

$$\frac{1}{4} f\left(\frac{\log\left(fx+e\right)^2 - 2\log\left(fx+e\right)\log\left(fx-e\right)}{ef^2} + \frac{2\left(\log\left(fx+e\right)\log\left(-\frac{fx+e}{2e}+1\right) + \mathrm{Li}_2\left(\frac{fx+e}{2e}\right)\right)}{ef^2}\right) + \frac{1}{2}\left(\frac{\log\left(fx+\right.}{ef}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e/(f*x+e))/(-f^2*x^2+e^2),x, algorithm="maxima")
```

```
[Out] 1/4*f*((log(f*x + e)^2 - 2*log(f*x + e)*log(f*x - e))/(e*f^2) + 2*(log(f*x
+ e)*log(-1/2*(f*x + e)/e + 1) + dilog(1/2*(f*x + e)/e))/(e*f^2)) + 1/2*(lo
g(f*x + e)/(e*f) - log(f*x - e)/(e*f))*log(e/(f*x + e))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\ln\left(\frac{e}{e+f\,x}\right)}{e^2-f^2\,x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(e/(e + f*x))/(e^2 - f^2*x^2),x)
```

```
[Out] int(log(e/(e + f*x))/(e^2 - f^2*x^2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{\log\left(\frac{e}{e+fx}\right)}{-e^2+f^2x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(e/(f*x+e))/(-f**2*x**2+e**2),x)
```

```
[Out] -Integral(log(e/(e + f*x))/(-e**2 + f**2*x**2), x)
```

3.281 $\int \frac{a+b\log\left(\frac{2e}{e+fx}\right)}{e^2-f^2x^2}\,dx$

Optimal. Leaf size=41

$$\frac{a\tanh^{-1}\left(\frac{fx}{e}\right)}{ef}+\frac{b\text{Li}_2\left(1-\frac{2e}{e+fx}\right)}{2ef}$$

```
[Out] a*arctanh(f*x/e)/e/f+1/2*b*polylog(2,1-2*e/(f*x+e))/e/f
```

Rubi [A] time = 0.06, antiderivative size = 41, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133, Rules used = {2403, 208, 2402, 2315}

$$\frac{b\text{PolyLog}\left(2,1-\frac{2e}{e+fx}\right)}{2ef}+\frac{a\tanh^{-1}\left(\frac{fx}{e}\right)}{ef}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[(2*e)/(e + f*x)])/(e^2 - f^2*x^2),x]
```

```
[Out] (a*ArcTanh[(f*x)/e])/(e*f) + (b*PolyLog[2, 1 - (2*e)/(e + f*x)])/(2*e*f)
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2403

```
Int[((a_.) + Log[(c_.)/((d_) + (e_.)*(x_))]*(b_.))/((f_) + (g_.)*(x_)^2), x
_Symbol] :> Dist[a + b*Log[c/(2*d)], Int[1/(f + g*x^2), x], x] + Dist[b, In
t[Log[(2*d)/(d + e*x)]/(f + g*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && EqQ[e^2*f + d^2*g, 0] && GtQ[c/(2*d), 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{a+b\log\left(\frac{2e}{e+fx}\right)}{e^2-f^2x^2}\,dx &= a\int \frac{1}{e^2-f^2x^2}\,dx+b\int \frac{\log\left(\frac{2e}{e+fx}\right)}{e^2-f^2x^2}\,dx\\
&= \frac{a\tanh^{-1}\left(\frac{fx}{e}\right)}{ef}+\frac{b\,\text{Subst}\left(\int \frac{\log(2ex)}{1-2ex}\,dx,x,\frac{1}{e+fx}\right)}{f}\\
&= \frac{a\tanh^{-1}\left(\frac{fx}{e}\right)}{ef}+\frac{b\text{Li}_2\left(1-\frac{2e}{e+fx}\right)}{2ef}
\end{aligned}$$

Mathematica [A] time = 0.03, size = 82, normalized size = 2.00

$$\frac{2b^2\text{Li}_2\left(\frac{e+fx}{2e}\right)-\left(a+b\log\left(\frac{2e}{e+fx}\right)\right)\left(a+2b\log\left(\frac{e-fx}{2e}\right)+b\log\left(\frac{2e}{e+fx}\right)\right)}{4bef}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[(2*e)/(e + f*x)])/(e^2 - f^2*x^2),x]
```

```
[Out] (-((a + b*Log[(2*e)/(e + f*x)])*(a + 2*b*Log[(e - f*x)/(2*e)] + b*Log[(2*e)
/(e + f*x)])) + 2*b^2*PolyLog[2, (e + f*x)/(2*e)])/(4*b*e*f)
```

fricas [A] time = 0.42, size = 43, normalized size = 1.05

$$\frac{b\text{Li}_2\left(-\frac{2e}{fx+e}+1\right)+a\log\left(fx+e\right)-a\log\left(fx-e\right)}{2ef}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(2*e/(f*x+e)))/(-f^2*x^2+e^2),x, algorithm="fricas")
```

```
[Out] 1/2*(b*dilog(-2*e/(f*x + e) + 1) + a*log(f*x + e) - a*log(f*x - e))/(e*f)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{b\log\left(\frac{2e}{fx+e}\right)+a}{f^2x^2-e^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(2*e/(f*x+e)))/(-f^2*x^2+e^2),x, algorithm="giac")
```

```
[Out] integrate(-(b*log(2*e/(f*x + e)) + a)/(f^2*x^2 - e^2), x)
```

maple [A] time = 0.05, size = 44, normalized size = 1.07

$$-\frac{a\ln\left(\frac{2e}{fx+e}-1\right)}{2ef}+\frac{b\,\text{dilog}\left(\frac{2e}{fx+e}\right)}{2ef}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(2/(f*x+e)*e))/(-f^2*x^2+e^2),x)
```

```
[Out] -1/2/e/f*a*ln(2/(f*x+e)*e-1)+1/2/e/f*b*dilog(2/(f*x+e)*e)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{2}a\left(\frac{\log\left(fx+e\right)}{ef}-\frac{\log\left(fx-e\right)}{ef}\right)+b\int -\frac{\log(2)-\log\left(fx+e\right)+\log(e)}{f^2x^2-e^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(2*e/(f*x+e)))/(-f^2*x^2+e^2),x, algorithm="maxima")
```

```
[Out] 1/2*a*(log(f*x + e)/(e*f) - log(f*x - e)/(e*f)) + b*integrate(-(log(2) - lo
g(f*x + e) + log(e))/(f^2*x^2 - e^2), x)
```

mupad [B] time = 0.34, size = 43, normalized size = 1.05

$$-\frac{a\,\ln\left(f\,x-e\right)-b\,\text{Li}_2\left(\frac{2\,e}{e+f\,x}\right)+a\,\ln\left(\frac{1}{e+f\,x}\right)}{2\,e\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log((2*e)/(e + f*x)))/(e^2 - f^2*x^2),x)
```

```
[Out] -(a*log(f*x - e) - b*dilog((2*e)/(e + f*x)) + a*log(1/(e + f*x)))/(2*e*f)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{a}{-e^2+f^2x^2}\,dx - \int \frac{b\log(2)}{-e^2+f^2x^2}\,dx - \int \frac{b\log\left(\frac{e}{e+fx}\right)}{-e^2+f^2x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(2*e/(f*x+e)))/(-f**2*x**2+e**2),x)
```

```
[Out] -Integral(a/(-e**2 + f**2*x**2), x) - Integral(b*log(2)/(-e**2 + f**2*x**2)
, x) - Integral(b*log(e/(e + f*x))/(-e**2 + f**2*x**2), x)
```

3.282 $\int \frac{a+b\log\left(\frac{e}{e+fx}\right)}{e^2-f^2x^2}\,dx$

Optimal. Leaf size=47

$$\frac{(a-b\log(2))\tanh^{-1}\left(\frac{fx}{e}\right)}{ef}+\frac{b\text{Li}_2\left(1-\frac{2e}{e+fx}\right)}{2ef}$$

```
[Out] arctanh(f*x/e)*(a-b*ln(2))/e/f+1/2*b*polylog(2,1-2*e/(f*x+e))/e/f
```

Rubi [A] time = 0.06, antiderivative size = 47, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.138, Rules used = {2403, 208, 2402, 2315}

$$\frac{b\text{PolyLog}\left(2,1-\frac{2e}{e+fx}\right)}{2ef}+\frac{(a-b\log(2))\tanh^{-1}\left(\frac{fx}{e}\right)}{ef}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[e/(e + f*x)])/(e^2 - f^2*x^2),x]
```

```
[Out] (ArcTanh[(f*x)/e]*(a - b*Log[2]))/(e*f) + (b*PolyLog[2, 1 - (2*e)/(e + f*x)
])/(2*e*f)
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2403

```
Int[((a_.) + Log[(c_.)/((d_) + (e_.)*(x_))]*(b_.))/((f_) + (g_.)*(x_)^2), x
_Symbol] :> Dist[a + b*Log[c/(2*d)], Int[1/(f + g*x^2), x], x] + Dist[b, In
t[Log[(2*d)/(d + e*x)]/(f + g*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && EqQ[e^2*f + d^2*g, 0] && GtQ[c/(2*d), 0]
```

Rubi steps

$$\int \frac{a+b\log\left(\frac{e}{e+fx}\right)}{e^2-f^2x^2}\,dx = b\int \frac{\log\left(\frac{2e}{e+fx}\right)}{e^2-f^2x^2}\,dx + (a-b\log(2))\int \frac{1}{e^2-f^2x^2}\,dx$$
$$= \frac{\tanh^{-1}\left(\frac{fx}{e}\right)(a-b\log(2))}{ef} + \frac{b\,\mathrm{Subst}\left(\int \frac{\log(2ex)}{1-2ex}\,dx, x, \frac{1}{e+fx}\right)}{f}$$
$$= \frac{\tanh^{-1}\left(\frac{fx}{e}\right)(a-b\log(2))}{ef} + \frac{b\mathrm{Li}_2\left(1-\frac{2e}{e+fx}\right)}{2ef}$$

Mathematica [A] time = 0.03, size = 80, normalized size = 1.70

$$\frac{2b^2\mathrm{Li}_2\left(\frac{e+fx}{2e}\right)-\left(a+b\log\left(\frac{e}{e+fx}\right)\right)\left(a+2b\log\left(\frac{e-fx}{2e}\right)+b\log\left(\frac{e}{e+fx}\right)\right)}{4bef}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[e/(e + f*x)])/(e^2 - f^2*x^2),x]
```

```
[Out] (-((a + b*Log[e/(e + f*x)])*(a + 2*b*Log[(e - f*x)/(2*e)] + b*Log[e/(e + f*
x)])) + 2*b^2*PolyLog[2, (e + f*x)/(2*e)])/(4*b*e*f)
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\frac{b\log\left(\frac{e}{fx+e}\right)+a}{f^2x^2-e^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(e/(f*x+e)))/(-f^2*x^2+e^2),x, algorithm="fricas")
```

```
[Out] integral(-(b*log(e/(f*x + e)) + a)/(f^2*x^2 - e^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{b\log\left(\frac{e}{fx+e}\right)+a}{f^2x^2-e^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(e/(f*x+e)))/(-f^2*x^2+e^2),x, algorithm="giac")
```

```
[Out] integrate(-(b*log(e/(f*x + e)) + a)/(f^2*x^2 - e^2), x)
```

maple [B] time = 0.05, size = 109, normalized size = 2.32

$$-\frac{b\ln\left(\frac{e}{fx+e}\right)\ln\left(-\frac{2e}{fx+e}+1\right)}{2ef}+\frac{b\ln\left(\frac{2e}{fx+e}\right)\ln\left(-\frac{2e}{fx+e}+1\right)}{2ef}-\frac{a\ln\left(\frac{2e}{fx+e}-1\right)}{2ef}+\frac{b\,\mathrm{dilog}\left(\frac{2e}{fx+e}\right)}{2ef}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(1/(f*x+e)*e))/(-f^2*x^2+e^2),x)
```

```
[Out] -1/2*a/e/f*ln(2/(f*x+e)*e-1)+1/2/e/f*b*ln(-2/(f*x+e)*e+1)*ln(2/(f*x+e)*e)-1
/2/e/f*b*ln(-2/(f*x+e)*e+1)*ln(1/(f*x+e)*e)+1/2/e/f*b*dilog(2/(f*x+e)*e)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{2}\,a\left(\frac{\log\left(fx+e\right)}{ef}-\frac{\log\left(fx-e\right)}{ef}\right)+b\int\frac{\log\left(fx+e\right)-\log(e)}{f^2x^2-e^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(e/(f*x+e)))/(-f^2*x^2+e^2),x, algorithm="maxima")
```

```
[Out] 1/2*a*(log(f*x + e)/(e*f) - log(f*x - e)/(e*f)) + b*integrate((log(f*x + e)
 - log(e))/(f^2*x^2 - e^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int\frac{a+b\,\ln\left(\frac{e}{e+f\,x}\right)}{e^2-f^2\,x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(e/(e + f*x)))/(e^2 - f^2*x^2),x)
```

```
[Out] int((a + b*log(e/(e + f*x)))/(e^2 - f^2*x^2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\frac{a}{-e^2+f^2x^2}\,dx-\int\frac{b\log\left(\frac{e}{e+fx}\right)}{-e^2+f^2x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(e/(f*x+e)))/(-f**2*x**2+e**2),x)
```

```
[Out] -Integral(a/(-e**2 + f**2*x**2), x) - Integral(b*log(e/(e + f*x))/(-e**2 +
f**2*x**2), x)
```

3.283 $\int \frac{x^5 \log(c+dx)}{a+bx^3} dx$

Optimal. Leaf size=371

$$-\frac{a\text{Li}_2\left(\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3b^2}-\frac{a\text{Li}_2\left(\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c+\sqrt[3]{-1}\sqrt[3]{a}d}\right)}{3b^2}-\frac{a\text{Li}_2\left(\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-(-1)^{2/3}\sqrt[3]{a}d}\right)}{3b^2}-\frac{a\log(c+dx)\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3b^2}-\frac{a\log(c+d}{}$$

```
[Out] -1/3*c^2*x/b/d^2+1/6*c*x^2/b/d-1/9*x^3/b+1/3*c^3*ln(d*x+c)/b/d^3+1/3*x^3*ln
(d*x+c)/b-1/3*a*ln(-d*(a^(1/3)+b^(1/3)*x)/(b^(1/3)*c-a^(1/3)*d))*ln(d*x+c)/
b^2-1/3*a*ln(-d*((-1)^(2/3)*a^(1/3)+b^(1/3)*x)/(b^(1/3)*c-(-1)^(2/3)*a^(1/3
)*d))*ln(d*x+c)/b^2-1/3*a*ln((-1)^(1/3)*d*(a^(1/3)+(-1)^(2/3)*b^(1/3)*x)/(b
^(1/3)*c+(-1)^(1/3)*a^(1/3)*d))*ln(d*x+c)/b^2-1/3*a*polylog(2,b^(1/3)*(d*x+
c)/(b^(1/3)*c-a^(1/3)*d))/b^2-1/3*a*polylog(2,b^(1/3)*(d*x+c)/(b^(1/3)*c+(-
1)^(1/3)*a^(1/3)*d))/b^2-1/3*a*polylog(2,b^(1/3)*(d*x+c)/(b^(1/3)*c-(-1)^(2
/3)*a^(1/3)*d))/b^2
```

Rubi [A] time = 0.60, antiderivative size = 371, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 8, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.421, Rules used = {266, 43, 2416, 2395, 260, 2394, 2393, 2391}

$$-\frac{a\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3b^2}-\frac{a\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{-1}\sqrt[3]{a}d+\sqrt[3]{b}c}\right)}{3b^2}-\frac{a\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-(-1)^{2/3}\sqrt[3]{a}d}\right)}{3b^2}-\frac{a\log(c+dx)\log\left(-\right.}{3b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^5*Log[c + d*x])/(a + b*x^3),x]
```

```
[Out] -(c^2*x)/(3*b*d^2) + (c*x^2)/(6*b*d) - x^3/(9*b) + (c^3*Log[c + d*x])/(3*b*
d^3) + (x^3*Log[c + d*x])/(3*b) - (a*Log[-((d*(a^(1/3) + b^(1/3)*x))/(b^(1/
3)*c - a^(1/3)*d))]*Log[c + d*x])/(3*b^2) - (a*Log[-((d*((-1)^(2/3)*a^(1/3)
 + b^(1/3)*x))/(b^(1/3)*c - (-1)^(2/3)*a^(1/3)*d))]*Log[c + d*x])/(3*b^2) -
 (a*Log[((-1)^(1/3)*d*(a^(1/3) + (-1)^(2/3)*b^(1/3)*x))/(b^(1/3)*c + (-1)^(
1/3)*a^(1/3)*d)]*Log[c + d*x])/(3*b^2) - (a*PolyLog[2, (b^(1/3)*(c + d*x))/
(b^(1/3)*c - a^(1/3)*d)])/(3*b^2) - (a*PolyLog[2, (b^(1/3)*(c + d*x))/(b^(1
/3)*c + (-1)^(1/3)*a^(1/3)*d)])/(3*b^2) - (a*PolyLog[2, (b^(1/3)*(c + d*x))
/(b^(1/3)*c - (-1)^(2/3)*a^(1/3)*d)])/(3*b^2)
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{x^5 \log(c+dx)}{a+bx^3} dx = \int \left(\frac{x^2 \log(c+dx)}{b} - \frac{ax^2 \log(c+dx)}{b(a+bx^3)} \right) dx$$

$$= \frac{\int x^2 \log(c+dx) dx}{b} - \frac{a \int \frac{x^2 \log(c+dx)}{a+bx^3} dx}{b}$$

$$= \frac{x^3 \log(c+dx)}{3b} - \frac{a \int \left(\frac{\log(c+dx)}{3b^{2/3}\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)} + \frac{\log(c+dx)}{3b^{2/3}\left(-\sqrt[3]{-1}\sqrt[3]{a}+\sqrt[3]{b}x\right)} + \frac{\log(c+dx)}{3b^{2/3}\left((-1)^{2/3}\sqrt[3]{a}+\sqrt[3]{b}x\right)} \right) dx}{b} -$$

$$= \frac{x^3 \log(c+dx)}{3b} - \frac{a \int \frac{\log(c+dx)}{\sqrt[3]{a}+\sqrt[3]{b}x} dx}{3b^{5/3}} - \frac{a \int \frac{\log(c+dx)}{-\sqrt[3]{-1}\sqrt[3]{a}+\sqrt[3]{b}x} dx}{3b^{5/3}} - \frac{a \int \frac{\log(c+dx)}{(-1)^{2/3}\sqrt[3]{a}+\sqrt[3]{b}x} dx}{3b^{5/3}} - d\int\Big($$

$$= -\frac{c^2 x}{3bd^2} + \frac{cx^2}{6bd} - \frac{x^3}{9b} + \frac{c^3 \log(c+dx)}{3bd^3} + \frac{x^3 \log(c+dx)}{3b} - \frac{a \log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right) \log(c+d}{3b^2}$$

$$= -\frac{c^2 x}{3bd^2} + \frac{cx^2}{6bd} - \frac{x^3}{9b} + \frac{c^3 \log(c+dx)}{3bd^3} + \frac{x^3 \log(c+dx)}{3b} - \frac{a \log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right) \log(c+d}{3b^2}$$

$$= -\frac{c^2 x}{3bd^2} + \frac{cx^2}{6bd} - \frac{x^3}{9b} + \frac{c^3 \log(c+dx)}{3bd^3} + \frac{x^3 \log(c+dx)}{3b} - \frac{a \log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right) \log(c+d}{3b^2}$$

Mathematica [A] time = 0.35, size = 345, normalized size = 0.93

$$-\frac{6ad^3 \operatorname{Li}_2\left(\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right) + 6ad^3 \operatorname{Li}_2\left(\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c+\sqrt[3]{-1}\sqrt[3]{a}d}\right) + 6ad^3 \operatorname{Li}_2\left(\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-(-1)^{2/3}\sqrt[3]{a}d}\right) + 6ad^3 \log(c+dx) \log\left(\frac{d\left(\sqrt[3]{-1}\sqrt[3]{a}-\right.}{\sqrt[3]{-1}\sqrt[3]{a}d+}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^5*Log[c + d*x])/(a + b*x^3),x]
```

```
[Out] -1/18*(6*b*c^2*d*x - 3*b*c*d^2*x^2 + 2*b*d^3*x^3 - 6*b*c^3*Log[c + d*x] - 6
*b*d^3*x^3*Log[c + d*x] + 6*a*d^3*Log[(d*((-1)^(1/3)*a^(1/3) - b^(1/3)*x))/
(b^(1/3)*c + (-1)^(1/3)*a^(1/3)*d)]*Log[c + d*x] + 6*a*d^3*Log[(d*(a^(1/3)
+ b^(1/3)*x))/(-(b^(1/3)*c) + a^(1/3)*d)]*Log[c + d*x] + 6*a*d^3*Log[(d*((-
1)^(2/3)*a^(1/3) + b^(1/3)*x))/(-(b^(1/3)*c) + (-1)^(2/3)*a^(1/3)*d)]*Log[c
 + d*x] + 6*a*d^3*PolyLog[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c - a^(1/3)*d)] +
 6*a*d^3*PolyLog[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c + (-1)^(1/3)*a^(1/3)*d)]
 + 6*a*d^3*PolyLog[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c - (-1)^(2/3)*a^(1/3)*d
)])/(b^2*d^3)
```

fricas [F] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{x^5 \log(dx+c)}{bx^3+a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*log(d*x+c)/(b*x^3+a),x, algorithm="fricas")
```

```
[Out] integral(x^5*log(d*x + c)/(b*x^3 + a), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^5 \log(dx+c)}{bx^3+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*log(d*x+c)/(b*x^3+a),x, algorithm="giac")
[Out] integrate(x^5*log(d*x + c)/(b*x^3 + a), x)
```

maple [C] time = 0.26, size = 153, normalized size = 0.41

$$\frac{x^3\ln(dx+c)}{3b}-\frac{x^3}{9b}+\frac{c\,x^2}{6bd}-\frac{a\left(\ln\left(\frac{-dx+\mathrm{RootOf}\left(b\_Z^3-3bc\_Z^2+3bc^2\_Z+a\,d^3-b\,c^3\right)-c}{\mathrm{RootOf}\left(b\_Z^3-3bc\_Z^2+3bc^2\_Z+a\,d^3-b\,c^3\right)}\right)\ln(dx+c)+\mathrm{dilog}\left(\frac{-dx+\mathrm{RootOf}\left(b\_Z^3-3bc\_\right.}{\mathrm{RootOf}\left(b\_Z^3-3bc\_\right.}\right.}{3b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*ln(d*x+c)/(b*x^3+a),x)
[Out] 1/3*x^3*ln(d*x+c)/b+1/3*c^3*ln(d*x+c)/b/d^3-1/9*x^3/b+1/6*c*x^2/b/d-1/3*c^2
*x/b/d^2-11/18/d^3/b*c^3-1/3/b^2*sum(ln(d*x+c)*ln((-d*x+_R1-c)/_R1)+dilog((
-d*x+_R1-c)/_R1),_R1=RootOf(_Z^3*b-3*_Z^2*b*c+3*_Z*b*c^2+a*d^3-b*c^3))*a
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^5 \log(dx+c)}{bx^3+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*log(d*x+c)/(b*x^3+a),x, algorithm="maxima")
[Out] integrate(x^5*log(d*x + c)/(b*x^3 + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^5\,\ln(c+d\,x)}{b\,x^3+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^5*log(c + d*x))/(a + b*x^3),x)
[Out] int((x^5*log(c + d*x))/(a + b*x^3), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**5*ln(d*x+c)/(b*x**3+a),x)
[Out] Timed out
```

3.284 $\int \frac{x^2 \log(c+dx)}{a+bx^3} dx$

Optimal. Leaf size=292

$$\frac{\text{Li}_2\left(\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3b}+\frac{\text{Li}_2\left(\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c+\sqrt[3]{-1}\sqrt[3]{a}d}\right)}{3b}+\frac{\text{Li}_2\left(\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-(-1)^{2/3}\sqrt[3]{a}d}\right)}{3b}+\frac{\log(c+dx)\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3b}+\frac{\log(c+dx)\log\left(-\right.}{3}$$

```
[Out] 1/3*ln(-d*(a^(1/3)+b^(1/3)*x)/(b^(1/3)*c-a^(1/3)*d))*ln(d*x+c)/b+1/3*ln(-d*
((-1)^(2/3)*a^(1/3)+b^(1/3)*x)/(b^(1/3)*c-(-1)^(2/3)*a^(1/3)*d))*ln(d*x+c)/
b+1/3*ln((-1)^(1/3)*d*(a^(1/3)+(-1)^(2/3)*b^(1/3)*x)/(b^(1/3)*c+(-1)^(1/3)*
a^(1/3)*d))*ln(d*x+c)/b+1/3*polylog(2,b^(1/3)*(d*x+c)/(b^(1/3)*c-a^(1/3)*d)
)/b+1/3*polylog(2,b^(1/3)*(d*x+c)/(b^(1/3)*c+(-1)^(1/3)*a^(1/3)*d))/b+1/3*p
olylog(2,b^(1/3)*(d*x+c)/(b^(1/3)*c-(-1)^(2/3)*a^(1/3)*d))/b
```

Rubi [A] time = 0.28, antiderivative size = 292, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.263, Rules used = {260, 2416, 2394, 2393, 2391}

$$\frac{\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3b}+\frac{\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{-1}\sqrt[3]{a}d+\sqrt[3]{b}c}\right)}{3b}+\frac{\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-(-1)^{2/3}\sqrt[3]{a}d}\right)}{3b}+\frac{\log(c+dx)\log\left(-\frac{d\left(\sqrt[3]{a}+\right.}{\sqrt[3]{b}c-}\right.}{3b}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*Log[c + d*x])/(a + b*x^3),x]
```

```
[Out] (Log[-((d*(a^(1/3) + b^(1/3)*x))/(b^(1/3)*c - a^(1/3)*d))]*Log[c + d*x])/(3
*b) + (Log[-((d*((-1)^(2/3)*a^(1/3) + b^(1/3)*x))/(b^(1/3)*c - (-1)^(2/3)*a
^(1/3)*d))]*Log[c + d*x])/(3*b) + (Log[((-1)^(1/3)*d*(a^(1/3) + (-1)^(2/3)*
b^(1/3)*x))/(b^(1/3)*c + (-1)^(1/3)*a^(1/3)*d)]*Log[c + d*x])/(3*b) + PolyL
og[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c - a^(1/3)*d)]/(3*b) + PolyLog[2, (b^(1
/3)*(c + d*x))/(b^(1/3)*c + (-1)^(1/3)*a^(1/3)*d)]/(3*b) + PolyLog[2, (b^(1
/3)*(c + d*x))/(b^(1/3)*c - (-1)^(2/3)*a^(1/3)*d)]/(3*b)
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{x^2 \log(c+dx)}{a+bx^3}\,dx = \int \left(\frac{\log(c+dx)}{3b^{2/3}\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)} + \frac{\log(c+dx)}{3b^{2/3}\left(-\sqrt[3]{-1}\sqrt[3]{a}+\sqrt[3]{b}x\right)} + \frac{\log(c+dx)}{3b^{2/3}\left((-1)^{2/3}\sqrt[3]{a}+\sqrt[3]{b}x\right)}\right)dx$$

$$= \frac{\int \frac{\log(c+dx)}{\sqrt[3]{a}+\sqrt[3]{b}x}\,dx}{3b^{2/3}} + \frac{\int \frac{\log(c+dx)}{-\sqrt[3]{-1}\sqrt[3]{a}+\sqrt[3]{b}x}\,dx}{3b^{2/3}} + \frac{\int \frac{\log(c+dx)}{(-1)^{2/3}\sqrt[3]{a}+\sqrt[3]{b}x}\,dx}{3b^{2/3}}$$

$$= \frac{\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)\log(c+dx)}{3b} + \frac{\log\left(-\frac{d\left((-1)^{2/3}\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-(-1)^{2/3}\sqrt[3]{a}d}\right)\log(c+dx)}{3b} + \frac{\log\left(\frac{\sqrt[3]{-1}d\left(\sqrt[3]{a}+(-1\right.}{\sqrt[3]{b}c+\sqrt[3]{-1}}\right.}{}$$

$$= \frac{\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)\log(c+dx)}{3b} + \frac{\log\left(-\frac{d\left((-1)^{2/3}\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-(-1)^{2/3}\sqrt[3]{a}d}\right)\log(c+dx)}{3b} + \frac{\log\left(\frac{\sqrt[3]{-1}d\left(\sqrt[3]{a}+(-1\right.}{\sqrt[3]{b}c+\sqrt[3]{-1}}\right.}{}$$

$$= \frac{\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)\log(c+dx)}{3b} + \frac{\log\left(-\frac{d\left((-1)^{2/3}\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-(-1)^{2/3}\sqrt[3]{a}d}\right)\log(c+dx)}{3b} + \frac{\log\left(\frac{\sqrt[3]{-1}d\left(\sqrt[3]{a}+(-1\right.}{\sqrt[3]{b}c+\sqrt[3]{-1}}\right.}{}$$

Mathematica [A] time = 0.06, size = 297, normalized size = 1.02

$$\frac{\text{Li}_2\left(\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3b} + \frac{\text{Li}_2\left(\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c+\sqrt[3]{-1}\sqrt[3]{a}d}\right)}{3b} + \frac{\text{Li}_2\left(\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-(-1)^{2/3}\sqrt[3]{a}d}\right)}{3b} + \frac{\log(c+dx)\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3b} + \frac{\log(c+dx)\log\left(-\frac{(-}{}\right.}{3b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*Log[c + d*x])/(a + b*x^3),x]
```

```
[Out] (Log[-((d*(a^(1/3) + b^(1/3)*x))/(b^(1/3)*c - a^(1/3)*d))]*Log[c + d*x])/(3
*b) + (Log[-(((-1)^(2/3)*d*(a^(1/3) - (-1)^(1/3)*b^(1/3)*x))/(b^(1/3)*c - (
-1)^(2/3)*a^(1/3)*d))]*Log[c + d*x])/(3*b) + (Log[((-1)^(1/3)*d*(a^(1/3) +
(-1)^(2/3)*b^(1/3)*x))/(b^(1/3)*c + (-1)^(1/3)*a^(1/3)*d)]*Log[c + d*x])/(3
*b) + PolyLog[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c - a^(1/3)*d)]/(3*b) + PolyL
og[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c + (-1)^(1/3)*a^(1/3)*d)]/(3*b) + PolyL
og[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c - (-1)^(2/3)*a^(1/3)*d)]/(3*b)
```

fricas [F] time = 0.42, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{x^2\log(dx+c)}{bx^3+a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(d*x+c)/(b*x^3+a),x, algorithm="fricas")
```

```
[Out] integral(x^2*log(d*x + c)/(b*x^3 + a), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2 \log(dx + c)}{bx^3 + a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(d*x+c)/(b*x^3+a),x, algorithm="giac")
[Out] integrate(x^2*log(d*x + c)/(b*x^3 + a), x)
```

maple [C] time = 0.27, size = 77, normalized size = 0.26

$$\frac{\ln\left(\frac{-dx+\mathrm{RootOf}\left(b\_Z^3-3bc\_Z^2+3bc^2\_Z+a\,d^3-b\,c^3\right)-c}{\mathrm{RootOf}\left(b\_Z^3-3bc\_Z^2+3bc^2\_Z+a\,d^3-b\,c^3\right)}\right)\ln(dx+c)+\mathrm{dilog}\left(\frac{-dx+\mathrm{RootOf}\left(b\_Z^3-3bc\_Z^2+3bc^2\_Z+a\,d^3-b\,c^3\right)-c}{\mathrm{RootOf}\left(b\_Z^3-3bc\_Z^2+3bc^2\_Z+a\,d^3-b\,c^3\right)}\right)}{3b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*ln(d*x+c)/(b*x^3+a),x)
[Out] 1/3/b*sum(ln((-d*x+_R1-c)/_R1)*ln(d*x+c)+dilog((-d*x+_R1-c)/_R1),_R1=RootOf
(_Z^3*b-3*_Z^2*b*c+3*_Z*b*c^2+a*d^3-b*c^3))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2 \log(dx + c)}{bx^3 + a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(d*x+c)/(b*x^3+a),x, algorithm="maxima")
[Out] integrate(x^2*log(d*x + c)/(b*x^3 + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^2\,\ln(c + d\,x)}{b\,x^3 + a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*log(c + d*x))/(a + b*x^3),x)
[Out] int((x^2*log(c + d*x))/(a + b*x^3), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*ln(d*x+c)/(b*x**3+a),x)
[Out] Timed out
```

3.285 $\int \frac{\log(c+dx)}{x(a+bx^3)}\,dx$

Optimal. Leaf size=324

$$-\frac{\text{Li}_2\left(\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3a}-\frac{\text{Li}_2\left(\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c+\sqrt[3]{-1}\sqrt[3]{a}d}\right)}{3a}-\frac{\text{Li}_2\left(\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-(-1)^{2/3}\sqrt[3]{a}d}\right)}{3a}-\frac{\log(c+dx)\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3a}-\frac{\log(c+dx)\log\left(-\frac{d}{}\right.}{3a}$$

```
[Out] ln(-d*x/c)*ln(d*x+c)/a-1/3*ln(-d*(a^(1/3)+b^(1/3)*x)/(b^(1/3)*c-a^(1/3)*d))
*ln(d*x+c)/a-1/3*ln(-d*((-1)^(2/3)*a^(1/3)+b^(1/3)*x)/(b^(1/3)*c-(-1)^(2/3)
*a^(1/3)*d))*ln(d*x+c)/a-1/3*ln((-1)^(1/3)*d*(a^(1/3)+(-1)^(2/3)*b^(1/3)*x)
/(b^(1/3)*c+(-1)^(1/3)*a^(1/3)*d))*ln(d*x+c)/a-1/3*polylog(2,b^(1/3)*(d*x+c
)/(b^(1/3)*c-a^(1/3)*d))/a-1/3*polylog(2,b^(1/3)*(d*x+c)/(b^(1/3)*c+(-1)^(1
/3)*a^(1/3)*d))/a-1/3*polylog(2,b^(1/3)*(d*x+c)/(b^(1/3)*c-(-1)^(2/3)*a^(1/
3)*d))/a+polylog(2,1+d*x/c)/a
```

Rubi [A] time = 0.43, antiderivative size = 324, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 10, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.526, Rules used = {266, 36, 29, 31, 2416, 2394, 2315, 260, 2393, 2391}

$$-\frac{\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3a}-\frac{\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{-1}\sqrt[3]{a}d+\sqrt[3]{b}c}\right)}{3a}-\frac{\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-(-1)^{2/3}\sqrt[3]{a}d}\right)}{3a}+\frac{\text{PolyLog}\left(2,\frac{dx}{c}+1\right)}{a}-\frac{\log(c}{}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c + d*x]/(x*(a + b*x^3)),x]
```

```
[Out] (Log[-((d*x)/c)]*Log[c + d*x])/a - (Log[-((d*(a^(1/3) + b^(1/3)*x))/(b^(1/3
)*c - a^(1/3)*d))]*Log[c + d*x])/(3*a) - (Log[-((d*((-1)^(2/3)*a^(1/3) + b^
(1/3)*x))/(b^(1/3)*c - (-1)^(2/3)*a^(1/3)*d))]*Log[c + d*x])/(3*a) - (Log[(
(-1)^(1/3)*d*(a^(1/3) + (-1)^(2/3)*b^(1/3)*x))/(b^(1/3)*c + (-1)^(1/3)*a^(1
/3)*d)]*Log[c + d*x])/(3*a) - PolyLog[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c - a
^(1/3)*d)]/(3*a) - PolyLog[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c + (-1)^(1/3)*a
^(1/3)*d)]/(3*a) - PolyLog[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c - (-1)^(2/3)*a
^(1/3)*d)]/(3*a) + PolyLog[2, 1 + (d*x)/c]/a
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{\log(c+dx)}{x\left(a+bx^3\right)}\,dx = \int \left(\frac{\log(c+dx)}{ax} - \frac{bx^2\log(c+dx)}{a\left(a+bx^3\right)}\right)dx$$
$$= \frac{\int \frac{\log(c+dx)}{x}\,dx}{a} - \frac{b\int \frac{x^2\log(c+dx)}{a+bx^3}\,dx}{a}$$
$$= \frac{\log\left(-\frac{dx}{c}\right)\log(c+dx)}{a} - \frac{b\int \left(\frac{\log(c+dx)}{3b^{2/3}\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)} + \frac{\log(c+dx)}{3b^{2/3}\left(-\sqrt[3]{-1}\sqrt[3]{a}+\sqrt[3]{b}x\right)} + \frac{\log(c+dx)}{3b^{2/3}\left((-1)^{2/3}\sqrt[3]{a}+\sqrt[3]{b}x\right)}\right)dx}{a} -$$
$$= \frac{\log\left(-\frac{dx}{c}\right)\log(c+dx)}{a} + \frac{\text{Li}_2\left(1+\frac{dx}{c}\right)}{a} - \frac{\sqrt[3]{b}\int \frac{\log(c+dx)}{\sqrt[3]{a}+\sqrt[3]{b}x}\,dx}{3a} - \frac{\sqrt[3]{b}\int \frac{\log(c+dx)}{-\sqrt[3]{-1}\sqrt[3]{a}+\sqrt[3]{b}x}\,dx}{3a} - \frac{\sqrt[3]{b}\int}{}$$
$$= \frac{\log\left(-\frac{dx}{c}\right)\log(c+dx)}{a} - \frac{\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)\log(c+dx)}{3a} - \frac{\log\left(-\frac{d\left((-1)^{2/3}\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-(-1)^{2/3}\sqrt[3]{a}d}\right)\log(c+dx}{3a}$$

$$= \frac{\log\left(-\frac{dx}{c}\right)\log(c+dx)}{a} - \frac{\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)\log(c+dx)}{3a} - \frac{\log\left(-\frac{d\left((-1)^{2/3}\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-(-1)^{2/3}\sqrt[3]{a}d}\right)\log(c+dx}{3a}$$
$$= \frac{\log\left(-\frac{dx}{c}\right)\log(c+dx)}{a} - \frac{\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)\log(c+dx)}{3a} - \frac{\log\left(-\frac{d\left((-1)^{2/3}\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-(-1)^{2/3}\sqrt[3]{a}d}\right)\log(c+dx}{3a}$$

Mathematica [A] time = 0.11, size = 330, normalized size = 1.02

$$-\frac{\text{Li}_2\left(\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3a} - \frac{\text{Li}_2\left(\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c+\sqrt[3]{-1}\sqrt[3]{a}d}\right)}{3a} - \frac{\text{Li}_2\left(\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-(-1)^{2/3}\sqrt[3]{a}d}\right)}{3a} - \frac{\log(c+dx)\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3a} - \frac{\log(c+dx)\log\left(-\right.}{3}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c + d*x]/(x*(a + b*x^3)),x]
```

```
[Out] (Log[-((d*x)/c)]*Log[c + d*x])/a - (Log[-((d*(a^(1/3) + b^(1/3)*x))/(b^(1/3
)*c - a^(1/3)*d))]*Log[c + d*x])/(3*a) - (Log[-(((-1)^(2/3)*d*(a^(1/3) - (-
1)^(1/3)*b^(1/3)*x))/(b^(1/3)*c - (-1)^(2/3)*a^(1/3)*d))]*Log[c + d*x])/(3*
a) - (Log[((-1)^(1/3)*d*(a^(1/3) + (-1)^(2/3)*b^(1/3)*x))/(b^(1/3)*c + (-1)
^(1/3)*a^(1/3)*d)]*Log[c + d*x])/(3*a) + PolyLog[2, (c + d*x)/c]/a - PolyLo
g[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c - a^(1/3)*d)]/(3*a) - PolyLog[2, (b^(1/
3)*(c + d*x))/(b^(1/3)*c + (-1)^(1/3)*a^(1/3)*d)]/(3*a) - PolyLog[2, (b^(1/
3)*(c + d*x))/(b^(1/3)*c - (-1)^(2/3)*a^(1/3)*d)]/(3*a)
```

fricas [F] time = 0.42, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\log(dx+c)}{bx^4+ax}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x/(b*x^3+a),x, algorithm="fricas")
```

```
[Out] integral(log(d*x + c)/(b*x^4 + a*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log(dx+c)}{\left(bx^3+a\right)x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x/(b*x^3+a),x, algorithm="giac")
```

```
[Out] integrate(log(d*x + c)/((b*x^3 + a)*x), x)
```

maple [C] time = 0.28, size = 108, normalized size = 0.33

$$\frac{\ln\left(-\frac{dx}{c}\right)\ln\left(dx+c\right)}{a}+\frac{\mathrm{dilog}\left(-\frac{dx}{c}\right)}{a}-\frac{\ln\left(\frac{-dx+\mathrm{RootOf}\left(b\_Z^3-3bc\_Z^2+3bc^2\_Z+a\,d^3-b\,c^3\right)-c}{\mathrm{RootOf}\left(b\_Z^3-3bc\_Z^2+3bc^2\_Z+a\,d^3-b\,c^3\right)}\right)\ln\left(dx+c\right)+\mathrm{dilog}\left(\frac{-dx+\mathrm{Root}}{\mathrm{RootO}}\right.}{3a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(d*x+c)/x/(b*x^3+a),x)
```

```
[Out] -1/3*sum(ln((-d*x+_R1-c)/_R1)*ln(d*x+c)+dilog((-d*x+_R1-c)/_R1),_R1=RootOf(
_Z^3*b-3*_Z^2*b*c+3*_Z*b*c^2+a*d^3-b*c^3))/a+ln(-d*x/c)*ln(d*x+c)/a+1/a*dil
og(-d*x/c)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log\left(dx+c\right)}{\left(bx^3+a\right)x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x/(b*x^3+a),x, algorithm="maxima")
```

```
[Out] integrate(log(d*x + c)/((b*x^3 + a)*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln\left(c+d\,x\right)}{x\,\left(b\,x^3+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(c + d*x)/(x*(a + b*x^3)),x)
```

```
[Out] int(log(c + d*x)/(x*(a + b*x^3)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(d*x+c)/x/(b*x**3+a),x)
```

```
[Out] Timed out
```

3.286 $\int \frac{\log(c+dx)}{x^4(a+bx^3)}\,dx$

Optimal. Leaf size=414

$$\frac{b\text{Li}_2\left(\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3a^2}+\frac{b\text{Li}_2\left(\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c+\sqrt[3]{-1}\sqrt[3]{a}d}\right)}{3a^2}+\frac{b\text{Li}_2\left(\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-(-1)^{2/3}\sqrt[3]{a}d}\right)}{3a^2}-\frac{b\text{Li}_2\left(\frac{dx}{c}+1\right)}{a^2}-\frac{b\log\left(-\frac{dx}{c}\right)\log(c+dx)}{a^2}+\frac{b\log(c+$$

```
[Out] -1/6*d/a/c/x^2+1/3*d^2/a/c^2/x+1/3*d^3*ln(x)/a/c^3-1/3*d^3*ln(d*x+c)/a/c^3-
1/3*ln(d*x+c)/a/x^3-b*ln(-d*x/c)*ln(d*x+c)/a^2+1/3*b*ln(-d*(a^(1/3)+b^(1/3)
*x)/(b^(1/3)*c-a^(1/3)*d))*ln(d*x+c)/a^2+1/3*b*ln(-d*((-1)^(2/3)*a^(1/3)+b^
(1/3)*x)/(b^(1/3)*c-(-1)^(2/3)*a^(1/3)*d))*ln(d*x+c)/a^2+1/3*b*ln((-1)^(1/3
)*d*(a^(1/3)+(-1)^(2/3)*b^(1/3)*x)/(b^(1/3)*c+(-1)^(1/3)*a^(1/3)*d))*ln(d*x
+c)/a^2+1/3*b*polylog(2,b^(1/3)*(d*x+c)/(b^(1/3)*c-a^(1/3)*d))/a^2+1/3*b*po
lylog(2,b^(1/3)*(d*x+c)/(b^(1/3)*c+(-1)^(1/3)*a^(1/3)*d))/a^2+1/3*b*polylog
(2,b^(1/3)*(d*x+c)/(b^(1/3)*c-(-1)^(2/3)*a^(1/3)*d))/a^2-b*polylog(2,1+d*x/
c)/a^2
```

Rubi [A] time = 0.50, antiderivative size = 414, normalized size of antiderivative = 1.00, number of steps used = 18, number of rules used = 9, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.474$, Rules used = {266, 44, 2416, 2395, 2394, 2315, 260, 2393, 2391}

$$\frac{b\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3a^2}+\frac{b\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{-1}\sqrt[3]{a}d+\sqrt[3]{b}c}\right)}{3a^2}+\frac{b\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-(-1)^{2/3}\sqrt[3]{a}d}\right)}{3a^2}-\frac{b\text{PolyLog}\left(2,\frac{dx}{c}+1\right)}{a^2}-\frac{b}{}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c + d*x]/(x^4*(a + b*x^3)),x]
```

```
[Out] -d/(6*a*c*x^2) + d^2/(3*a*c^2*x) + (d^3*Log[x])/(3*a*c^3) - (d^3*Log[c + d*
x])/(3*a*c^3) - Log[c + d*x]/(3*a*x^3) - (b*Log[-((d*x)/c)]*Log[c + d*x])/a
^2 + (b*Log[-((d*(a^(1/3) + b^(1/3)*x))/(b^(1/3)*c - a^(1/3)*d))]*Log[c + d
*x])/(3*a^2) + (b*Log[-((d*((-1)^(2/3)*a^(1/3) + b^(1/3)*x))/(b^(1/3)*c - (
-1)^(2/3)*a^(1/3)*d))]*Log[c + d*x])/(3*a^2) + (b*Log[((-1)^(1/3)*d*(a^(1/3
) + (-1)^(2/3)*b^(1/3)*x))/(b^(1/3)*c + (-1)^(1/3)*a^(1/3)*d)]*Log[c + d*x]
)/(3*a^2) + (b*PolyLog[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c - a^(1/3)*d)])/(3*
a^2) + (b*PolyLog[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c + (-1)^(1/3)*a^(1/3)*d)
])/(3*a^2) + (b*PolyLog[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c - (-1)^(2/3)*a^(1
/3)*d)])/(3*a^2) - (b*PolyLog[2, 1 + (d*x)/c])/a^2
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{\log(c+dx)}{x^4\left(a+bx^3\right)}\,dx = \int \left(\frac{\log(c+dx)}{ax^4} - \frac{b\log(c+dx)}{a^2x} + \frac{b^2x^2\log(c+dx)}{a^2\left(a+bx^3\right)}\right)dx$$

$$= \frac{\int \frac{\log(c+dx)}{x^4}\,dx}{a} - \frac{b\int \frac{\log(c+dx)}{x}\,dx}{a^2} + \frac{b^2\int \frac{x^2\log(c+dx)}{a+bx^3}\,dx}{a^2}$$

$$= -\frac{\log(c+dx)}{3ax^3} - \frac{b\log\left(-\frac{dx}{c}\right)\log(c+dx)}{a^2} + \frac{b^2\int\left(\frac{\log(c+dx)}{3b^{2/3}\left(\sqrt[3]{a}+\sqrt[3]{b}\,x\right)} + \frac{\log(c+dx)}{3b^{2/3}\left(-\sqrt[3]{-1}\,\sqrt[3]{a}+\sqrt[3]{b}\,x\right)} + \frac{}{3b^{2/3}(}\right.}{a^2}$$

$$= -\frac{\log(c+dx)}{3ax^3} - \frac{b\log\left(-\frac{dx}{c}\right)\log(c+dx)}{a^2} - \frac{b\mathrm{Li}_2\left(1+\frac{dx}{c}\right)}{a^2} + \frac{b^{4/3}\int \frac{\log(c+dx)}{\sqrt[3]{a}+\sqrt[3]{b}\,x}\,dx}{3a^2} + \frac{b^{4/3}\int \frac{\log}{-\sqrt[3]{-1}}}{3a}$$

$$= -\frac{d}{6acx^2} + \frac{d^2}{3ac^2x} + \frac{d^3\log(x)}{3ac^3} - \frac{d^3\log(c+dx)}{3ac^3} - \frac{\log(c+dx)}{3ax^3} - \frac{b\log\left(-\frac{dx}{c}\right)\log(c+dx)}{a^2} + \frac{b}{}$$

$$= -\frac{d}{6acx^2} + \frac{d^2}{3ac^2x} + \frac{d^3\log(x)}{3ac^3} - \frac{d^3\log(c+dx)}{3ac^3} - \frac{\log(c+dx)}{3ax^3} - \frac{b\log\left(-\frac{dx}{c}\right)\log(c+dx)}{a^2} + \frac{b}{}$$

$$= -\frac{d}{6acx^2} + \frac{d^2}{3ac^2x} + \frac{d^3\log(x)}{3ac^3} - \frac{d^3\log(c+dx)}{3ac^3} - \frac{\log(c+dx)}{3ax^3} - \frac{b\log\left(-\frac{dx}{c}\right)\log(c+dx)}{a^2} + \frac{b}{}$$

Mathematica [A] time = 0.16, size = 405, normalized size = 0.98

$$-\frac{b\mathrm{Li}_2\left(\frac{c+dx}{c}\right)}{a^2} + \frac{b\mathrm{Li}_2\left(\frac{\sqrt[3]{b}\,(c+dx)}{\sqrt[3]{b}\,c-\sqrt[3]{a}\,d}\right)}{3a^2} + \frac{b\mathrm{Li}_2\left(\frac{\sqrt[3]{b}\,(c+dx)}{\sqrt[3]{b}\,c+\sqrt[3]{-1}\,\sqrt[3]{a}\,d}\right)}{3a^2} + \frac{b\mathrm{Li}_2\left(\frac{\sqrt[3]{b}\,(c+dx)}{\sqrt[3]{b}\,c-(-1)^{2/3}\,\sqrt[3]{a}\,d}\right)}{3a^2} - \frac{b\log\left(-\frac{dx}{c}\right)\log(c+dx)}{a^2} + \frac{b\log(c+}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c + d*x]/(x^4*(a + b*x^3)),x]
```

```
[Out] -1/3*Log[c + d*x]/(a*x^3) - (b*Log[-((d*x)/c)]*Log[c + d*x])/a^2 + (b*Log[-
((d*(a^(1/3) + b^(1/3)*x))/(b^(1/3)*c - a^(1/3)*d))]*Log[c + d*x])/(3*a^2)
+ (b*Log[-(((-1)^(2/3)*d*(a^(1/3) - (-1)^(1/3)*b^(1/3)*x))/(b^(1/3)*c - (-1
)^(2/3)*a^(1/3)*d))]*Log[c + d*x])/(3*a^2) + (b*Log[((-1)^(1/3)*d*(a^(1/3)
+ (-1)^(2/3)*b^(1/3)*x))/(b^(1/3)*c + (-1)^(1/3)*a^(1/3)*d)]*Log[c + d*x])/
(3*a^2) - (d*(1/(c*x^2) - (2*d)/(c^2*x) - (2*d^2*Log[x])/c^3 + (2*d^2*Log[c
 + d*x])/c^3))/(6*a) - (b*PolyLog[2, (c + d*x)/c])/a^2 + (b*PolyLog[2, (b^(
1/3)*(c + d*x))/(b^(1/3)*c - a^(1/3)*d)])/(3*a^2) + (b*PolyLog[2, (b^(1/3)*
(c + d*x))/(b^(1/3)*c + (-1)^(1/3)*a^(1/3)*d)])/(3*a^2) + (b*PolyLog[2, (b^
(1/3)*(c + d*x))/(b^(1/3)*c - (-1)^(2/3)*a^(1/3)*d)])/(3*a^2)
```

fricas [F] time = 0.97, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\log\left(dx+c\right)}{bx^7+ax^4}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x^4/(b*x^3+a),x, algorithm="fricas")
```

```
[Out] integral(log(d*x + c)/(b*x^7 + a*x^4), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log (dx + c)}{(bx^3 + a)x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x^4/(b*x^3+a),x, algorithm="giac")
[Out] integrate(log(d*x + c)/((b*x^3 + a)*x^4), x)
```

maple [C] time = 0.29, size = 185, normalized size = 0.45

$$-\frac{b \ln \left(-\frac{dx}{c}\right) \ln (dx + c)}{a^2} + \frac{d^3 \ln (dx)}{3a\,c^3} - \frac{d^3 \ln (dx + c)}{3a\,c^3} - \frac{b \operatorname{dilog}\left(-\frac{dx}{c}\right)}{a^2} + \frac{b \left(\ln \left(\frac{-dx+\operatorname{RootOf}\left(b\_Z^3-3bc\_Z^2+3b\,c^2\_Z+a\,d^3-b\,c\right.}{\operatorname{RootOf}\left(b\_Z^3-3bc\_Z^2+3b\,c^2\_Z+a\,d^3-b\,c^3\right.}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(d*x+c)/x^4/(b*x^3+a),x)
[Out] 1/3*b*sum(ln((-d*x+_R1-c)/_R1)*ln(d*x+c)+dilog((-d*x+_R1-c)/_R1),_R1=RootOf
(_Z^3*b-3*_Z^2*b*c+3*_Z*b*c^2+a*d^3-b*c^3))/a^2-b*ln(-1/c*d*x)*ln(d*x+c)/a^
2-1/a^2*b*dilog(-1/c*d*x)-1/6*d/a/c/x^2+1/3*d^3/a/c^3*ln(d*x)+1/3*d^2/a/c^2
/x-1/3*d^3*ln(d*x+c)/a/c^3-1/3*ln(d*x+c)/a/x^3
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log (dx + c)}{(bx^3 + a)x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x^4/(b*x^3+a),x, algorithm="maxima")
[Out] integrate(log(d*x + c)/((b*x^3 + a)*x^4), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln (c + d\,x)}{x^4\,\left(b\,x^3 + a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(c + d*x)/(x^4*(a + b*x^3)),x)
[Out] int(log(c + d*x)/(x^4*(a + b*x^3)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(d*x+c)/x**4/(b*x**3+a),x)
[Out] Timed out
```

3.287 $\int \frac{x^4 \log(c+dx)}{a+bx^3} dx$

Optimal. Leaf size=416

$$\frac{a^{2/3}\text{Li}_2\left(\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3b^{5/3}}+\frac{(-1)^{2/3}a^{2/3}\text{Li}_2\left(\frac{(-1)^{2/3}\sqrt[3]{b}(c+dx)}{(-1)^{2/3}\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3b^{5/3}}-\frac{\sqrt[3]{-1}\,a^{2/3}\text{Li}_2\left(\frac{\sqrt[3]{-1}\sqrt[3]{b}(c+dx)}{\sqrt[3]{-1}\sqrt[3]{b}c+\sqrt[3]{a}d}\right)}{3b^{5/3}}+\frac{a^{2/3}\log(c+dx)\log\left(-\frac{d(\sqrt[3]{a}+\sqrt[3]{b}}{\sqrt[3]{b}c-\sqrt[3]{a}}\right.}{3b^{5/3}}$$

```
[Out] 1/2*c*x/b/d-1/4*x^2/b-1/2*c^2*ln(d*x+c)/b/d^2+1/2*x^2*ln(d*x+c)/b+1/3*a^(2/
3)*ln(-d*(a^(1/3)+b^(1/3)*x)/(b^(1/3)*c-a^(1/3)*d))*ln(d*x+c)/b^(5/3)-1/3*(
-1)^(1/3)*a^(2/3)*ln(d*(a^(1/3)-(-1)^(1/3)*b^(1/3)*x)/((-1)^(1/3)*b^(1/3)*c
+a^(1/3)*d))*ln(d*x+c)/b^(5/3)+1/3*(-1)^(2/3)*a^(2/3)*ln(-d*(a^(1/3)+(-1)^(
2/3)*b^(1/3)*x)/((-1)^(2/3)*b^(1/3)*c-a^(1/3)*d))*ln(d*x+c)/b^(5/3)+1/3*a^(
2/3)*polylog(2,b^(1/3)*(d*x+c)/(b^(1/3)*c-a^(1/3)*d))/b^(5/3)+1/3*(-1)^(2/3
)*a^(2/3)*polylog(2,(-1)^(2/3)*b^(1/3)*(d*x+c)/((-1)^(2/3)*b^(1/3)*c-a^(1/3
)*d))/b^(5/3)-1/3*(-1)^(1/3)*a^(2/3)*polylog(2,(-1)^(1/3)*b^(1/3)*(d*x+c)/(
(-1)^(1/3)*b^(1/3)*c+a^(1/3)*d))/b^(5/3)
```

Rubi [A] time = 0.70, antiderivative size = 416, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 13, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.684, Rules used = {321, 292, 31, 634, 617, 204, 628, 2416, 2395, 43, 2394, 2393, 2391}

$$\frac{a^{2/3}\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3b^{5/3}}+\frac{(-1)^{2/3}a^{2/3}\text{PolyLog}\left(2,\frac{(-1)^{2/3}\sqrt[3]{b}(c+dx)}{(-1)^{2/3}\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3b^{5/3}}-\frac{\sqrt[3]{-1}\,a^{2/3}\text{PolyLog}\left(2,\frac{\sqrt[3]{-1}\sqrt[3]{b}(c+dx)}{\sqrt[3]{a}d+\sqrt[3]{-1}\sqrt[3]{b}c}\right)}{3b^{5/3}}+\frac{a^{2/3}\text{lo}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*Log[c + d*x])/(a + b*x^3),x]
```

```
[Out] (c*x)/(2*b*d) - x^2/(4*b) - (c^2*Log[c + d*x])/(2*b*d^2) + (x^2*Log[c + d*x
])/(2*b) + (a^(2/3)*Log[-((d*(a^(1/3) + b^(1/3)*x))/(b^(1/3)*c - a^(1/3)*d)
)]*Log[c + d*x])/(3*b^(5/3)) - ((-1)^(1/3)*a^(2/3)*Log[(d*(a^(1/3) - (-1)^(
1/3)*b^(1/3)*x))/((-1)^(1/3)*b^(1/3)*c + a^(1/3)*d)]*Log[c + d*x])/(3*b^(5/
3)) + ((-1)^(2/3)*a^(2/3)*Log[-((d*(a^(1/3) + (-1)^(2/3)*b^(1/3)*x))/((-1)^
(2/3)*b^(1/3)*c - a^(1/3)*d))]*Log[c + d*x])/(3*b^(5/3)) + (a^(2/3)*PolyLog
[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c - a^(1/3)*d)])/(3*b^(5/3)) + ((-1)^(2/3)
*a^(2/3)*PolyLog[2, ((-1)^(2/3)*b^(1/3)*(c + d*x))/((-1)^(2/3)*b^(1/3)*c -
a^(1/3)*d)])/(3*b^(5/3)) - ((-1)^(1/3)*a^(2/3)*PolyLog[2, ((-1)^(1/3)*b^(1/
3)*(c + d*x))/((-1)^(1/3)*b^(1/3)*c + a^(1/3)*d)])/(3*b^(5/3))
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 292

```
Int[(x_)/((a_) + (b_.)*(x_)^3), x_Symbol] :> -Dist[(3*Rt[a, 3]*Rt[b, 3])^(-
1), Int[1/(Rt[a, 3] + Rt[b, 3]*x), x], x] + Dist[1/(3*Rt[a, 3]*Rt[b, 3]), I
nt[(Rt[a, 3] + Rt[b, 3]*x)/(Rt[a, 3]^2 - Rt[a, 3]*Rt[b, 3]*x + Rt[b, 3]^2*x
^2), x], x] /; FreeQ[{a, b}, x]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
```

```
eQ[q, -1]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{x^4\log(c+dx)}{a+bx^3}\,dx = \int \left(\frac{x\log(c+dx)}{b} - \frac{ax\log(c+dx)}{b\left(a+bx^3\right)}\right)dx$$

$$= \frac{\int x\log(c+dx)\,dx}{b} - \frac{a\int \frac{x\log(c+dx)}{a+bx^3}\,dx}{b}$$

$$= \frac{x^2\log(c+dx)}{2b} - \frac{a\int\left(-\frac{\log(c+dx)}{3\sqrt[3]{a}\sqrt[3]{b}\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)} - \frac{(-1)^{2/3}\log(c+dx)}{3\sqrt[3]{a}\sqrt[3]{b}\left(\sqrt[3]{a}-\sqrt[3]{-1}\sqrt[3]{b}x\right)} + \frac{\sqrt[3]{-1}\log(c+dx)}{3\sqrt[3]{a}\sqrt[3]{b}\left(\sqrt[3]{a}+(-1)^{2/3}\sqrt[3]{b}x\right)}\right) \cdots}{b}$$

$$= \frac{x^2\log(c+dx)}{2b} + \frac{a^{2/3}\int \frac{\log(c+dx)}{\sqrt[3]{a}+\sqrt[3]{b}x}\,dx}{3b^{4/3}} - \frac{\left(\sqrt[3]{-1}\,a^{2/3}\right)\int \frac{\log(c+dx)}{\sqrt[3]{a}+(-1)^{2/3}\sqrt[3]{b}x}\,dx}{3b^{4/3}} + \frac{\left((-1)^{2/3}a^{2/3}\right)\int \cdots}{3b^{4/3}}$$

$$= \frac{cx}{2bd} - \frac{x^2}{4b} - \frac{c^2\log(c+dx)}{2bd^2} + \frac{x^2\log(c+dx)}{2b} + \frac{a^{2/3}\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)\log(c+dx)}{3b^{5/3}} - \frac{\sqrt[3]{-1}\cdots}{\cdots}$$

$$= \frac{cx}{2bd} - \frac{x^2}{4b} - \frac{c^2\log(c+dx)}{2bd^2} + \frac{x^2\log(c+dx)}{2b} + \frac{a^{2/3}\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)\log(c+dx)}{3b^{5/3}} - \frac{\sqrt[3]{-1}\cdots}{\cdots}$$

$$= \frac{cx}{2bd} - \frac{x^2}{4b} - \frac{c^2\log(c+dx)}{2bd^2} + \frac{x^2\log(c+dx)}{2b} + \frac{a^{2/3}\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)\log(c+dx)}{3b^{5/3}} - \frac{\sqrt[3]{-1}\cdots}{\cdots}$$

Mathematica [A] time = 0.33, size = 403, normalized size = 0.97

$$\frac{4a^{2/3}d^2\text{Li}_2\left(\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right) + 4(-1)^{2/3}a^{2/3}d^2\text{Li}_2\left(\frac{(-1)^{2/3}\sqrt[3]{b}(c+dx)}{(-1)^{2/3}\sqrt[3]{b}c-\sqrt[3]{a}d}\right) - 4\sqrt[3]{-1}\,a^{2/3}d^2\text{Li}_2\left(\frac{\sqrt[3]{-1}\sqrt[3]{b}(c+dx)}{\sqrt[3]{-1}\sqrt[3]{b}c+\sqrt[3]{a}d}\right) + 4a^{2/3}d^2\log(c+dx\cdots}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*Log[c + d*x])/(a + b*x^3),x]
```

```
[Out] (6*b^(2/3)*c*d*x - 3*b^(2/3)*d^2*x^2 - 6*b^(2/3)*c^2*Log[c + d*x] + 6*b^(2/
3)*d^2*x^2*Log[c + d*x] + 4*a^(2/3)*d^2*Log[(d*(a^(1/3) + b^(1/3)*x))/(-(b^
(1/3)*c) + a^(1/3)*d)]*Log[c + d*x] - 4*(-1)^(1/3)*a^(2/3)*d^2*Log[(d*(a^(1
/3) - (-1)^(1/3)*b^(1/3)*x))/((-1)^(1/3)*b^(1/3)*c + a^(1/3)*d)]*Log[c + d*
x] + 4*(-1)^(2/3)*a^(2/3)*d^2*Log[(d*(a^(1/3) + (-1)^(2/3)*b^(1/3)*x))/(-((
-1)^(2/3)*b^(1/3)*c) + a^(1/3)*d)]*Log[c + d*x] + 4*a^(2/3)*d^2*PolyLog[2,
(b^(1/3)*(c + d*x))/(b^(1/3)*c - a^(1/3)*d)] + 4*(-1)^(2/3)*a^(2/3)*d^2*Pol
yLog[2, ((-1)^(2/3)*b^(1/3)*(c + d*x))/((-1)^(2/3)*b^(1/3)*c - a^(1/3)*d)]
 - 4*(-1)^(1/3)*a^(2/3)*d^2*PolyLog[2, ((-1)^(1/3)*b^(1/3)*(c + d*x))/((-1)^
(1/3)*b^(1/3)*c + a^(1/3)*d)])/(12*b^(5/3)*d^2)
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{x^4\log\left(dx+c\right)}{bx^3+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*log(d*x+c)/(b*x^3+a),x, algorithm="fricas")
[Out] integral(x^4*log(d*x + c)/(b*x^3 + a), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^4\log\left(dx+c\right)}{bx^3+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*log(d*x+c)/(b*x^3+a),x, algorithm="giac")
[Out] integrate(x^4*log(d*x + c)/(b*x^3 + a), x)
```

maple [C] time = 0.26, size = 148, normalized size = 0.36

$$\frac{x^2\ln\left(dx+c\right)}{2b}-\frac{ad\left(\ln\left(\frac{-dx+\mathrm{RootOf}\left(b\_Z^3-3bc\_Z^2+3bc^2\_Z+ad^3-bc^3\right)-c}{\mathrm{RootOf}\left(b\_Z^3-3bc\_Z^2+3bc^2\_Z+ad^3-bc^3\right)}\right)\ln\left(dx+c\right)+\mathrm{dilog}\left(\frac{-dx+\mathrm{RootOf}\left(b\_Z^3-3bc\_Z^2+3b\right.}{\mathrm{RootOf}\left(b\_Z^3-3bc\_Z^2+3bc\right.}\right.\right.}{3b^2\left(\mathrm{RootOf}\left(b\_Z^3-3bc\_Z^2+3bc^2\_Z+ad^3-bc^3\right)-c\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*ln(d*x+c)/(b*x^3+a),x)
[Out] 1/2*x^2*ln(d*x+c)/b-1/2*c^2*ln(d*x+c)/b/d^2-1/4*x^2/b+1/2*c*x/b/d+3/4/b*c^2
/d^2-1/3*d/b^2*sum(1/(_R1-c)*(ln((-d*x+_R1-c)/_R1)*ln(d*x+c)+dilog((-d*x+_R
1-c)/_R1)),_R1=RootOf(_Z^3*b-3*_Z^2*b*c+3*_Z*b*c^2+a*d^3-b*c^3))*a
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^4\log\left(dx+c\right)}{bx^3+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*log(d*x+c)/(b*x^3+a),x, algorithm="maxima")
[Out] integrate(x^4*log(d*x + c)/(b*x^3 + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^4\,\ln\left(c+d\,x\right)}{b\,x^3+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*log(c + d*x))/(a + b*x^3),x)
[Out] int((x^4*log(c + d*x))/(a + b*x^3), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*ln(d*x+c)/(b*x**3+a),x)
[Out] Timed out
```

3.288 $\int \frac{x^3 \log(c+dx)}{a+bx^3}\,dx$

Optimal. Leaf size=383

$$-\frac{\sqrt[3]{a}\,\text{Li}_2\left(\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3b^{4/3}}+\frac{\sqrt[3]{-1}\sqrt[3]{a}\,\text{Li}_2\left(\frac{(-1)^{2/3}\sqrt[3]{b}(c+dx)}{(-1)^{2/3}\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3b^{4/3}}-\frac{(-1)^{2/3}\sqrt[3]{a}\,\text{Li}_2\left(\frac{\sqrt[3]{-1}\sqrt[3]{b}(c+dx)}{\sqrt[3]{-1}\sqrt[3]{b}c+\sqrt[3]{a}d}\right)}{3b^{4/3}}-\frac{\sqrt[3]{a}\log(c+dx)\log\left(-\frac{d(\sqrt[3]{a}+\sqrt[3]{\ldots}}{\sqrt[3]{b}c-\sqrt[3]{\ldots}}\right.}{3b^{4/3}}$$

```
[Out] -x/b+(d*x+c)*ln(d*x+c)/b/d-1/3*a^(1/3)*ln(-d*(a^(1/3)+b^(1/3)*x)/(b^(1/3)*c
-a^(1/3)*d))*ln(d*x+c)/b^(4/3)-1/3*(-1)^(2/3)*a^(1/3)*ln(d*(a^(1/3)-(-1)^(1
/3)*b^(1/3)*x)/((-1)^(1/3)*b^(1/3)*c+a^(1/3)*d))*ln(d*x+c)/b^(4/3)+1/3*(-1)
^(1/3)*a^(1/3)*ln(-d*(a^(1/3)+(-1)^(2/3)*b^(1/3)*x)/((-1)^(2/3)*b^(1/3)*c-a
^(1/3)*d))*ln(d*x+c)/b^(4/3)-1/3*a^(1/3)*polylog(2,b^(1/3)*(d*x+c)/(b^(1/3)
*c-a^(1/3)*d))/b^(4/3)+1/3*(-1)^(1/3)*a^(1/3)*polylog(2,(-1)^(2/3)*b^(1/3)*
(d*x+c)/((-1)^(2/3)*b^(1/3)*c-a^(1/3)*d))/b^(4/3)-1/3*(-1)^(2/3)*a^(1/3)*po
lylog(2,(-1)^(1/3)*b^(1/3)*(d*x+c)/((-1)^(1/3)*b^(1/3)*c+a^(1/3)*d))/b^(4/3
)
```

Rubi [A] time = 0.45, antiderivative size = 383, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 14, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.737, Rules used = {321, 200, 31, 634, 617, 204, 628, 2416, 2389, 2295, 2409, 2394, 2393, 2391}

$$-\frac{\sqrt[3]{a}\,\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3b^{4/3}}+\frac{\sqrt[3]{-1}\sqrt[3]{a}\,\text{PolyLog}\left(2,\frac{(-1)^{2/3}\sqrt[3]{b}(c+dx)}{(-1)^{2/3}\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3b^{4/3}}-\frac{(-1)^{2/3}\sqrt[3]{a}\,\text{PolyLog}\left(2,\frac{\sqrt[3]{-1}\sqrt[3]{b}(c+dx)}{\sqrt[3]{a}d+\sqrt[3]{-1}\sqrt[3]{b}c}\right)}{3b^{4/3}}-\sqrt[3]{a}\,\ldots$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*Log[c + d*x])/(a + b*x^3),x]
```

```
[Out] -(x/b) + ((c + d*x)*Log[c + d*x])/(b*d) - (a^(1/3)*Log[-((d*(a^(1/3) + b^(1
/3)*x))/(b^(1/3)*c - a^(1/3)*d))]*Log[c + d*x])/(3*b^(4/3)) - ((-1)^(2/3)*a
^(1/3)*Log[(d*(a^(1/3) - (-1)^(1/3)*b^(1/3)*x))/((-1)^(1/3)*b^(1/3)*c + a^(
1/3)*d)]*Log[c + d*x])/(3*b^(4/3)) + ((-1)^(1/3)*a^(1/3)*Log[-((d*(a^(1/3)
+ (-1)^(2/3)*b^(1/3)*x))/((-1)^(2/3)*b^(1/3)*c - a^(1/3)*d))]*Log[c + d*x])
/(3*b^(4/3)) - (a^(1/3)*PolyLog[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c - a^(1/3)
*d)])/(3*b^(4/3)) + ((-1)^(1/3)*a^(1/3)*PolyLog[2, ((-1)^(2/3)*b^(1/3)*(c +
 d*x))/((-1)^(2/3)*b^(1/3)*c - a^(1/3)*d)])/(3*b^(4/3)) - ((-1)^(2/3)*a^(1/
3)*PolyLog[2, ((-1)^(1/3)*b^(1/3)*(c + d*x))/((-1)^(1/3)*b^(1/3)*c + a^(1/3
)*d)])/(3*b^(4/3))
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 200

```
Int[((a_) + (b_.)*(x_)^3)^(-1), x_Symbol] :> Dist[1/(3*Rt[a, 3]^2), Int[1/(
Rt[a, 3] + Rt[b, 3]*x), x], x] + Dist[1/(3*Rt[a, 3]^2), Int[(2*Rt[a, 3] - R
t[b, 3]*x)/(Rt[a, 3]^2 - Rt[a, 3]*Rt[b, 3]*x + Rt[b, 3]^2*x^2), x], x] /; F
reeQ[{a, b}, x]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{x^3 \log(c+dx)}{a+bx^3} dx = \int \left(\frac{\log(c+dx)}{b} - \frac{a\log(c+dx)}{b\left(a+bx^3\right)}\right) dx$$

$$= \frac{\int \log(c+dx)\,dx}{b} - \frac{a\int \frac{\log(c+dx)}{a+bx^3}\,dx}{b}$$

$$= -\frac{a\int \left(-\frac{\log(c+dx)}{3a^{2/3}\left(-\sqrt[3]{a}-\sqrt[3]{b}\,x\right)} - \frac{\log(c+dx)}{3a^{2/3}\left(-\sqrt[3]{a}+\sqrt[3]{-1}\,\sqrt[3]{b}\,x\right)} - \frac{\log(c+dx)}{3a^{2/3}\left(-\sqrt[3]{a}-(-1)^{2/3}\sqrt[3]{b}\,x\right)}\right)dx}{b} + \frac{\text{Subst}(\int \log(x)}{bd}$$

$$= -\frac{x}{b} + \frac{(c+dx)\log(c+dx)}{bd} + \frac{\sqrt[3]{a}\int \frac{\log(c+dx)}{-\sqrt[3]{a}-\sqrt[3]{b}\,x}\,dx}{3b} + \frac{\sqrt[3]{a}\int \frac{\log(c+dx)}{-\sqrt[3]{a}+\sqrt[3]{-1}\,\sqrt[3]{b}\,x}\,dx}{3b} + \frac{\sqrt[3]{a}\int \frac{\log(}{-\sqrt[3]{a}-(-}}{3b}$$

$$= -\frac{x}{b} + \frac{(c+dx)\log(c+dx)}{bd} - \frac{\sqrt[3]{a}\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}\,x\right)}{\sqrt[3]{b}\,c-\sqrt[3]{a}\,d}\right)\log(c+dx)}{3b^{4/3}} - \frac{(-1)^{2/3}\sqrt[3]{a}\log\left(\frac{d\left(\sqrt[3]{a}-\sqrt[3]{}\right.}{\sqrt[3]{-1}\,\sqrt[3]{b}}\right.}{3b^{4/}}$$

$$= -\frac{x}{b} + \frac{(c+dx)\log(c+dx)}{bd} - \frac{\sqrt[3]{a}\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}\,x\right)}{\sqrt[3]{b}\,c-\sqrt[3]{a}\,d}\right)\log(c+dx)}{3b^{4/3}} - \frac{(-1)^{2/3}\sqrt[3]{a}\log\left(\frac{d\left(\sqrt[3]{a}-\sqrt[3]{}\right.}{\sqrt[3]{-1}\,\sqrt[3]{b}}\right.}{3b^{4/}}$$

$$= -\frac{x}{b} + \frac{(c+dx)\log(c+dx)}{bd} - \frac{\sqrt[3]{a}\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}\,x\right)}{\sqrt[3]{b}\,c-\sqrt[3]{a}\,d}\right)\log(c+dx)}{3b^{4/3}} - \frac{(-1)^{2/3}\sqrt[3]{a}\log\left(\frac{d\left(\sqrt[3]{a}-\sqrt[3]{}\right.}{\sqrt[3]{-1}\,\sqrt[3]{b}}\right.}{3b^{4/}}$$

Mathematica [A] time = 0.14, size = 369, normalized size = 0.96

$$\frac{-\sqrt[3]{a}\,d\,\text{Li}_2\left(\frac{\sqrt[3]{b}\,(c+dx)}{\sqrt[3]{b}\,c-\sqrt[3]{a}\,d}\right) + \sqrt[3]{-1}\,\sqrt[3]{a}\,d\,\text{Li}_2\left(\frac{(-1)^{2/3}\sqrt[3]{b}\,(c+dx)}{(-1)^{2/3}\sqrt[3]{b}\,c-\sqrt[3]{a}\,d}\right) - (-1)^{2/3}\sqrt[3]{a}\,d\,\text{Li}_2\left(\frac{\sqrt[3]{-1}\,\sqrt[3]{b}\,(c+dx)}{\sqrt[3]{-1}\,\sqrt[3]{b}\,c+\sqrt[3]{a}\,d}\right) - \sqrt[3]{a}\,d\log(c+dx)\log\left(-\frac{d(}{}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*Log[c + d*x])/(a + b*x^3),x]
```

```
[Out] (-3*b^(1/3)*d*x + 3*b^(1/3)*c*Log[c + d*x] + 3*b^(1/3)*d*x*Log[c + d*x] - a
^(1/3)*d*Log[(d*(a^(1/3) + b^(1/3)*x))/(-(b^(1/3)*c) + a^(1/3)*d)]*Log[c +
d*x] - (-1)^(2/3)*a^(1/3)*d*Log[(d*(a^(1/3) - (-1)^(1/3)*b^(1/3)*x))/((-1)^
(1/3)*b^(1/3)*c + a^(1/3)*d)]*Log[c + d*x] + (-1)^(1/3)*a^(1/3)*d*Log[(d*(a
^(1/3) + (-1)^(2/3)*b^(1/3)*x))/(-((-1)^(2/3)*b^(1/3)*c) + a^(1/3)*d)]*Log[
c + d*x] - a^(1/3)*d*PolyLog[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c - a^(1/3)*d)
] + (-1)^(1/3)*a^(1/3)*d*PolyLog[2, ((-1)^(2/3)*b^(1/3)*(c + d*x))/((-1)^(2
```

```
/3)*b^(1/3)*c - a^(1/3)*d)] - (-1)^(2/3)*a^(1/3)*d*PolyLog[2, ((-1)^(1/3)*b
^(1/3)*(c + d*x))/((-1)^(1/3)*b^(1/3)*c + a^(1/3)*d)])/(3*b^(4/3)*d)
```

fricas [F] time = 0.51, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{x^3 \log(dx+c)}{bx^3+a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*log(d*x+c)/(b*x^3+a),x, algorithm="fricas")
```

```
[Out] integral(x^3*log(d*x + c)/(b*x^3 + a), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^3 \log(dx+c)}{bx^3+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*log(d*x+c)/(b*x^3+a),x, algorithm="giac")
```

```
[Out] integrate(x^3*log(d*x + c)/(b*x^3 + a), x)
```

maple [C] time = 0.26, size = 136, normalized size = 0.36

$$-\frac{a\,d^2\left(\ln\left(\frac{-dx+\mathrm{RootOf}\left(b\_Z^3-3bc\_Z^2+3b\,c^2\_Z+a\,d^3-b\,c^3\right)-c}{\mathrm{RootOf}\left(b\_Z^3-3bc\_Z^2+3b\,c^2\_Z+a\,d^3-b\,c^3\right)}\right)\ln(dx+c)+\mathrm{dilog}\left(\frac{-dx+\mathrm{RootOf}\left(b\_Z^3-3bc\_Z^2+3b\,c^2\_Z+a\,d^3-b\right.}{\mathrm{RootOf}\left(b\_Z^3-3bc\_Z^2+3b\,c^2\_Z+a\,d^3-b\,c^3\right.}\right.\right.}{3b^2\left(\mathrm{RootOf}\left(b\_Z^3-3bc\_Z^2+3b\,c^2\_Z+a\,d^3-b\,c^3\right)^2-2\,\mathrm{RootOf}\left(b\_Z^3-3bc\_Z^2+3b\,c^2\_Z+a\,d^3-b\,c^3\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*ln(d*x+c)/(b*x^3+a),x)
```

```
[Out] 1/b*ln(d*x+c)*x+1/d/b*ln(d*x+c)*c-x/b-1/d/b*c-1/3*d^2/b^2*sum(1/(_R1^2-2*_R
1*c+c^2)*(ln((-d*x+_R1-c)/_R1)*ln(d*x+c)+dilog((-d*x+_R1-c)/_R1)),_R1=RootO
f(_Z^3*b-3*_Z^2*b*c+3*_Z*b*c^2+a*d^3-b*c^3))*a
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^3 \log(dx+c)}{bx^3+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*log(d*x+c)/(b*x^3+a),x, algorithm="maxima")
```

```
[Out] integrate(x^3*log(d*x + c)/(b*x^3 + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^3\,\ln(c+d\,x)}{b\,x^3+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*log(c + d*x))/(a + b*x^3),x)
```

```
[Out] int((x^3*log(c + d*x))/(a + b*x^3), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*ln(d*x+c)/(b*x**3+a),x)
```

```
[Out] Timed out
```

3.289 $\int \frac{x\log(c+dx)}{a+bx^3}\,dx$

Optimal. Leaf size=359

$$-\frac{\mathrm{Li}_2\left(\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3\sqrt[3]{a}\,b^{2/3}}-\frac{(-1)^{2/3}\mathrm{Li}_2\left(\frac{(-1)^{2/3}\sqrt[3]{b}(c+dx)}{(-1)^{2/3}\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3\sqrt[3]{a}\,b^{2/3}}+\frac{\sqrt[3]{-1}\,\mathrm{Li}_2\left(\frac{\sqrt[3]{-1}\sqrt[3]{b}(c+dx)}{\sqrt[3]{-1}\sqrt[3]{b}c+\sqrt[3]{a}d}\right)}{3\sqrt[3]{a}\,b^{2/3}}-\frac{\log(c+dx)\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3\sqrt[3]{a}\,b^{2/3}}+\sqrt[3]{-1}\cdots$$

```
[Out] -1/3*ln(-d*(a^(1/3)+b^(1/3)*x)/(b^(1/3)*c-a^(1/3)*d))*ln(d*x+c)/a^(1/3)/b^(
2/3)+1/3*(-1)^(1/3)*ln(d*(a^(1/3)-(-1)^(1/3)*b^(1/3)*x)/((-1)^(1/3)*b^(1/3)
*c+a^(1/3)*d))*ln(d*x+c)/a^(1/3)/b^(2/3)-1/3*(-1)^(2/3)*ln(-d*(a^(1/3)+(-1)
^(2/3)*b^(1/3)*x)/((-1)^(2/3)*b^(1/3)*c-a^(1/3)*d))*ln(d*x+c)/a^(1/3)/b^(2/
3)-1/3*polylog(2,b^(1/3)*(d*x+c)/(b^(1/3)*c-a^(1/3)*d))/a^(1/3)/b^(2/3)-1/3
*(-1)^(2/3)*polylog(2,(-1)^(2/3)*b^(1/3)*(d*x+c)/((-1)^(2/3)*b^(1/3)*c-a^(1
/3)*d))/a^(1/3)/b^(2/3)+1/3*(-1)^(1/3)*polylog(2,(-1)^(1/3)*b^(1/3)*(d*x+c)
/((-1)^(1/3)*b^(1/3)*c+a^(1/3)*d))/a^(1/3)/b^(2/3)
```

Rubi [A] time = 0.31, antiderivative size = 359, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 10, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.588, Rules used = {292, 31, 634, 617, 204, 628, 2416, 2394, 2393, 2391}

$$-\frac{\mathrm{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3\sqrt[3]{a}\,b^{2/3}}-\frac{(-1)^{2/3}\mathrm{PolyLog}\left(2,\frac{(-1)^{2/3}\sqrt[3]{b}(c+dx)}{(-1)^{2/3}\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3\sqrt[3]{a}\,b^{2/3}}+\frac{\sqrt[3]{-1}\,\mathrm{PolyLog}\left(2,\frac{\sqrt[3]{-1}\sqrt[3]{b}(c+dx)}{\sqrt[3]{a}d+\sqrt[3]{-1}\sqrt[3]{b}c}\right)}{3\sqrt[3]{a}\,b^{2/3}}-\frac{\log(c+dx)\,\mathrm{l}\cdots}{3\cdots}$$

Antiderivative was successfully verified.

```
[In] Int[(x*Log[c + d*x])/(a + b*x^3),x]
```

```
[Out] -(Log[-((d*(a^(1/3) + b^(1/3)*x))/(b^(1/3)*c - a^(1/3)*d))]*Log[c + d*x])/(
3*a^(1/3)*b^(2/3)) + ((-1)^(1/3)*Log[(d*(a^(1/3) - (-1)^(1/3)*b^(1/3)*x))/(
(-1)^(1/3)*b^(1/3)*c + a^(1/3)*d)]*Log[c + d*x])/(3*a^(1/3)*b^(2/3)) - ((-1
)^(2/3)*Log[-((d*(a^(1/3) + (-1)^(2/3)*b^(1/3)*x))/((-1)^(2/3)*b^(1/3)*c -
a^(1/3)*d))]*Log[c + d*x])/(3*a^(1/3)*b^(2/3)) - PolyLog[2, (b^(1/3)*(c + d
*x))/(b^(1/3)*c - a^(1/3)*d)]/(3*a^(1/3)*b^(2/3)) - ((-1)^(2/3)*PolyLog[2,
((-1)^(2/3)*b^(1/3)*(c + d*x))/((-1)^(2/3)*b^(1/3)*c - a^(1/3)*d)])/(3*a^(1
/3)*b^(2/3)) + ((-1)^(1/3)*PolyLog[2, ((-1)^(1/3)*b^(1/3)*(c + d*x))/((-1)^
(1/3)*b^(1/3)*c + a^(1/3)*d)])/(3*a^(1/3)*b^(2/3))
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 292

```
Int[(x_)/((a_) + (b_.)*(x_)^3), x_Symbol] :> -Dist[(3*Rt[a, 3]*Rt[b, 3])^(-
1), Int[1/(Rt[a, 3] + Rt[b, 3]*x), x], x] + Dist[1/(3*Rt[a, 3]*Rt[b, 3]), I
nt[(Rt[a, 3] + Rt[b, 3]*x)/(Rt[a, 3]^2 - Rt[a, 3]*Rt[b, 3]*x + Rt[b, 3]^2*x
^2), x], x] /; FreeQ[{a, b}, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{x\log(c+dx)}{a+bx^3}\,dx = \int\left(-\frac{\log(c+dx)}{3\sqrt[3]{a}\sqrt[3]{b}\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)} - \frac{(-1)^{2/3}\log(c+dx)}{3\sqrt[3]{a}\sqrt[3]{b}\left(\sqrt[3]{a}-\sqrt[3]{-1}\sqrt[3]{b}x\right)} + \frac{\sqrt[3]{-1}\log(c+dx)}{3\sqrt[3]{a}\sqrt[3]{b}\left(\sqrt[3]{a}+(-1)^{2/3}\sqrt[3]{b}x\right.}\right.$$

$$= -\frac{\int \frac{\log(c+dx)}{\sqrt[3]{a}+\sqrt[3]{b}x}\,dx}{3\sqrt[3]{a}\sqrt[3]{b}} + \frac{\sqrt[3]{-1}\int \frac{\log(c+dx)}{\sqrt[3]{a}+(-1)^{2/3}\sqrt[3]{b}x}\,dx}{3\sqrt[3]{a}\sqrt[3]{b}} - \frac{(-1)^{2/3}\int \frac{\log(c+dx)}{\sqrt[3]{a}-\sqrt[3]{-1}\sqrt[3]{b}x}\,dx}{3\sqrt[3]{a}\sqrt[3]{b}}$$

$$= -\frac{\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)\log(c+dx)}{3\sqrt[3]{a}b^{2/3}} + \frac{\sqrt[3]{-1}\log\left(\frac{d\left(\sqrt[3]{a}-\sqrt[3]{-1}\sqrt[3]{b}x\right)}{\sqrt[3]{-1}\sqrt[3]{b}c+\sqrt[3]{a}d}\right)\log(c+dx)}{3\sqrt[3]{a}b^{2/3}} - \frac{(-1)^{2/3}\log\left(\right.}{}$$

$$= -\frac{\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)\log(c+dx)}{3\sqrt[3]{a}b^{2/3}} + \frac{\sqrt[3]{-1}\log\left(\frac{d\left(\sqrt[3]{a}-\sqrt[3]{-1}\sqrt[3]{b}x\right)}{\sqrt[3]{-1}\sqrt[3]{b}c+\sqrt[3]{a}d}\right)\log(c+dx)}{3\sqrt[3]{a}b^{2/3}} - \frac{(-1)^{2/3}\log\left(\right.}{}$$

$$= -\frac{\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)\log(c+dx)}{3\sqrt[3]{a}b^{2/3}} + \frac{\sqrt[3]{-1}\log\left(\frac{d\left(\sqrt[3]{a}-\sqrt[3]{-1}\sqrt[3]{b}x\right)}{\sqrt[3]{-1}\sqrt[3]{b}c+\sqrt[3]{a}d}\right)\log(c+dx)}{3\sqrt[3]{a}b^{2/3}} - \frac{(-1)^{2/3}\log\left(\right.}{}$$

Mathematica [A] time = 0.09, size = 297, normalized size = 0.83

$$\frac{-\mathrm{Li}_2\left(\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right) - (-1)^{2/3}\mathrm{Li}_2\left(\frac{(-1)^{2/3}\sqrt[3]{b}(c+dx)}{(-1)^{2/3}\sqrt[3]{b}c-\sqrt[3]{a}d}\right) + \sqrt[3]{-1}\,\mathrm{Li}_2\left(\frac{\sqrt[3]{-1}\sqrt[3]{b}(c+dx)}{\sqrt[3]{-1}\sqrt[3]{b}c+\sqrt[3]{a}d}\right) + \log(c+dx)\left(-\log\left(\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{a}d-\sqrt[3]{b}c}\right)\right) + }{3\sqrt[3]{a}b^{2/3}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*Log[c + d*x])/(a + b*x^3),x]
```

```
[Out] (-(Log[(d*(a^(1/3) + b^(1/3)*x))/(-(b^(1/3)*c) + a^(1/3)*d)]*Log[c + d*x])
+ (-1)^(1/3)*Log[(d*(a^(1/3) - (-1)^(1/3)*b^(1/3)*x))/((-1)^(1/3)*b^(1/3)*c
 + a^(1/3)*d)]*Log[c + d*x] - (-1)^(2/3)*Log[(d*(a^(1/3) + (-1)^(2/3)*b^(1/
3)*x))/(-((-1)^(2/3)*b^(1/3)*c) + a^(1/3)*d)]*Log[c + d*x] - PolyLog[2, (b^
(1/3)*(c + d*x))/(b^(1/3)*c - a^(1/3)*d)] - (-1)^(2/3)*PolyLog[2, ((-1)^(2/
3)*b^(1/3)*(c + d*x))/((-1)^(2/3)*b^(1/3)*c - a^(1/3)*d)] + (-1)^(1/3)*Poly
Log[2, ((-1)^(1/3)*b^(1/3)*(c + d*x))/((-1)^(1/3)*b^(1/3)*c + a^(1/3)*d)])/
(3*a^(1/3)*b^(2/3))
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{x\log(dx+c)}{bx^3+a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*log(d*x+c)/(b*x^3+a),x, algorithm="fricas")
```

```
[Out] integral(x*log(d*x + c)/(b*x^3 + a), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x\log(dx+c)}{bx^3+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*log(d*x+c)/(b*x^3+a),x, algorithm="giac")
```

```
[Out] integrate(x*log(d*x + c)/(b*x^3 + a), x)
```

maple [C] time = 0.26, size = 86, normalized size = 0.24

$$\frac{d\left(\ln\left(\frac{-dx+\mathrm{RootOf}\left(b\_Z^3-3bc\_Z^2+3b\,c^2\_Z+a\,d^3-b\,c^3\right)-c}{\mathrm{RootOf}\left(b\_Z^3-3bc\_Z^2+3b\,c^2\_Z+a\,d^3-b\,c^3\right)}\right)\ln\left(dx+c\right)+\mathrm{dilog}\left(\frac{-dx+\mathrm{RootOf}\left(b\_Z^3-3bc\_Z^2+3b\,c^2\_Z+a\,d^3-b\,c^3\right)-c}{\mathrm{RootOf}\left(b\_Z^3-3bc\_Z^2+3b\,c^2\_Z+a\,d^3-b\,c^3\right)}\right)\right)}{3b\left(\mathrm{RootOf}\left(b\_Z^3-3bc\_Z^2+3b\,c^2\_Z+a\,d^3-b\,c^3\right)-c\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*ln(d*x+c)/(b*x^3+a),x)
```

```
[Out] 1/3*d/b*sum(1/(_R1-c)*(ln((-d*x+_R1-c)/_R1)*ln(d*x+c)+dilog((-d*x+_R1-c)/_R
1)),_R1=RootOf(_Z^3*b-3*_Z^2*b*c+3*_Z*b*c^2+a*d^3-b*c^3))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x\log\left(dx+c\right)}{bx^3+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*log(d*x+c)/(b*x^3+a),x, algorithm="maxima")
```

```
[Out] integrate(x*log(d*x + c)/(b*x^3 + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x\,\ln\left(c+d\,x\right)}{b\,x^3+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*log(c + d*x))/(a + b*x^3),x)
```

```
[Out] int((x*log(c + d*x))/(a + b*x^3), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*ln(d*x+c)/(b*x**3+a),x)
```

```
[Out] Timed out
```

3.290 $\int \frac{\log(c+dx)}{a+bx^3} dx$

Optimal. Leaf size=359

$$\frac{\text{Li}_2\left(\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3a^{2/3}\sqrt[3]{b}}-\frac{\sqrt[3]{-1}\,\text{Li}_2\left(\frac{(-1)^{2/3}\sqrt[3]{b}(c+dx)}{(-1)^{2/3}\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3a^{2/3}\sqrt[3]{b}}+\frac{(-1)^{2/3}\text{Li}_2\left(\frac{\sqrt[3]{-1}\sqrt[3]{b}(c+dx)}{\sqrt[3]{-1}\sqrt[3]{b}c+\sqrt[3]{a}d}\right)}{3a^{2/3}\sqrt[3]{b}}+\frac{\log(c+dx)\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3a^{2/3}\sqrt[3]{b}}+(-1)^{2/3}$$

```
[Out] 1/3*ln(-d*(a^(1/3)+b^(1/3)*x)/(b^(1/3)*c-a^(1/3)*d))*ln(d*x+c)/a^(2/3)/b^(1
/3)+1/3*(-1)^(2/3)*ln(d*(a^(1/3)-(-1)^(1/3)*b^(1/3)*x)/((-1)^(1/3)*b^(1/3)*
c+a^(1/3)*d))*ln(d*x+c)/a^(2/3)/b^(1/3)-1/3*(-1)^(1/3)*ln(-d*(a^(1/3)+(-1)^
(2/3)*b^(1/3)*x)/((-1)^(2/3)*b^(1/3)*c-a^(1/3)*d))*ln(d*x+c)/a^(2/3)/b^(1/3
)+1/3*polylog(2,b^(1/3)*(d*x+c)/(b^(1/3)*c-a^(1/3)*d))/a^(2/3)/b^(1/3)-1/3*
(-1)^(1/3)*polylog(2,(-1)^(2/3)*b^(1/3)*(d*x+c)/((-1)^(2/3)*b^(1/3)*c-a^(1/
3)*d))/a^(2/3)/b^(1/3)+1/3*(-1)^(2/3)*polylog(2,(-1)^(1/3)*b^(1/3)*(d*x+c)/
((-1)^(1/3)*b^(1/3)*c+a^(1/3)*d))/a^(2/3)/b^(1/3)
```

Rubi [A] time = 0.24, antiderivative size = 359, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {2409, 2394, 2393, 2391}

$$\frac{\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3a^{2/3}\sqrt[3]{b}}-\frac{\sqrt[3]{-1}\,\text{PolyLog}\left(2,\frac{(-1)^{2/3}\sqrt[3]{b}(c+dx)}{(-1)^{2/3}\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3a^{2/3}\sqrt[3]{b}}+\frac{(-1)^{2/3}\text{PolyLog}\left(2,\frac{\sqrt[3]{-1}\sqrt[3]{b}(c+dx)}{\sqrt[3]{a}d+\sqrt[3]{-1}\sqrt[3]{b}c}\right)}{3a^{2/3}\sqrt[3]{b}}+\frac{\log(c+dx)\,\text{lo}}{3a^{2}}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c + d*x]/(a + b*x^3),x]
```

```
[Out] (Log[-((d*(a^(1/3) + b^(1/3)*x))/(b^(1/3)*c - a^(1/3)*d))]*Log[c + d*x])/(3
*a^(2/3)*b^(1/3)) + ((-1)^(2/3)*Log[(d*(a^(1/3) - (-1)^(1/3)*b^(1/3)*x))/((
-1)^(1/3)*b^(1/3)*c + a^(1/3)*d)]*Log[c + d*x])/(3*a^(2/3)*b^(1/3)) - ((-1)
^(1/3)*Log[-((d*(a^(1/3) + (-1)^(2/3)*b^(1/3)*x))/((-1)^(2/3)*b^(1/3)*c - a
^(1/3)*d))]*Log[c + d*x])/(3*a^(2/3)*b^(1/3)) + PolyLog[2, (b^(1/3)*(c + d*
x))/(b^(1/3)*c - a^(1/3)*d)]/(3*a^(2/3)*b^(1/3)) - ((-1)^(1/3)*PolyLog[2, (
(-1)^(2/3)*b^(1/3)*(c + d*x))/((-1)^(2/3)*b^(1/3)*c - a^(1/3)*d)])/(3*a^(2/
3)*b^(1/3)) + ((-1)^(2/3)*PolyLog[2, ((-1)^(1/3)*b^(1/3)*(c + d*x))/((-1)^(
1/3)*b^(1/3)*c + a^(1/3)*d)])/(3*a^(2/3)*b^(1/3))
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rubi steps

$$\int \frac{\log(c+dx)}{a+bx^3}\,dx = \int \left(-\frac{\log(c+dx)}{3a^{2/3}\left(-\sqrt[3]{a}-\sqrt[3]{b}x\right)}-\frac{\log(c+dx)}{3a^{2/3}\left(-\sqrt[3]{a}+\sqrt[3]{-1}\sqrt[3]{b}x\right)}-\frac{\log(c+dx)}{3a^{2/3}\left(-\sqrt[3]{a}-(-1)^{2/3}\sqrt[3]{b}x\right)}\right)dx$$

$$= -\frac{\int \frac{\log(c+dx)}{-\sqrt[3]{a}-\sqrt[3]{b}x}\,dx}{3a^{2/3}}-\frac{\int \frac{\log(c+dx)}{-\sqrt[3]{a}+\sqrt[3]{-1}\sqrt[3]{b}x}\,dx}{3a^{2/3}}-\frac{\int \frac{\log(c+dx)}{-\sqrt[3]{a}-(-1)^{2/3}\sqrt[3]{b}x}\,dx}{3a^{2/3}}$$

$$= \frac{\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)\log(c+dx)}{3a^{2/3}\sqrt[3]{b}}+\frac{(-1)^{2/3}\log\left(\frac{d\left(\sqrt[3]{a}-\sqrt[3]{-1}\sqrt[3]{b}x\right)}{\sqrt[3]{-1}\sqrt[3]{b}c+\sqrt[3]{a}d}\right)\log(c+dx)}{3a^{2/3}\sqrt[3]{b}}-\frac{\sqrt[3]{-1}\log\left(-\frac{d\left(\sqrt[3]{a}\right.}{(-1)}\right.}{}$$

$$= \frac{\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)\log(c+dx)}{3a^{2/3}\sqrt[3]{b}}+\frac{(-1)^{2/3}\log\left(\frac{d\left(\sqrt[3]{a}-\sqrt[3]{-1}\sqrt[3]{b}x\right)}{\sqrt[3]{-1}\sqrt[3]{b}c+\sqrt[3]{a}d}\right)\log(c+dx)}{3a^{2/3}\sqrt[3]{b}}-\frac{\sqrt[3]{-1}\log\left(-\frac{d\left(\sqrt[3]{a}\right.}{(-1)}\right.}{}$$

$$= \frac{\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)\log(c+dx)}{3a^{2/3}\sqrt[3]{b}}+\frac{(-1)^{2/3}\log\left(\frac{d\left(\sqrt[3]{a}-\sqrt[3]{-1}\sqrt[3]{b}x\right)}{\sqrt[3]{-1}\sqrt[3]{b}c+\sqrt[3]{a}d}\right)\log(c+dx)}{3a^{2/3}\sqrt[3]{b}}-\frac{\sqrt[3]{-1}\log\left(-\frac{d\left(\sqrt[3]{a}\right.}{(-1)}\right.}{}$$

Mathematica [A] time = 0.07, size = 294, normalized size = 0.82

$$\frac{\text{Li}_2\left(\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)-\sqrt[3]{-1}\,\text{Li}_2\left(\frac{(-1)^{2/3}\sqrt[3]{b}(c+dx)}{(-1)^{2/3}\sqrt[3]{b}c-\sqrt[3]{a}d}\right)+(-1)^{2/3}\text{Li}_2\left(\frac{\sqrt[3]{-1}\sqrt[3]{b}(c+dx)}{\sqrt[3]{-1}\sqrt[3]{b}c+\sqrt[3]{a}d}\right)+\log(c+dx)\log\left(\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{a}d-\sqrt[3]{b}c}\right)+(-1)^{2/3}\,\mathrm{l}}{3a^{2/3}\sqrt[3]{b}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c + d*x]/(a + b*x^3),x]
```

```
[Out] (Log[(d*(a^(1/3) + b^(1/3)*x))/(-(b^(1/3)*c) + a^(1/3)*d)]*Log[c + d*x] + (
-1)^(2/3)*Log[(d*(a^(1/3) - (-1)^(1/3)*b^(1/3)*x))/((-1)^(1/3)*b^(1/3)*c +
a^(1/3)*d)]*Log[c + d*x] - (-1)^(1/3)*Log[(d*(a^(1/3) + (-1)^(2/3)*b^(1/3)*
x))/(-((-1)^(2/3)*b^(1/3)*c) + a^(1/3)*d)]*Log[c + d*x] + PolyLog[2, (b^(1/
3)*(c + d*x))/(b^(1/3)*c - a^(1/3)*d)] - (-1)^(1/3)*PolyLog[2, ((-1)^(2/3)*
b^(1/3)*(c + d*x))/((-1)^(2/3)*b^(1/3)*c - a^(1/3)*d)] + (-1)^(2/3)*PolyLog
[2, ((-1)^(1/3)*b^(1/3)*(c + d*x))/((-1)^(1/3)*b^(1/3)*c + a^(1/3)*d)])/(3*
a^(2/3)*b^(1/3))
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\log(dx+c)}{bx^3+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/(b*x^3+a),x, algorithm="fricas")
```

```
[Out] integral(log(d*x + c)/(b*x^3 + a), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log(dx+c)}{bx^3+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/(b*x^3+a),x, algorithm="giac")
```

```
[Out] integrate(log(d*x + c)/(b*x^3 + a), x)
```

maple [C] time = 0.26, size = 94, normalized size = 0.26

$$\frac{d^2\left(\ln\left(\frac{-dx+\mathrm{RootOf}\left(b\_Z^3-3bc\_Z^2+3b\,c^2\_Z+a\,d^3-b\,c^3\right)-c}{\mathrm{RootOf}\left(b\_Z^3-3bc\_Z^2+3b\,c^2\_Z+a\,d^3-b\,c^3\right)}\right)\ln(dx+c)+\mathrm{dilog}\left(\frac{-dx+\mathrm{RootOf}\left(b\_Z^3-3bc\_Z^2+3b\,c^2\_Z+a\,d^3-b\,c^3\right)-}{\mathrm{RootOf}\left(b\_Z^3-3bc\_Z^2+3b\,c^2\_Z+a\,d^3-b\,c^3\right)}\right.\right.}{3b\left(\mathrm{RootOf}\left(b\_Z^3-3bc\_Z^2+3b\,c^2\_Z+a\,d^3-b\,c^3\right)^2-2\,\mathrm{RootOf}\left(b\_Z^3-3bc\_Z^2+3b\,c^2\_Z+a\,d^3-b\,c^3\right)c\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(d*x+c)/(b*x^3+a),x)
```

```
[Out] 1/3*d^2/b*sum(1/(_R1^2-2*_R1*c+c^2)*(ln((-d*x+_R1-c)/_R1)*ln(d*x+c)+dilog((
-d*x+_R1-c)/_R1)),_R1=RootOf(_Z^3*b-3*_Z^2*b*c+3*_Z*b*c^2+a*d^3-b*c^3))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log(dx+c)}{bx^3+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/(b*x^3+a),x, algorithm="maxima")
```

```
[Out] integrate(log(d*x + c)/(b*x^3 + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln(c+d\,x)}{b\,x^3+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(c + d*x)/(a + b*x^3),x)
```

```
[Out] int(log(c + d*x)/(a + b*x^3), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(d*x+c)/(b*x**3+a),x)
```

```
[Out] Timed out
```

3.291 $\int \frac{\log(c+dx)}{x^2(a+bx^3)}\,dx$

Optimal. Leaf size=398

$$\frac{\sqrt[3]{b}\,\mathrm{Li}_2\left(\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3a^{4/3}}+\frac{(-1)^{2/3}\sqrt[3]{b}\,\mathrm{Li}_2\left(\frac{(-1)^{2/3}\sqrt[3]{b}(c+dx)}{(-1)^{2/3}\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3a^{4/3}}-\frac{\sqrt[3]{-1}\sqrt[3]{b}\,\mathrm{Li}_2\left(\frac{\sqrt[3]{-1}\sqrt[3]{b}(c+dx)}{\sqrt[3]{-1}\sqrt[3]{b}c+\sqrt[3]{a}d}\right)}{3a^{4/3}}+\frac{\sqrt[3]{b}\log(c+dx)\log\left(-\frac{d(\sqrt[3]{a}+\sqrt[3]{b}}{\sqrt[3]{b}c-\sqrt[3]{a}}\right.}{3a^{4/3}}$$

```
[Out] d*ln(x)/a/c-d*ln(d*x+c)/a/c-ln(d*x+c)/a/x+1/3*b^(1/3)*ln(-d*(a^(1/3)+b^(1/3
)*x)/(b^(1/3)*c-a^(1/3)*d))*ln(d*x+c)/a^(4/3)-1/3*(-1)^(1/3)*b^(1/3)*ln(d*(
a^(1/3)-(-1)^(1/3)*b^(1/3)*x)/((-1)^(1/3)*b^(1/3)*c+a^(1/3)*d))*ln(d*x+c)/a
^(4/3)+1/3*(-1)^(2/3)*b^(1/3)*ln(-d*(a^(1/3)+(-1)^(2/3)*b^(1/3)*x)/((-1)^(2
/3)*b^(1/3)*c-a^(1/3)*d))*ln(d*x+c)/a^(4/3)+1/3*b^(1/3)*polylog(2,b^(1/3)*(
d*x+c)/(b^(1/3)*c-a^(1/3)*d))/a^(4/3)+1/3*(-1)^(2/3)*b^(1/3)*polylog(2,(-1)
^(2/3)*b^(1/3)*(d*x+c)/((-1)^(2/3)*b^(1/3)*c-a^(1/3)*d))/a^(4/3)-1/3*(-1)^(
1/3)*b^(1/3)*polylog(2,(-1)^(1/3)*b^(1/3)*(d*x+c)/((-1)^(1/3)*b^(1/3)*c+a^(
1/3)*d))/a^(4/3)
```

Rubi [A] time = 0.49, antiderivative size = 398, normalized size of antiderivative = 1.00, number of steps used = 17, number of rules used = 14, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.737, Rules used = {325, 292, 31, 634, 617, 204, 628, 2416, 2395, 36, 29, 2394, 2393, 2391}

$$\frac{\sqrt[3]{b}\,\mathrm{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3a^{4/3}}+\frac{(-1)^{2/3}\sqrt[3]{b}\,\mathrm{PolyLog}\left(2,\frac{(-1)^{2/3}\sqrt[3]{b}(c+dx)}{(-1)^{2/3}\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3a^{4/3}}-\frac{\sqrt[3]{-1}\sqrt[3]{b}\,\mathrm{PolyLog}\left(2,\frac{\sqrt[3]{-1}\sqrt[3]{b}(c+dx)}{\sqrt[3]{a}d+\sqrt[3]{-1}\sqrt[3]{b}c}\right)}{3a^{4/3}}+\sqrt[3]{b}\log\ldots$$

Antiderivative was successfully verified.

```
[In] Int[Log[c + d*x]/(x^2*(a + b*x^3)),x]
```

```
[Out] (d*Log[x])/(a*c) - (d*Log[c + d*x])/(a*c) - Log[c + d*x]/(a*x) + (b^(1/3)*L
og[-((d*(a^(1/3) + b^(1/3)*x))/(b^(1/3)*c - a^(1/3)*d))]*Log[c + d*x])/(3*a
^(4/3)) - ((-1)^(1/3)*b^(1/3)*Log[(d*(a^(1/3) - (-1)^(1/3)*b^(1/3)*x))/((-1
)^(1/3)*b^(1/3)*c + a^(1/3)*d)]*Log[c + d*x])/(3*a^(4/3)) + ((-1)^(2/3)*b^(
1/3)*Log[-((d*(a^(1/3) + (-1)^(2/3)*b^(1/3)*x))/((-1)^(2/3)*b^(1/3)*c - a^(
1/3)*d))]*Log[c + d*x])/(3*a^(4/3)) + (b^(1/3)*PolyLog[2, (b^(1/3)*(c + d*x
))/(b^(1/3)*c - a^(1/3)*d)])/(3*a^(4/3)) + ((-1)^(2/3)*b^(1/3)*PolyLog[2, (
(-1)^(2/3)*b^(1/3)*(c + d*x))/((-1)^(2/3)*b^(1/3)*c - a^(1/3)*d)])/(3*a^(4/
3)) - ((-1)^(1/3)*b^(1/3)*PolyLog[2, ((-1)^(1/3)*b^(1/3)*(c + d*x))/((-1)^(
1/3)*b^(1/3)*c + a^(1/3)*d)])/(3*a^(4/3))
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 292

```
Int[(x_)/((a_) + (b_.)*(x_)^3), x_Symbol] :> -Dist[(3*Rt[a, 3]*Rt[b, 3])^(-
1), Int[1/(Rt[a, 3] + Rt[b, 3]*x), x], x] + Dist[1/(3*Rt[a, 3]*Rt[b, 3]), I
nt[(Rt[a, 3] + Rt[b, 3]*x)/(Rt[a, 3]^2 - Rt[a, 3]*Rt[b, 3]*x + Rt[b, 3]^2*x
^2), x], x] /; FreeQ[{a, b}, x]
```

Rule 325

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[((c*
x)^(m + 1)*(a + b*x^n)^(p + 1))/(a*c*(m + 1)), x] - Dist[(b*(m + n*(p + 1)
+ 1))/(a*c^n*(m + 1)), Int[(c*x)^(m + n)*(a + b*x^n)^p, x], x] /; FreeQ[{a,
 b, c, p}, x] && IGtQ[n, 0] && LtQ[m, -1] && IntBinomialQ[a, b, c, n, m, p,
 x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{\log(c+dx)}{x^2\left(a+bx^3\right)}\,dx = \int \left(\frac{\log(c+dx)}{ax^2} - \frac{bx\log(c+dx)}{a\left(a+bx^3\right)}\right)dx$$

$$= \frac{\int \frac{\log(c+dx)}{x^2}\,dx}{a} - \frac{b\int \frac{x\log(c+dx)}{a+bx^3}\,dx}{a}$$

$$= -\frac{\log(c+dx)}{ax} - \frac{b\int \left(-\frac{\log(c+dx)}{3\sqrt[3]{a}\sqrt[3]{b}\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)} - \frac{(-1)^{2/3}\log(c+dx)}{3\sqrt[3]{a}\sqrt[3]{b}\left(\sqrt[3]{a}-\sqrt[3]{-1}\sqrt[3]{b}x\right)} + \frac{\sqrt[3]{-1}\log(c+dx)}{3\sqrt[3]{a}\sqrt[3]{b}\left(\sqrt[3]{a}+(-1)^{2/3}\sqrt[3]{b}x\right)}\right)dx}{a}$$

$$= -\frac{\log(c+dx)}{ax} + \frac{b^{2/3}\int \frac{\log(c+dx)}{\sqrt[3]{a}+\sqrt[3]{b}x}\,dx}{3a^{4/3}} - \frac{\left(\sqrt[3]{-1}\,b^{2/3}\right)\int \frac{\log(c+dx)}{\sqrt[3]{a}+(-1)^{2/3}\sqrt[3]{b}x}\,dx}{3a^{4/3}} + \frac{\left((-1)^{2/3}b^{2/3}\right)\int \frac{\log(c+}{\sqrt[3]{a}-\sqrt[3]{-}}}{3a^{4/3}}$$

$$= \frac{d\log(x)}{ac} - \frac{d\log(c+dx)}{ac} - \frac{\log(c+dx)}{ax} + \frac{\sqrt[3]{b}\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)\log(c+dx)}{3a^{4/3}} - \frac{\sqrt[3]{-1}\sqrt[3]{b}\log}{}$$

$$= \frac{d\log(x)}{ac} - \frac{d\log(c+dx)}{ac} - \frac{\log(c+dx)}{ax} + \frac{\sqrt[3]{b}\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)\log(c+dx)}{3a^{4/3}} - \frac{\sqrt[3]{-1}\sqrt[3]{b}\log}{}$$

$$= \frac{d\log(x)}{ac} - \frac{d\log(c+dx)}{ac} - \frac{\log(c+dx)}{ax} + \frac{\sqrt[3]{b}\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)\log(c+dx)}{3a^{4/3}} - \frac{\sqrt[3]{-1}\sqrt[3]{b}\log}{}$$

Mathematica [A] time = 0.14, size = 378, normalized size = 0.95

$$\frac{\sqrt[3]{b}\,cx\,\mathrm{Li}_2\left(\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right) + (-1)^{2/3}\sqrt[3]{b}\,cx\,\mathrm{Li}_2\left(\frac{(-1)^{2/3}\sqrt[3]{b}(c+dx)}{(-1)^{2/3}\sqrt[3]{b}c-\sqrt[3]{a}d}\right) - \sqrt[3]{-1}\sqrt[3]{b}\,cx\,\mathrm{Li}_2\left(\frac{\sqrt[3]{-1}\sqrt[3]{b}(c+dx)}{\sqrt[3]{-1}\sqrt[3]{b}c+\sqrt[3]{a}d}\right) + \sqrt[3]{b}\,cx\log(c+dx)\log}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c + d*x]/(x^2*(a + b*x^3)),x]
```

```
[Out] (3*a^(1/3)*d*x*Log[x] - 3*a^(1/3)*c*Log[c + d*x] - 3*a^(1/3)*d*x*Log[c + d*
x] + b^(1/3)*c*x*Log[(d*(a^(1/3) + b^(1/3)*x))/(-(b^(1/3)*c) + a^(1/3)*d)]*
Log[c + d*x] - (-1)^(1/3)*b^(1/3)*c*x*Log[(d*(a^(1/3) - (-1)^(1/3)*b^(1/3)*
x))/((-1)^(1/3)*b^(1/3)*c + a^(1/3)*d)]*Log[c + d*x] + (-1)^(2/3)*b^(1/3)*c
*x*Log[(d*(a^(1/3) + (-1)^(2/3)*b^(1/3)*x))/(-((-1)^(2/3)*b^(1/3)*c) + a^(1
/3)*d)]*Log[c + d*x] + b^(1/3)*c*x*PolyLog[2, (b^(1/3)*(c + d*x))/(b^(1/3)*
```

```
c - a^(1/3)*d)] + (-1)^(2/3)*b^(1/3)*c*x*PolyLog[2, ((-1)^(2/3)*b^(1/3)*(c
+ d*x))/((-1)^(2/3)*b^(1/3)*c - a^(1/3)*d)] - (-1)^(1/3)*b^(1/3)*c*x*PolyLo
g[2, ((-1)^(1/3)*b^(1/3)*(c + d*x))/((-1)^(1/3)*b^(1/3)*c + a^(1/3)*d)])/(3
*a^(4/3)*c*x)
```

fricas [F] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\log(dx+c)}{bx^5+ax^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x^2/(b*x^3+a),x, algorithm="fricas")
```

```
[Out] integral(log(d*x + c)/(b*x^5 + a*x^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log(dx+c)}{(bx^3+a)x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x^2/(b*x^3+a),x, algorithm="giac")
```

```
[Out] integrate(log(d*x + c)/((b*x^3 + a)*x^2), x)
```

maple [C] time = 0.28, size = 128, normalized size = 0.32

$$-\frac{d\left(\ln\left(\frac{-dx+\mathrm{RootOf}\left(b\_Z^3-3bc\_Z^2+3bc^2\_Z+ad^3-bc^3\right)-c}{\mathrm{RootOf}\left(b\_Z^3-3bc\_Z^2+3bc^2\_Z+ad^3-bc^3\right)}\right)\ln(dx+c)+\mathrm{dilog}\left(\frac{-dx+\mathrm{RootOf}\left(b\_Z^3-3bc\_Z^2+3bc^2\_Z+ad^3-bc^3\right)-c}{\mathrm{RootOf}\left(b\_Z^3-3bc\_Z^2+3bc^2\_Z+ad^3-bc^3\right)}\right.}{3a\left(\mathrm{RootOf}\left(b\_Z^3-3bc\_Z^2+3bc^2\_Z+ad^3-bc^3\right)-c\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(d*x+c)/x^2/(b*x^3+a),x)
```

```
[Out] -1/3*d*sum(1/(_R1-c)*(ln((-d*x+_R1-c)/_R1)*ln(d*x+c)+dilog((-d*x+_R1-c)/_R1
)),_R1=RootOf(_Z^3*b-3*_Z^2*b*c+3*_Z*b*c^2+a*d^3-b*c^3))/a+d/a/c*ln(d*x)-d*
ln(d*x+c)/a/c-ln(d*x+c)/a/x
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log(dx+c)}{(bx^3+a)x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x^2/(b*x^3+a),x, algorithm="maxima")
```

```
[Out] integrate(log(d*x + c)/((b*x^3 + a)*x^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln(c+d\,x)}{x^2\,\left(b\,x^3+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(c + d*x)/(x^2*(a + b*x^3)),x)
```

```
[Out] int(log(c + d*x)/(x^2*(a + b*x^3)), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(d*x+c)/x**2/(b*x**3+a),x)
```

```
[Out] Timed out
```

3.292 $\int \frac{\log(c+dx)}{x^3(a+bx^3)}\,dx$

Optimal. Leaf size=423

$$-\frac{b^{2/3}\text{Li}_2\left(\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3a^{5/3}}+\frac{\sqrt[3]{-1}\,b^{2/3}\text{Li}_2\left(\frac{(-1)^{2/3}\sqrt[3]{b}(c+dx)}{(-1)^{2/3}\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3a^{5/3}}-\frac{(-1)^{2/3}b^{2/3}\text{Li}_2\left(\frac{\sqrt[3]{-1}\sqrt[3]{b}(c+dx)}{\sqrt[3]{-1}\sqrt[3]{b}c+\sqrt[3]{a}d}\right)}{3a^{5/3}}-\frac{b^{2/3}\log(c+dx)\log\left(-\frac{d(\sqrt[3]{}}{\sqrt[3]{b}}\right.}{3a^{5/3}}$$

```
[Out] -1/2*d/a/c/x-1/2*d^2*ln(x)/a/c^2+1/2*d^2*ln(d*x+c)/a/c^2-1/2*ln(d*x+c)/a/x^
2-1/3*b^(2/3)*ln(-d*(a^(1/3)+b^(1/3)*x)/(b^(1/3)*c-a^(1/3)*d))*ln(d*x+c)/a^
(5/3)-1/3*(-1)^(2/3)*b^(2/3)*ln(d*(a^(1/3)-(-1)^(1/3)*b^(1/3)*x)/((-1)^(1/3
)*b^(1/3)*c+a^(1/3)*d))*ln(d*x+c)/a^(5/3)+1/3*(-1)^(1/3)*b^(2/3)*ln(-d*(a^(
1/3)+(-1)^(2/3)*b^(1/3)*x)/((-1)^(2/3)*b^(1/3)*c-a^(1/3)*d))*ln(d*x+c)/a^(5
/3)-1/3*b^(2/3)*polylog(2,b^(1/3)*(d*x+c)/(b^(1/3)*c-a^(1/3)*d))/a^(5/3)+1/
3*(-1)^(1/3)*b^(2/3)*polylog(2,(-1)^(2/3)*b^(1/3)*(d*x+c)/((-1)^(2/3)*b^(1/
3)*c-a^(1/3)*d))/a^(5/3)-1/3*(-1)^(2/3)*b^(2/3)*polylog(2,(-1)^(1/3)*b^(1/3
)*(d*x+c)/((-1)^(1/3)*b^(1/3)*c+a^(1/3)*d))/a^(5/3)
```

Rubi [A] time = 0.44, antiderivative size = 423, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 14, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.737, Rules used = {325, 200, 31, 634, 617, 204, 628, 2416, 2395, 44, 2409, 2394, 2393, 2391}

$$-\frac{b^{2/3}\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3a^{5/3}}+\frac{\sqrt[3]{-1}\,b^{2/3}\text{PolyLog}\left(2,\frac{(-1)^{2/3}\sqrt[3]{b}(c+dx)}{(-1)^{2/3}\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3a^{5/3}}-\frac{(-1)^{2/3}b^{2/3}\text{PolyLog}\left(2,\frac{\sqrt[3]{-1}\sqrt[3]{b}(c+dx)}{\sqrt[3]{a}d+\sqrt[3]{-1}\sqrt[3]{b}c}\right)}{3a^{5/3}}-\frac{b^{2}}{}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c + d*x]/(x^3*(a + b*x^3)),x]
```

```
[Out] -d/(2*a*c*x) - (d^2*Log[x])/(2*a*c^2) + (d^2*Log[c + d*x])/(2*a*c^2) - Log[
c + d*x]/(2*a*x^2) - (b^(2/3)*Log[-((d*(a^(1/3) + b^(1/3)*x))/(b^(1/3)*c -
a^(1/3)*d))]*Log[c + d*x])/(3*a^(5/3)) - ((-1)^(2/3)*b^(2/3)*Log[(d*(a^(1/3
) - (-1)^(1/3)*b^(1/3)*x))/((-1)^(1/3)*b^(1/3)*c + a^(1/3)*d)]*Log[c + d*x]
)/(3*a^(5/3)) + ((-1)^(1/3)*b^(2/3)*Log[-((d*(a^(1/3) + (-1)^(2/3)*b^(1/3)*
x))/((-1)^(2/3)*b^(1/3)*c - a^(1/3)*d))]*Log[c + d*x])/(3*a^(5/3)) - (b^(2/
3)*PolyLog[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c - a^(1/3)*d)])/(3*a^(5/3)) + (
(-1)^(1/3)*b^(2/3)*PolyLog[2, ((-1)^(2/3)*b^(1/3)*(c + d*x))/((-1)^(2/3)*b^
(1/3)*c - a^(1/3)*d)])/(3*a^(5/3)) - ((-1)^(2/3)*b^(2/3)*PolyLog[2, ((-1)^(
1/3)*b^(1/3)*(c + d*x))/((-1)^(1/3)*b^(1/3)*c + a^(1/3)*d)])/(3*a^(5/3))
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 200

```
Int[((a_) + (b_.)*(x_)^3)^(-1), x_Symbol] :> Dist[1/(3*Rt[a, 3]^2), Int[1/(
Rt[a, 3] + Rt[b, 3]*x), x], x] + Dist[1/(3*Rt[a, 3]^2), Int[(2*Rt[a, 3] - R
t[b, 3]*x)/(Rt[a, 3]^2 - Rt[a, 3]*Rt[b, 3]*x + Rt[b, 3]^2*x^2), x], x] /; F
```

```
reeQ[{a, b}, x]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 325

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[((c*
x)^(m + 1)*(a + b*x^n)^(p + 1))/(a*c*(m + 1)), x] - Dist[(b*(m + n*(p + 1)
+ 1))/(a*c^n*(m + 1)), Int[(c*x)^(m + n)*(a + b*x^n)^p, x], x] /; FreeQ[{a,
 b, c, p}, x] && IGtQ[n, 0] && LtQ[m, -1] && IntBinomialQ[a, b, c, n, m, p,
 x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
```

```
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{\log(c+dx)}{x^3\left(a+bx^3\right)}\,dx = \int \left(\frac{\log(c+dx)}{ax^3}-\frac{b\log(c+dx)}{a\left(a+bx^3\right)}\right)dx$$

$$= \frac{\int \frac{\log(c+dx)}{x^3}\,dx}{a}-\frac{b\int \frac{\log(c+dx)}{a+bx^3}\,dx}{a}$$

$$= -\frac{\log(c+dx)}{2ax^2}-\frac{b\int \left(-\frac{\log(c+dx)}{3a^{2/3}\left(-\sqrt[3]{a}-\sqrt[3]{b}x\right)}-\frac{\log(c+dx)}{3a^{2/3}\left(-\sqrt[3]{a}+\sqrt[3]{-1}\sqrt[3]{b}x\right)}-\frac{\log(c+dx)}{3a^{2/3}\left(-\sqrt[3]{a}-(-1)^{2/3}\sqrt[3]{b}x\right)}\right)dx}{a}+$$

$$= -\frac{\log(c+dx)}{2ax^2}+\frac{b\int \frac{\log(c+dx)}{-\sqrt[3]{a}-\sqrt[3]{b}x}\,dx}{3a^{5/3}}+\frac{b\int \frac{\log(c+dx)}{-\sqrt[3]{a}+\sqrt[3]{-1}\sqrt[3]{b}x}\,dx}{3a^{5/3}}+\frac{b\int \frac{\log(c+dx)}{-\sqrt[3]{a}-(-1)^{2/3}\sqrt[3]{b}x}\,dx}{3a^{5/3}}+\frac{d\int (}{}$$

$$= -\frac{d}{2acx}-\frac{d^2\log(x)}{2ac^2}+\frac{d^2\log(c+dx)}{2ac^2}-\frac{\log(c+dx)}{2ax^2}-\frac{b^{2/3}\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)\log(c+dx)}{3a^{5/3}}$$

$$= -\frac{d}{2acx}-\frac{d^2\log(x)}{2ac^2}+\frac{d^2\log(c+dx)}{2ac^2}-\frac{\log(c+dx)}{2ax^2}-\frac{b^{2/3}\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)\log(c+dx)}{3a^{5/3}}$$

$$= -\frac{d}{2acx}-\frac{d^2\log(x)}{2ac^2}+\frac{d^2\log(c+dx)}{2ac^2}-\frac{\log(c+dx)}{2ax^2}-\frac{b^{2/3}\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)\log(c+dx)}{3a^{5/3}}$$

Mathematica [A] time = 0.23, size = 371, normalized size = 0.88

$$-\frac{3a^{2/3}d(-dx\log(c+dx)+c+dx\log(x))}{c^2x}-\frac{3a^{2/3}\log(c+dx)}{x^2}-2b^{2/3}\mathrm{Li}_2\left(\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)+2\sqrt[3]{-1}\,b^{2/3}\mathrm{Li}_2\left(\frac{(-1)^{2/3}\sqrt[3]{b}(c+dx)}{(-1)^{2/3}\sqrt[3]{b}c-\sqrt[3]{a}d}\right)-2(-1)^{2/3}b$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c + d*x]/(x^3*(a + b*x^3)),x]
```

```
[Out] ((-3*a^(2/3)*Log[c + d*x])/x^2 - 2*b^(2/3)*Log[(d*(a^(1/3) + b^(1/3)*x))/(-
(b^(1/3)*c) + a^(1/3)*d)]*Log[c + d*x] - 2*(-1)^(2/3)*b^(2/3)*Log[(d*(a^(1/
```

```
3) - (-1)^(1/3)*b^(1/3)*x))/((-1)^(1/3)*b^(1/3)*c + a^(1/3)*d)]*Log[c + d*x
] + 2*(-1)^(1/3)*b^(2/3)*Log[(d*(a^(1/3) + (-1)^(2/3)*b^(1/3)*x))/(-((-1)^(
2/3)*b^(1/3)*c) + a^(1/3)*d)]*Log[c + d*x] - (3*a^(2/3)*d*(c + d*x*Log[x] -
 d*x*Log[c + d*x]))/(c^2*x) - 2*b^(2/3)*PolyLog[2, (b^(1/3)*(c + d*x))/(b^(
1/3)*c - a^(1/3)*d)] + 2*(-1)^(1/3)*b^(2/3)*PolyLog[2, ((-1)^(2/3)*b^(1/3)*
(c + d*x))/((-1)^(2/3)*b^(1/3)*c - a^(1/3)*d)] - 2*(-1)^(2/3)*b^(2/3)*PolyL
og[2, ((-1)^(1/3)*b^(1/3)*(c + d*x))/((-1)^(1/3)*b^(1/3)*c + a^(1/3)*d)])/(
6*a^(5/3))
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\log\left(dx+c\right)}{bx^6+ax^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x^3/(b*x^3+a),x, algorithm="fricas")
```

```
[Out] integral(log(d*x + c)/(b*x^6 + a*x^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log\left(dx+c\right)}{\left(bx^3+a\right)x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x^3/(b*x^3+a),x, algorithm="giac")
```

```
[Out] integrate(log(d*x + c)/((b*x^3 + a)*x^3), x)
```

maple [C] time = 0.29, size = 153, normalized size = 0.36

$$-\frac{d^2\left(\ln\left(\frac{-dx+\mathrm{RootOf}\left(b\_Z^3-3bc\_Z^2+3bc^2\_Z+ad^3-bc^3\right)-c}{\mathrm{RootOf}\left(b\_Z^3-3bc\_Z^2+3bc^2\_Z+ad^3-bc^3\right)}\right)\ln\left(dx+c\right)+\mathrm{dilog}\left(\frac{-dx+\mathrm{RootOf}\left(b\_Z^3-3bc\_Z^2+3bc^2\_Z+ad^3-bc^3\right)-c}{\mathrm{RootOf}\left(b\_Z^3-3bc\_Z^2+3bc^2\_Z+ad^3-bc^3\right)}\right.}{3a\left(\mathrm{RootOf}\left(b\_Z^3-3bc\_Z^2+3bc^2\_Z+ad^3-bc^3\right)^2-2\,\mathrm{RootOf}\left(b\_Z^3-3bc\_Z^2+3bc^2\_Z+ad^3-bc^3\right)c\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(d*x+c)/x^3/(b*x^3+a),x)
```

```
[Out] -1/2*d^2/a/c^2*ln(d*x)-1/2*d/a/c/x+1/2*d^2*ln(d*x+c)/a/c^2-1/2*ln(d*x+c)/a/
x^2-1/3*d^2*sum(1/(_R1^2-2*_R1*c+c^2)*(ln((-d*x+_R1-c)/_R1)*ln(d*x+c)+dilog
((-d*x+_R1-c)/_R1)),_R1=RootOf(_Z^3*b-3*_Z^2*b*c+3*_Z*b*c^2+a*d^3-b*c^3))/a
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log\left(dx+c\right)}{\left(bx^3+a\right)x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x^3/(b*x^3+a),x, algorithm="maxima")
```

```
[Out] integrate(log(d*x + c)/((b*x^3 + a)*x^3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln\left(c+d\,x\right)}{x^3\,\left(b\,x^3+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(c + d*x)/(x^3*(a + b*x^3)),x)
[Out] int(log(c + d*x)/(x^3*(a + b*x^3)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(d*x+c)/x**3/(b*x**3+a),x)
[Out] Timed out
```

3.293 $\int \frac{x^7 \log(c+dx)}{a+bx^4} dx$

Optimal. Leaf size=498

$$-\frac{a\text{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt{-\sqrt{-a}}\,d}\right)}{4b^2}-\frac{a\text{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c+\sqrt{-\sqrt{-a}}\,d}\right)}{4b^2}-\frac{a\text{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt[4]{-a}\,d}\right)}{4b^2}-\frac{a\text{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c+\sqrt[4]{-a}\,d}\right)}{4b^2}-\frac{a\log(c+dx)\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\cdots\right)}{\sqrt{-\sqrt{-a}}\,d+\cdots}\right)}{4b^2}$$

```
[Out] 1/4*c^3*x/b/d^3-1/8*c^2*x^2/b/d^2+1/12*c*x^3/b/d-1/16*x^4/b-1/4*c^4*ln(d*x+
c)/b/d^4+1/4*x^4*ln(d*x+c)/b-1/4*a*ln(d*((-a)^(1/4)-b^(1/4)*x)/(b^(1/4)*c+(
-a)^(1/4)*d))*ln(d*x+c)/b^2-1/4*a*ln(-d*((-a)^(1/4)+b^(1/4)*x)/(b^(1/4)*c-(
-a)^(1/4)*d))*ln(d*x+c)/b^2-1/4*a*ln(d*x+c)*ln(-d*(b^(1/4)*x+(-(-a)^(1/2))^
(1/2))/(b^(1/4)*c-d*(-(-a)^(1/2))^(1/2)))/b^2-1/4*a*ln(d*x+c)*ln(d*(-b^(1/4
)*x+(-(-a)^(1/2))^(1/2))/(b^(1/4)*c+d*(-(-a)^(1/2))^(1/2)))/b^2-1/4*a*polyl
og(2,b^(1/4)*(d*x+c)/(b^(1/4)*c-(-a)^(1/4)*d))/b^2-1/4*a*polylog(2,b^(1/4)*
(d*x+c)/(b^(1/4)*c+(-a)^(1/4)*d))/b^2-1/4*a*polylog(2,b^(1/4)*(d*x+c)/(b^(1
/4)*c-d*(-(-a)^(1/2))^(1/2)))/b^2-1/4*a*polylog(2,b^(1/4)*(d*x+c)/(b^(1/4)*
c+d*(-(-a)^(1/2))^(1/2)))/b^2
```

Rubi [A] time = 0.81, antiderivative size = 498, normalized size of antiderivative = 1.00, number of steps used = 23, number of rules used = 8, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.421, Rules used = {266, 43, 2416, 2395, 260, 2394, 2393, 2391}

$$-\frac{a\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt{-\sqrt{-a}}\,d}\right)}{4b^2}-\frac{a\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt{-\sqrt{-a}}\,d+\sqrt[4]{b}c}\right)}{4b^2}-\frac{a\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt[4]{-a}\,d}\right)}{4b^2}-\frac{a\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{-a}\,d+\sqrt[4]{b}c}\right)}{4b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^7*Log[c + d*x])/(a + b*x^4),x]
```

```
[Out] (c^3*x)/(4*b*d^3) - (c^2*x^2)/(8*b*d^2) + (c*x^3)/(12*b*d) - x^4/(16*b) - (
c^4*Log[c + d*x])/(4*b*d^4) + (x^4*Log[c + d*x])/(4*b) - (a*Log[(d*(Sqrt[-S
qrt[-a]] - b^(1/4)*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]*d)]*Log[c + d*x])/(4*b^
2) - (a*Log[(d*((-a)^(1/4) - b^(1/4)*x))/(b^(1/4)*c + (-a)^(1/4)*d)]*Log[c
+ d*x])/(4*b^2) - (a*Log[-((d*(Sqrt[-Sqrt[-a]] + b^(1/4)*x))/(b^(1/4)*c - S
qrt[-Sqrt[-a]]*d))]*Log[c + d*x])/(4*b^2) - (a*Log[-((d*((-a)^(1/4) + b^(1/
4)*x))/(b^(1/4)*c - (-a)^(1/4)*d))]*Log[c + d*x])/(4*b^2) - (a*PolyLog[2, (
b^(1/4)*(c + d*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d)])/(4*b^2) - (a*PolyLog[2
, (b^(1/4)*(c + d*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]*d)])/(4*b^2) - (a*PolyLo
g[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - (-a)^(1/4)*d)])/(4*b^2) - (a*PolyLog[
2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + (-a)^(1/4)*d)])/(4*b^2)
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{x^7 \log(c+dx)}{a+bx^4}\,dx = \int \left(\frac{x^3\log(c+dx)}{b} - \frac{ax^3\log(c+dx)}{b\left(a+bx^4\right)}\right)dx$$
$$= \frac{\int x^3\log(c+dx)\,dx}{b} - \frac{a\int \frac{x^3\log(c+dx)}{a+bx^4}\,dx}{b}$$
$$= \frac{x^4\log(c+dx)}{4b} - \frac{a\int\left(\frac{x\log(c+dx)}{2\left(-\sqrt{-a}\sqrt{b}+bx^2\right)} + \frac{x\log(c+dx)}{2\left(\sqrt{-a}\sqrt{b}+bx^2\right)}\right)dx}{b} - \frac{d\int \frac{x^4}{c+dx}\,dx}{4b}$$
$$= \frac{x^4\log(c+dx)}{4b} - \frac{a\int \frac{x\log(c+dx)}{-\sqrt{-a}\sqrt{b}+bx^2}\,dx}{2b} - \frac{a\int \frac{x\log(c+dx)}{\sqrt{-a}\sqrt{b}+bx^2}\,dx}{2b} - \frac{d\int\left(-\frac{c^3}{d^4}+\frac{c^2x}{d^3}-\frac{cx^2}{d^2}+\frac{x^3}{d}+\frac{}{d^4}\right.}{4b}$$
$$= \frac{c^3x}{4bd^3} - \frac{c^2x^2}{8bd^2} + \frac{cx^3}{12bd} - \frac{x^4}{16b} - \frac{c^4\log(c+dx)}{4bd^4} + \frac{x^4\log(c+dx)}{4b} - \frac{a\int\left(-\frac{\log(c+dx)}{2b^{3/4}\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}\right.}{2}$$
$$= \frac{c^3x}{4bd^3} - \frac{c^2x^2}{8bd^2} + \frac{cx^3}{12bd} - \frac{x^4}{16b} - \frac{c^4\log(c+dx)}{4bd^4} + \frac{x^4\log(c+dx)}{4b} + \frac{a\int \frac{\log(c+dx)}{\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x}\,dx}{4b^{7/4}} + \frac{a}{}$$
$$= \frac{c^3x}{4bd^3} - \frac{c^2x^2}{8bd^2} + \frac{cx^3}{12bd} - \frac{x^4}{16b} - \frac{c^4\log(c+dx)}{4bd^4} + \frac{x^4\log(c+dx)}{4b} - \frac{a\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt{-\sqrt{-a}}\,d}\right)\mathrm{lo}}{4b^2}$$
$$= \frac{c^3x}{4bd^3} - \frac{c^2x^2}{8bd^2} + \frac{cx^3}{12bd} - \frac{x^4}{16b} - \frac{c^4\log(c+dx)}{4bd^4} + \frac{x^4\log(c+dx)}{4b} - \frac{a\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt{-\sqrt{-a}}\,d}\right)\mathrm{lo}}{4b^2}$$
$$= \frac{c^3x}{4bd^3} - \frac{c^2x^2}{8bd^2} + \frac{cx^3}{12bd} - \frac{x^4}{16b} - \frac{c^4\log(c+dx)}{4bd^4} + \frac{x^4\log(c+dx)}{4b} - \frac{a\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt{-\sqrt{-a}}\,d}\right)\mathrm{lo}}{4b^2}$$

Mathematica [C] time = 0.34, size = 446, normalized size = 0.90

$$-\frac{12ad^4\mathrm{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt[4]{-a}d}\right)+12ad^4\mathrm{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-i\sqrt[4]{-a}d}\right)+12ad^4\mathrm{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c+i\sqrt[4]{-a}d}\right)+12ad^4\mathrm{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c+\sqrt[4]{-a}d}\right)+12ad^4\log(c}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^7*Log[c + d*x])/(a + b*x^4),x]
```

```
[Out] -1/48*(-12*b*c^3*d*x + 6*b*c^2*d^2*x^2 - 4*b*c*d^3*x^3 + 3*b*d^4*x^4 + 12*b
*c^4*Log[c + d*x] - 12*b*d^4*x^4*Log[c + d*x] + 12*a*d^4*Log[(d*((-a)^(1/4)
 - b^(1/4)*x))/(b^(1/4)*c + (-a)^(1/4)*d)]*Log[c + d*x] + 12*a*d^4*Log[(d*(
(-a)^(1/4) - I*b^(1/4)*x))/(I*b^(1/4)*c + (-a)^(1/4)*d)]*Log[c + d*x] + 12*
a*d^4*Log[(d*((-a)^(1/4) + I*b^(1/4)*x))/((-I)*b^(1/4)*c + (-a)^(1/4)*d)]*L
og[c + d*x] + 12*a*d^4*Log[(d*((-a)^(1/4) + b^(1/4)*x))/(-(b^(1/4)*c) + (-a
)^(1/4)*d)]*Log[c + d*x] + 12*a*d^4*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)
*c - (-a)^(1/4)*d)] + 12*a*d^4*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c -
I*(-a)^(1/4)*d)] + 12*a*d^4*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + I*(
-a)^(1/4)*d)] + 12*a*d^4*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + (-a)^(
1/4)*d)])/(b^2*d^4)
```

fricas [F] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{x^7 \log(dx + c)}{bx^4 + a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^7*log(d*x+c)/(b*x^4+a),x, algorithm="fricas")
[Out] integral(x^7*log(d*x + c)/(b*x^4 + a), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^7 \log(dx + c)}{bx^4 + a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^7*log(d*x+c)/(b*x^4+a),x, algorithm="giac")
[Out] integrate(x^7*log(d*x + c)/(b*x^4 + a), x)
```

maple [C] time = 0.26, size = 175, normalized size = 0.35

$$\frac{x^4 \ln(dx + c)}{4b} - \frac{x^4}{16b} + \frac{c\,x^3}{12bd} - \frac{c^2 x^2}{8b\,d^2} - \frac{a\left(\ln\left(\frac{-dx + \mathrm{RootOf}\left(\_Z^4 b - 4bc\,\_Z^3 + 6b\,c^2\,\_Z^2 - 4b\,c^3\,\_Z + a\,d^4 + b\,c^4\right) - c}{\mathrm{RootOf}\left(\_Z^4 b - 4bc\,\_Z^3 + 6b\,c^2\,\_Z^2 - 4b\,c^3\,\_Z + a\,d^4 + b\,c^4\right)}\right)\ln(dx + c) + \mathrm{dilog}\left(\right.}{4b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^7*ln(d*x+c)/(b*x^4+a),x)
[Out] 1/4*x^4*ln(d*x+c)/b-1/4*c^4*ln(d*x+c)/b/d^4-1/16*x^4/b+1/12*c*x^3/b/d-1/8*c
^2*x^2/b/d^2+1/4*c^3*x/b/d^3+25/48/d^4/b*c^4-1/4/b^2*sum(ln((-d*x+_R1-c)/_R
1)*ln(d*x+c)+dilog((-d*x+_R1-c)/_R1),_R1=RootOf(_Z^4*b-4*_Z^3*b*c+6*_Z^2*b*
c^2-4*_Z*b*c^3+a*d^4+b*c^4))*a
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^7 \log(dx + c)}{bx^4 + a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^7*log(d*x+c)/(b*x^4+a),x, algorithm="maxima")
[Out] integrate(x^7*log(d*x + c)/(b*x^4 + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^7\,\ln(c + d\,x)}{b\,x^4 + a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^7*log(c + d*x))/(a + b*x^4),x)
[Out] int((x^7*log(c + d*x))/(a + b*x^4), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**7*ln(d*x+c)/(b*x**4+a),x)
[Out] Timed out
```

3.294 $\int \frac{x^3\log(c+dx)}{a+bx^4}\,dx$

Optimal. Leaf size=401

$$\frac{\text{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt{-\sqrt{-a}}\,d}\right)}{4b}+\frac{\text{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c+\sqrt{-\sqrt{-a}}\,d}\right)}{4b}+\frac{\text{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt[4]{-a}\,d}\right)}{4b}+\frac{\text{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c+\sqrt[4]{-a}\,d}\right)}{4b}+\frac{\log(c+dx)\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)}{\sqrt{-\sqrt{-a}}\,d+\sqrt[4]{b}c}\right)}{4b}+$$

```
[Out] 1/4*ln(d*((-a)^(1/4)-b^(1/4)*x)/(b^(1/4)*c+(-a)^(1/4)*d))*ln(d*x+c)/b+1/4*l
n(-d*((-a)^(1/4)+b^(1/4)*x)/(b^(1/4)*c-(-a)^(1/4)*d))*ln(d*x+c)/b+1/4*ln(d*
x+c)*ln(-d*(b^(1/4)*x+(-(-a)^(1/2))^(1/2))/(b^(1/4)*c-d*(-(-a)^(1/2))^(1/2)
))/b+1/4*ln(d*x+c)*ln(d*(-b^(1/4)*x+(-(-a)^(1/2))^(1/2))/(b^(1/4)*c+d*(-(-a
)^(1/2))^(1/2)))/b+1/4*polylog(2,b^(1/4)*(d*x+c)/(b^(1/4)*c-(-a)^(1/4)*d))/
b+1/4*polylog(2,b^(1/4)*(d*x+c)/(b^(1/4)*c+(-a)^(1/4)*d))/b+1/4*polylog(2,b
^(1/4)*(d*x+c)/(b^(1/4)*c-d*(-(-a)^(1/2))^(1/2)))/b+1/4*polylog(2,b^(1/4)*(
d*x+c)/(b^(1/4)*c+d*(-(-a)^(1/2))^(1/2)))/b
```

Rubi [A] time = 0.46, antiderivative size = 401, normalized size of antiderivative = 1.00, number of steps used = 18, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.263, Rules used = {260, 2416, 2394, 2393, 2391}

$$\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt{-\sqrt{-a}}\,d}\right)}{4b}+\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt{-\sqrt{-a}}\,d+\sqrt[4]{b}c}\right)}{4b}+\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt[4]{-a}\,d}\right)}{4b}+\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{-a}\,d+\sqrt[4]{b}c}\right)}{4b}+\text{lo}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*Log[c + d*x])/(a + b*x^4),x]
```

```
[Out] (Log[(d*(Sqrt[-Sqrt[-a]] - b^(1/4)*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]*d)]*Log
[c + d*x])/(4*b) + (Log[(d*((-a)^(1/4) - b^(1/4)*x))/(b^(1/4)*c + (-a)^(1/4
)*d)]*Log[c + d*x])/(4*b) + (Log[-((d*(Sqrt[-Sqrt[-a]] + b^(1/4)*x))/(b^(1/
4)*c - Sqrt[-Sqrt[-a]]*d))]*Log[c + d*x])/(4*b) + (Log[-((d*((-a)^(1/4) + b
^(1/4)*x))/(b^(1/4)*c - (-a)^(1/4)*d))]*Log[c + d*x])/(4*b) + PolyLog[2, (b
^(1/4)*(c + d*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d)]/(4*b) + PolyLog[2, (b^(1
/4)*(c + d*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]*d)]/(4*b) + PolyLog[2, (b^(1/4)
*(c + d*x))/(b^(1/4)*c - (-a)^(1/4)*d)]/(4*b) + PolyLog[2, (b^(1/4)*(c + d*
x))/(b^(1/4)*c + (-a)^(1/4)*d)]/(4*b)
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{x^3\log(c+dx)}{a+bx^4}\,dx = \int \left(\frac{x\log(c+dx)}{2\left(-\sqrt{-a}\sqrt{b}+bx^2\right)}+\frac{x\log(c+dx)}{2\left(\sqrt{-a}\sqrt{b}+bx^2\right)}\right)dx$$

$$= \frac{1}{2}\int \frac{x\log(c+dx)}{-\sqrt{-a}\sqrt{b}+bx^2}\,dx+\frac{1}{2}\int \frac{x\log(c+dx)}{\sqrt{-a}\sqrt{b}+bx^2}\,dx$$

$$= \frac{1}{2}\int \left(-\frac{\log(c+dx)}{2b^{3/4}\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}+\frac{\log(c+dx)}{2b^{3/4}\left(\sqrt{-\sqrt{-a}}+\sqrt[4]{b}\,x\right)}\right)dx+\frac{1}{2}\int \left(-\frac{\log(c+}{2b^{3/4}\left(\sqrt[4]{-a}\right.}\right.$$

$$= -\frac{\int \frac{\log(c+dx)}{\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x}\,dx}{4b^{3/4}}-\frac{\int \frac{\log(c+dx)}{\sqrt[4]{-a}-\sqrt[4]{b}\,x}\,dx}{4b^{3/4}}+\frac{\int \frac{\log(c+dx)}{\sqrt{-\sqrt{-a}}+\sqrt[4]{b}\,x}\,dx}{4b^{3/4}}+\frac{\int \frac{\log(c+dx)}{\sqrt[4]{-a}+\sqrt[4]{b}\,x}\,dx}{4b^{3/4}}$$

$$= \frac{\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt{-\sqrt{-a}}\,d}\right)\log(c+dx)}{4b}+\frac{\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)\log(c+dx)}{4b}+\frac{\log\left(-\frac{d\left(\sqrt{-\sqrt{-a}}+\sqrt[4]{}\right.}{\sqrt[4]{b}\,c-\sqrt{-\sqrt{-}}}\right.}{4b}$$

$$= \frac{\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt{-\sqrt{-a}}\,d}\right)\log(c+dx)}{4b}+\frac{\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)\log(c+dx)}{4b}+\frac{\log\left(-\frac{d\left(\sqrt{-\sqrt{-a}}+\sqrt[4]{}\right.}{\sqrt[4]{b}\,c-\sqrt{-\sqrt{-}}}\right.}{4b}$$

$$= \frac{\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt{-\sqrt{-a}}\,d}\right)\log(c+dx)}{4b}+\frac{\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)\log(c+dx)}{4b}+\frac{\log\left(-\frac{d\left(\sqrt{-\sqrt{-a}}+\sqrt[4]{}\right.}{\sqrt[4]{b}\,c-\sqrt{-\sqrt{-}}}\right.}{4b}$$

Mathematica [C] time = 0.07, size = 383, normalized size = 0.96

$$\frac{\text{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}\,c-\sqrt[4]{-a}\,d}\right)}{4b}+\frac{\text{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}\,c-i\sqrt[4]{-a}\,d}\right)}{4b}+\frac{\text{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}\,c+i\sqrt[4]{-a}\,d}\right)}{4b}+\frac{\text{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)}{4b}+\frac{\log(c+dx)\log\left(\frac{d\left(-\sqrt[4]{b}\,x+i\sqrt[4]{-a}\right)}{\sqrt[4]{b}\,c+i\sqrt[4]{-a}\,d}\right)}{4b}+\frac{\log}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*Log[c + d*x])/(a + b*x^4),x]
```

```
[Out] (Log[(d*(I*(-a)^(1/4) - b^(1/4)*x))/(b^(1/4)*c + I*(-a)^(1/4)*d)]*Log[c + d
*x])/(4*b) + (Log[(d*((-a)^(1/4) - b^(1/4)*x))/(b^(1/4)*c + (-a)^(1/4)*d)]*
Log[c + d*x])/(4*b) + (Log[-((d*(I*(-a)^(1/4) + b^(1/4)*x))/(b^(1/4)*c - I*
(-a)^(1/4)*d))]*Log[c + d*x])/(4*b) + (Log[-((d*((-a)^(1/4) + b^(1/4)*x))/(
```

```
b^(1/4)*c - (-a)^(1/4)*d))]*Log[c + d*x])/(4*b) + PolyLog[2, (b^(1/4)*(c +
d*x))/(b^(1/4)*c - (-a)^(1/4)*d)]/(4*b) + PolyLog[2, (b^(1/4)*(c + d*x))/(b
^(1/4)*c - I*(-a)^(1/4)*d)]/(4*b) + PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)
*c + I*(-a)^(1/4)*d)]/(4*b) + PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + (
-a)^(1/4)*d)]/(4*b)
```

fricas [F] time = 0.41, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{x^3\log(dx+c)}{bx^4+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*log(d*x+c)/(b*x^4+a),x, algorithm="fricas")
[Out] integral(x^3*log(d*x + c)/(b*x^4 + a), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^3\log(dx+c)}{bx^4+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*log(d*x+c)/(b*x^4+a),x, algorithm="giac")
[Out] integrate(x^3*log(d*x + c)/(b*x^4 + a), x)
```

maple [C] time = 0.26, size = 85, normalized size = 0.21

$$\frac{\ln\left(\frac{-dx+\mathrm{RootOf}\left(\_Z^4b-4bc\_Z^3+6bc^2\_Z^2-4bc^3\_Z+ad^4+bc^4\right)-c}{\mathrm{RootOf}\left(\_Z^4b-4bc\_Z^3+6bc^2\_Z^2-4bc^3\_Z+ad^4+bc^4\right)}\right)\ln(dx+c)+\mathrm{dilog}\left(\frac{-dx+\mathrm{RootOf}\left(\_Z^4b-4bc\_Z^3+6bc^2\_Z^2-4bc^3\_Z+ad^4}{\mathrm{RootOf}\left(\_Z^4b-4bc\_Z^3+6bc^2\_Z^2-4bc^3\_Z+ad^4+}\right.\right.}{4b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*ln(d*x+c)/(b*x^4+a),x)
[Out] 1/4/b*sum(ln((-d*x+_R1-c)/_R1)*ln(d*x+c)+dilog((-d*x+_R1-c)/_R1),_R1=RootOf
(_Z^4*b-4*_Z^3*b*c+6*_Z^2*b*c^2-4*_Z*b*c^3+a*d^4+b*c^4))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^3\log(dx+c)}{bx^4+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*log(d*x+c)/(b*x^4+a),x, algorithm="maxima")
[Out] integrate(x^3*log(d*x + c)/(b*x^4 + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^3\,\ln(c+d\,x)}{b\,x^4+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*log(c + d*x))/(a + b*x^4),x)
[Out] int((x^3*log(c + d*x))/(a + b*x^4), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*ln(d*x+c)/(b*x**4+a),x)
```

```
[Out] Timed out
```

3.295 $\int \frac{\log(c+dx)}{x\left(a+bx^4\right)}\,dx$

Optimal. Leaf size=433

$$-\frac{\mathrm{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt{-\sqrt{-a}}\,d}\right)}{4a}-\frac{\mathrm{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c+\sqrt{-\sqrt{-a}}\,d}\right)}{4a}-\frac{\mathrm{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt[4]{-a}\,d}\right)}{4a}-\frac{\mathrm{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c+\sqrt[4]{-a}\,d}\right)}{4a}-\frac{\log(c+dx)\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)}{\sqrt{-\sqrt{-a}}\,d+\sqrt[4]{b}c}\right)}{4a}-$$

```
[Out] ln(-d*x/c)*ln(d*x+c)/a-1/4*ln(d*((-a)^(1/4)-b^(1/4)*x)/(b^(1/4)*c+(-a)^(1/4
)*d))*ln(d*x+c)/a-1/4*ln(-d*((-a)^(1/4)+b^(1/4)*x)/(b^(1/4)*c-(-a)^(1/4)*d)
)*ln(d*x+c)/a-1/4*ln(d*x+c)*ln(-d*(b^(1/4)*x+(-(-a)^(1/2))^(1/2))/(b^(1/4)*
c-d*(-(-a)^(1/2))^(1/2)))/a-1/4*ln(d*x+c)*ln(d*(-b^(1/4)*x+(-(-a)^(1/2))^(1
/2))/(b^(1/4)*c+d*(-(-a)^(1/2))^(1/2)))/a-1/4*polylog(2,b^(1/4)*(d*x+c)/(b^
(1/4)*c-(-a)^(1/4)*d))/a-1/4*polylog(2,b^(1/4)*(d*x+c)/(b^(1/4)*c+(-a)^(1/4
)*d))/a+polylog(2,1+d*x/c)/a-1/4*polylog(2,b^(1/4)*(d*x+c)/(b^(1/4)*c-d*(-(
-a)^(1/2))^(1/2)))/a-1/4*polylog(2,b^(1/4)*(d*x+c)/(b^(1/4)*c+d*(-(-a)^(1/2
))^(1/2)))/a
```

Rubi [A] time = 0.59, antiderivative size = 433, normalized size of antiderivative = 1.00, number of steps used = 22, number of rules used = 10, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.526, Rules used = {266, 36, 29, 31, 2416, 2394, 2315, 260, 2393, 2391}

$$-\frac{\mathrm{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt{-\sqrt{-a}}\,d}\right)}{4a}-\frac{\mathrm{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt{-\sqrt{-a}}\,d+\sqrt[4]{b}c}\right)}{4a}-\frac{\mathrm{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt[4]{-a}\,d}\right)}{4a}-\frac{\mathrm{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{-a}\,d+\sqrt[4]{b}c}\right)}{4a}+$$

Antiderivative was successfully verified.

```
[In] Int[Log[c + d*x]/(x*(a + b*x^4)),x]
```

```
[Out] (Log[-((d*x)/c)]*Log[c + d*x])/a - (Log[(d*(Sqrt[-Sqrt[-a]] - b^(1/4)*x))/(
b^(1/4)*c + Sqrt[-Sqrt[-a]]*d)]*Log[c + d*x])/(4*a) - (Log[(d*((-a)^(1/4) -
 b^(1/4)*x))/(b^(1/4)*c + (-a)^(1/4)*d)]*Log[c + d*x])/(4*a) - (Log[-((d*(S
qrt[-Sqrt[-a]] + b^(1/4)*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d))]*Log[c + d*x]
)/(4*a) - (Log[-((d*((-a)^(1/4) + b^(1/4)*x))/(b^(1/4)*c - (-a)^(1/4)*d))]*
Log[c + d*x])/(4*a) - PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - Sqrt[-Sqr
t[-a]]*d)]/(4*a) - PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + Sqrt[-Sqrt[-
a]]*d)]/(4*a) - PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - (-a)^(1/4)*d)]/
(4*a) - PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + (-a)^(1/4)*d)]/(4*a) +
PolyLog[2, 1 + (d*x)/c]/a
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{\log(c+dx)}{x\left(a+bx^4\right)}\,dx = \int \left(\frac{\log(c+dx)}{ax} - \frac{bx^3\log(c+dx)}{a\left(a+bx^4\right)}\right)dx$$

$$= \frac{\int \frac{\log(c+dx)}{x}\,dx}{a} - \frac{b\int \frac{x^3\log(c+dx)}{a+bx^4}\,dx}{a}$$

$$= \frac{\log\left(-\frac{dx}{c}\right)\log(c+dx)}{a} - \frac{b\int \left(\frac{x\log(c+dx)}{2\left(-\sqrt{-a}\,\sqrt{b}+bx^2\right)} + \frac{x\log(c+dx)}{2\left(\sqrt{-a}\,\sqrt{b}+bx^2\right)}\right)dx}{a} - \frac{d\int \frac{\log\left(-\frac{dx}{c}\right)}{c+dx}\,dx}{a}$$

$$= \frac{\log\left(-\frac{dx}{c}\right)\log(c+dx)}{a} + \frac{\text{Li}_2\left(1+\frac{dx}{c}\right)}{a} - \frac{b\int \frac{x\log(c+dx)}{-\sqrt{-a}\,\sqrt{b}+bx^2}\,dx}{2a} - \frac{b\int \frac{x\log(c+dx)}{\sqrt{-a}\,\sqrt{b}+bx^2}\,dx}{2a}$$

$$= \frac{\log\left(-\frac{dx}{c}\right)\log(c+dx)}{a} + \frac{\text{Li}_2\left(1+\frac{dx}{c}\right)}{a} - \frac{b\int \left(-\frac{\log(c+dx)}{2b^{3/4}\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)} + \frac{\log(c+dx)}{2b^{3/4}\left(\sqrt{-\sqrt{-a}}+\sqrt[4]{b}\,x\right)}\right)dx}{2a} -$$

$$= \frac{\log\left(-\frac{dx}{c}\right)\log(c+dx)}{a} + \frac{\text{Li}_2\left(1+\frac{dx}{c}\right)}{a} + \frac{\sqrt[4]{b}\int \frac{\log(c+dx)}{\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x}\,dx}{4a} + \frac{\sqrt[4]{b}\int \frac{\log(c+dx)}{\sqrt[4]{-a}-\sqrt[4]{b}\,x}\,dx}{4a} - \frac{\sqrt[4]{b}\int}{}$$

$$= \frac{\log\left(-\frac{dx}{c}\right)\log(c+dx)}{a} - \frac{\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt{-\sqrt{-a}}\,d}\right)\log(c+dx)}{4a} - \frac{\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)\log(c+dx)}{4a} -$$

$$= \frac{\log\left(-\frac{dx}{c}\right)\log(c+dx)}{a} - \frac{\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt{-\sqrt{-a}}\,d}\right)\log(c+dx)}{4a} - \frac{\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)\log(c+dx)}{4a} -$$

$$= \frac{\log\left(-\frac{dx}{c}\right)\log(c+dx)}{a} - \frac{\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt{-\sqrt{-a}}\,d}\right)\log(c+dx)}{4a} - \frac{\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)\log(c+dx)}{4a} -$$

Mathematica [C] time = 0.11, size = 416, normalized size = 0.96

$$-\frac{\text{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt[4]{-a}d}\right)}{4a}-\frac{\text{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-i\sqrt[4]{-a}d}\right)}{4a}-\frac{\text{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c+i\sqrt[4]{-a}d}\right)}{4a}-\frac{\text{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c+\sqrt[4]{-a}d}\right)}{4a}-\frac{\log(c+dx)\log\left(\frac{d\left(-\sqrt[4]{b}x+i\sqrt[4]{-a}\right)}{\sqrt[4]{b}c+i\sqrt[4]{-a}d}\right)}{4a}-\frac{\log(c}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c + d*x]/(x*(a + b*x^4)),x]
```

```
[Out] (Log[-((d*x)/c)]*Log[c + d*x])/a - (Log[(d*(I*(-a)^(1/4) - b^(1/4)*x))/(b^(
1/4)*c + I*(-a)^(1/4)*d)]*Log[c + d*x])/(4*a) - (Log[(d*((-a)^(1/4) - b^(1/
4)*x))/(b^(1/4)*c + (-a)^(1/4)*d)]*Log[c + d*x])/(4*a) - (Log[-((d*(I*(-a)^
(1/4) + b^(1/4)*x))/(b^(1/4)*c - I*(-a)^(1/4)*d))]*Log[c + d*x])/(4*a) - (L
og[-((d*((-a)^(1/4) + b^(1/4)*x))/(b^(1/4)*c - (-a)^(1/4)*d))]*Log[c + d*x]
)/(4*a) + PolyLog[2, (c + d*x)/c]/a - PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/
4)*c - (-a)^(1/4)*d)]/(4*a) - PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - I
*(-a)^(1/4)*d)]/(4*a) - PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + I*(-a)^
(1/4)*d)]/(4*a) - PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + (-a)^(1/4)*d)
]/(4*a)
```

fricas [F] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\log\left(dx+c\right)}{bx^5+ax},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x/(b*x^4+a),x, algorithm="fricas")
[Out] integral(log(d*x + c)/(b*x^5 + a*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log\left(dx+c\right)}{\left(bx^4+a\right)x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x/(b*x^4+a),x, algorithm="giac")
[Out] integrate(log(d*x + c)/((b*x^4 + a)*x), x)
```

maple [C] time = 0.26, size = 116, normalized size = 0.27

$$\frac{\ln\left(-\frac{dx}{c}\right)\ln\left(dx+c\right)}{a}+\frac{\operatorname{dilog}\left(-\frac{dx}{c}\right)}{a}-\frac{\ln\left(\frac{-dx+\operatorname{RootOf}\left(\_Z^4b-4bc\_Z^3+6bc^2\_Z^2-4bc^3\_Z+ad^4+bc^4\right)-c}{\operatorname{RootOf}\left(\_Z^4b-4bc\_Z^3+6bc^2\_Z^2-4bc^3\_Z+ad^4+bc^4\right)}\right)\ln\left(dx+c\right)+\operatorname{dilog}\left(\frac{-\cdots}{\cdots}\right)}{4a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(d*x+c)/x/(b*x^4+a),x)
[Out] -1/4*sum(ln((-d*x+_R1-c)/_R1)*ln(d*x+c)+dilog((-d*x+_R1-c)/_R1),_R1=RootOf(
_Z^4*b-4*_Z^3*b*c+6*_Z^2*b*c^2-4*_Z*b*c^3+a*d^4+b*c^4))/a+1/a*ln(-1/c*d*x)*
ln(d*x+c)+1/a*dilog(-1/c*d*x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log\left(dx+c\right)}{\left(bx^4+a\right)x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x/(b*x^4+a),x, algorithm="maxima")
[Out] integrate(log(d*x + c)/((b*x^4 + a)*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln\left(c+d\,x\right)}{x\,\left(b\,x^4+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(c + d*x)/(x*(a + b*x^4)),x)
[Out] int(log(c + d*x)/(x*(a + b*x^4)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(d*x+c)/x/(b*x**4+a),x)
[Out] Timed out
```

3.296 $\int \frac{x^5 \log(c+dx)}{a+bx^4} \, dx$

Optimal. Leaf size=530

$$-\frac{\sqrt{-a}\,\text{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt{-\sqrt{-a}}\,d}\right)}{4b^{3/2}}-\frac{\sqrt{-a}\,\text{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c+\sqrt{-\sqrt{-a}}\,d}\right)}{4b^{3/2}}+\frac{\sqrt{-a}\,\text{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt[4]{-a}\,d}\right)}{4b^{3/2}}+\frac{\sqrt{-a}\,\text{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c+\sqrt[4]{-a}\,d}\right)}{4b^{3/2}}-\frac{\sqrt{-a}\,\log(c+}{}$$

```
[Out] 1/2*c*x/b/d-1/4*x^2/b-1/2*c^2*ln(d*x+c)/b/d^2+1/2*x^2*ln(d*x+c)/b+1/4*ln(d*
((-a)^(1/4)-b^(1/4)*x)/(b^(1/4)*c+(-a)^(1/4)*d))*ln(d*x+c)*(-a)^(1/2)/b^(3/
2)+1/4*ln(-d*((-a)^(1/4)+b^(1/4)*x)/(b^(1/4)*c-(-a)^(1/4)*d))*ln(d*x+c)*(-a
)^(1/2)/b^(3/2)-1/4*ln(d*x+c)*ln(-d*(b^(1/4)*x+(-(-a)^(1/2))^(1/2))/(b^(1/4
)*c-d*(-(-a)^(1/2))^(1/2)))*(-a)^(1/2)/b^(3/2)-1/4*ln(d*x+c)*ln(d*(-b^(1/4)
*x+(-(-a)^(1/2))^(1/2))/(b^(1/4)*c+d*(-(-a)^(1/2))^(1/2)))*(-a)^(1/2)/b^(3/
2)+1/4*polylog(2,b^(1/4)*(d*x+c)/(b^(1/4)*c-(-a)^(1/4)*d))*(-a)^(1/2)/b^(3/
2)+1/4*polylog(2,b^(1/4)*(d*x+c)/(b^(1/4)*c+(-a)^(1/4)*d))*(-a)^(1/2)/b^(3/
2)-1/4*polylog(2,b^(1/4)*(d*x+c)/(b^(1/4)*c-d*(-(-a)^(1/2))^(1/2)))*(-a)^(1
/2)/b^(3/2)-1/4*polylog(2,b^(1/4)*(d*x+c)/(b^(1/4)*c+d*(-(-a)^(1/2))^(1/2))
)*(-a)^(1/2)/b^(3/2)
```

Rubi [A] time = 0.65, antiderivative size = 530, normalized size of antiderivative = 1.00, number of steps used = 23, number of rules used = 10, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.526, Rules used = {275, 321, 205, 2416, 2395, 43, 260, 2394, 2393, 2391}

$$-\frac{\sqrt{-a}\,\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt{-\sqrt{-a}}\,d}\right)}{4b^{3/2}}-\frac{\sqrt{-a}\,\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt{-\sqrt{-a}}\,d+\sqrt[4]{b}c}\right)}{4b^{3/2}}+\frac{\sqrt{-a}\,\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt[4]{-a}\,d}\right)}{4b^{3/2}}+\frac{\sqrt{-a}\,\text{PolyLo}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(x^5*Log[c + d*x])/(a + b*x^4),x]
```

```
[Out] (c*x)/(2*b*d) - x^2/(4*b) - (c^2*Log[c + d*x])/(2*b*d^2) + (x^2*Log[c + d*x
])/(2*b) - (Sqrt[-a]*Log[(d*(Sqrt[-Sqrt[-a]] - b^(1/4)*x))/(b^(1/4)*c + Sqr
t[-Sqrt[-a]]*d)]*Log[c + d*x])/(4*b^(3/2)) + (Sqrt[-a]*Log[(d*((-a)^(1/4) -
 b^(1/4)*x))/(b^(1/4)*c + (-a)^(1/4)*d)]*Log[c + d*x])/(4*b^(3/2)) - (Sqrt[
-a]*Log[-((d*(Sqrt[-Sqrt[-a]] + b^(1/4)*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d)
)]*Log[c + d*x])/(4*b^(3/2)) + (Sqrt[-a]*Log[-((d*((-a)^(1/4) + b^(1/4)*x))
/(b^(1/4)*c - (-a)^(1/4)*d))]*Log[c + d*x])/(4*b^(3/2)) - (Sqrt[-a]*PolyLog
[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d)])/(4*b^(3/2)) - (Sq
rt[-a]*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]*d)])/(4*
b^(3/2)) + (Sqrt[-a]*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - (-a)^(1/4)
*d)])/(4*b^(3/2)) + (Sqrt[-a]*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + (
-a)^(1/4)*d)])/(4*b^(3/2))
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 275

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k = GCD[m
+ 1, n]}, Dist[1/k, Subst[Int[x^((m + 1)/k - 1)*(a + b*x^(n/k))^p, x], x, x
^k], x] /; k != 1] /; FreeQ[{a, b, p}, x] && IGtQ[n, 0] && IntegerQ[m]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{x^5 \log(c+dx)}{a+bx^4} dx = \int \left(\frac{x \log(c+dx)}{b} - \frac{ax \log(c+dx)}{b(a+bx^4)} \right) dx$$

$$= \frac{\int x \log(c+dx) dx}{b} - \frac{a \int \frac{x \log(c+dx)}{a+bx^4} dx}{b}$$

$$= \frac{x^2 \log(c+dx)}{2b} - \frac{a \int \left(-\frac{\sqrt{b}\, x \log(c+dx)}{2\sqrt{-a}\left(\sqrt{-a}\sqrt{b}-bx^2\right)} - \frac{\sqrt{b}\, x \log(c+dx)}{2\sqrt{-a}\left(\sqrt{-a}\sqrt{b}+bx^2\right)} \right) dx}{b} - \frac{d \int \frac{x^2}{c+dx} dx}{2b}$$

$$= \frac{x^2 \log(c+dx)}{2b} - \frac{\sqrt{-a} \int \frac{x \log(c+dx)}{\sqrt{-a}\sqrt{b}-bx^2} dx}{2\sqrt{b}} - \frac{\sqrt{-a} \int \frac{x \log(c+dx)}{\sqrt{-a}\sqrt{b}+bx^2} dx}{2\sqrt{b}} - \frac{d \int \left(-\frac{c}{d^2} + \frac{x}{d} + \frac{c^2}{d^2(c+dx)} \right.}{2b}$$

$$= \frac{cx}{2bd} - \frac{x^2}{4b} - \frac{c^2 \log(c+dx)}{2bd^2} + \frac{x^2 \log(c+dx)}{2b} - \frac{\sqrt{-a} \int \left(-\frac{\log(c+dx)}{2b^{3/4}\left(\sqrt{-\sqrt{-a}} - \sqrt[4]{b}\, x\right)} + \frac{\log(c+dx}{2b^{3/4}\left(\sqrt{-\sqrt{-a}} \right.} \right.}{2\sqrt{b}}$$

$$= \frac{cx}{2bd} - \frac{x^2}{4b} - \frac{c^2 \log(c+dx)}{2bd^2} + \frac{x^2 \log(c+dx)}{2b} + \frac{\sqrt{-a} \int \frac{\log(c+dx)}{\sqrt{-\sqrt{-a}} - \sqrt[4]{b}\, x} dx}{4b^{5/4}} - \frac{\sqrt{-a} \int \frac{\log(c+dx)}{\sqrt[4]{-a} - \sqrt[4]{b}\, x}}{4b^{5/4}}$$

$$= \frac{cx}{2bd} - \frac{x^2}{4b} - \frac{c^2 \log(c+dx)}{2bd^2} + \frac{x^2 \log(c+dx)}{2b} - \frac{\sqrt{-a} \log\left(\frac{d\left(\sqrt{-\sqrt{-a}} - \sqrt[4]{b}\, x\right)}{\sqrt[4]{b}\, c + \sqrt{-\sqrt{-a}}\, d} \right) \log(c+dx)}{4b^{3/2}} + \ldots$$

$$= \frac{cx}{2bd} - \frac{x^2}{4b} - \frac{c^2 \log(c+dx)}{2bd^2} + \frac{x^2 \log(c+dx)}{2b} - \frac{\sqrt{-a} \log\left(\frac{d\left(\sqrt{-\sqrt{-a}} - \sqrt[4]{b}\, x\right)}{\sqrt[4]{b}\, c + \sqrt{-\sqrt{-a}}\, d} \right) \log(c+dx)}{4b^{3/2}} + \ldots$$

$$= \frac{cx}{2bd} - \frac{x^2}{4b} - \frac{c^2 \log(c+dx)}{2bd^2} + \frac{x^2 \log(c+dx)}{2b} - \frac{\sqrt{-a} \log\left(\frac{d\left(\sqrt{-\sqrt{-a}} - \sqrt[4]{b}\, x\right)}{\sqrt[4]{b}\, c + \sqrt{-\sqrt{-a}}\, d} \right) \log(c+dx)}{4b^{3/2}} + \ldots$$

Mathematica [C] time = 0.23, size = 484, normalized size = 0.91

$$\sqrt{-a}\, d^2 \mathrm{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}\, c - \sqrt[4]{-a}\, d} \right) - \sqrt{-a}\, d^2 \mathrm{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}\, c - i\sqrt[4]{-a}\, d} \right) - \sqrt{-a}\, d^2 \mathrm{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}\, c + i\sqrt[4]{-a}\, d} \right) + \sqrt{-a}\, d^2 \mathrm{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}\, c + \sqrt[4]{-a}\, d} \right) + \sqrt{-a}\, d^2 \ldots$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^5*Log[c + d*x])/(a + b*x^4),x]
```

```
[Out] (2*Sqrt[b]*c*d*x - Sqrt[b]*d^2*x^2 - 2*Sqrt[b]*c^2*Log[c + d*x] + 2*Sqrt[b]
*d^2*x^2*Log[c + d*x] + Sqrt[-a]*d^2*Log[(d*((-a)^(1/4) - b^(1/4)*x))/(b^(1
/4)*c + (-a)^(1/4)*d)]*Log[c + d*x] - Sqrt[-a]*d^2*Log[(d*((-a)^(1/4) - I*b
^(1/4)*x))/(I*b^(1/4)*c + (-a)^(1/4)*d)]*Log[c + d*x] - Sqrt[-a]*d^2*Log[(d
*((-a)^(1/4) + I*b^(1/4)*x))/((-I)*b^(1/4)*c + (-a)^(1/4)*d)]*Log[c + d*x]
+ Sqrt[-a]*d^2*Log[(d*((-a)^(1/4) + b^(1/4)*x))/(-(b^(1/4)*c) + (-a)^(1/4)*
d)]*Log[c + d*x] + Sqrt[-a]*d^2*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c -
 (-a)^(1/4)*d)] - Sqrt[-a]*d^2*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c -
I*(-a)^(1/4)*d)] - Sqrt[-a]*d^2*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c +
 I*(-a)^(1/4)*d)] + Sqrt[-a]*d^2*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c
+ (-a)^(1/4)*d)])/(4*b^(3/2)*d^2)
```

fricas [F] time = 0.41, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{x^5\log(dx+c)}{bx^4+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*log(d*x+c)/(b*x^4+a),x, algorithm="fricas")
[Out] integral(x^5*log(d*x + c)/(b*x^4 + a), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^5\log(dx+c)}{bx^4+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*log(d*x+c)/(b*x^4+a),x, algorithm="giac")
[Out] integrate(x^5*log(d*x + c)/(b*x^4 + a), x)
```

maple [C] time = 0.26, size = 164, normalized size = 0.31

$$-\frac{ad^2\left(\ln\left(\frac{-dx+\text{RootOf}(\_Z^4b-4bc\_Z^3+6bc^2\_Z^2-4bc^3\_Z+ad^4+bc^4)-c}{\text{RootOf}(\_Z^4b-4bc\_Z^3+6bc^2\_Z^2-4bc^3\_Z+ad^4+bc^4)}\right)\ln(dx+c)+\text{dilog}\left(\frac{-dx+\text{RootOf}(\_Z^4b-4bc\_Z^3+6b}{\text{RootOf}(\_Z^4b-4bc\_Z^3+6bc}\right.\right.}{4b^2\left(\text{RootOf}\left(\_Z^4b-4bc\_Z^3+6bc^2\_Z^2-4bc^3\_Z+ad^4+bc^4\right)^2-2\,\text{RootOf}\left(\_Z^4b-4bc\_Z^3+6bc^2\_Z^2\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*ln(d*x+c)/(b*x^4+a),x)
[Out] 1/2/b*x^2*ln(d*x+c)-1/2/b*c^2/d^2*ln(d*x+c)-1/4/b*x^2+1/2/b*c/d*x+3/4/b*c^2
/d^2-1/4*d^2/b^2*sum(1/(_R1^2-2*_R1*c+c^2)*(ln((-d*x+_R1-c)/_R1)*ln(d*x+c)+
dilog((-d*x+_R1-c)/_R1)),_R1=RootOf(_Z^4*b-4*_Z^3*b*c+6*_Z^2*b*c^2-4*_Z*b*c
^3+a*d^4+b*c^4))*a
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^5\log(dx+c)}{bx^4+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*log(d*x+c)/(b*x^4+a),x, algorithm="maxima")
[Out] integrate(x^5*log(d*x + c)/(b*x^4 + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^5\,\ln(c+d\,x)}{b\,x^4+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^5*log(c + d*x))/(a + b*x^4),x)
[Out] int((x^5*log(c + d*x))/(a + b*x^4), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**5*ln(d*x+c)/(b*x**4+a),x)
[Out] Timed out
```

3.297 $\int \frac{x \log(c+dx)}{a+bx^4} dx$

Optimal. Leaf size=473

$$-\frac{\text{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt{-\sqrt{-a}}\,d}\right)}{4\sqrt{-a}\sqrt{b}}-\frac{\text{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c+\sqrt{-\sqrt{-a}}\,d}\right)}{4\sqrt{-a}\sqrt{b}}+\frac{\text{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt[4]{-a}\,d}\right)}{4\sqrt{-a}\sqrt{b}}+\frac{\text{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c+\sqrt[4]{-a}\,d}\right)}{4\sqrt{-a}\sqrt{b}}-\frac{\log(c+dx)\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)}{\sqrt{-\sqrt{-a}}\,d+\sqrt[4]{b}c}\right)}{4\sqrt{-a}\sqrt{b}}-$$

```
[Out] 1/4*ln(d*((-a)^(1/4)-b^(1/4)*x)/(b^(1/4)*c+(-a)^(1/4)*d))*ln(d*x+c)/(-a)^(1
/2)/b^(1/2)+1/4*ln(-d*((-a)^(1/4)+b^(1/4)*x)/(b^(1/4)*c-(-a)^(1/4)*d))*ln(d
*x+c)/(-a)^(1/2)/b^(1/2)-1/4*ln(d*x+c)*ln(-d*(b^(1/4)*x+(-(-a)^(1/2))^(1/2)
)/(b^(1/4)*c-d*(-(-a)^(1/2))^(1/2)))/(-a)^(1/2)/b^(1/2)-1/4*ln(d*x+c)*ln(d*
(-b^(1/4)*x+(-(-a)^(1/2))^(1/2))/(b^(1/4)*c+d*(-(-a)^(1/2))^(1/2)))/(-a)^(1
/2)/b^(1/2)+1/4*polylog(2,b^(1/4)*(d*x+c)/(b^(1/4)*c-(-a)^(1/4)*d))/(-a)^(1
/2)/b^(1/2)+1/4*polylog(2,b^(1/4)*(d*x+c)/(b^(1/4)*c+(-a)^(1/4)*d))/(-a)^(1
/2)/b^(1/2)-1/4*polylog(2,b^(1/4)*(d*x+c)/(b^(1/4)*c-d*(-(-a)^(1/2))^(1/2))
)/(-a)^(1/2)/b^(1/2)-1/4*polylog(2,b^(1/4)*(d*x+c)/(b^(1/4)*c+d*(-(-a)^(1/2
))^(1/2)))/(-a)^(1/2)/b^(1/2)
```

Rubi [A] time = 0.47, antiderivative size = 473, normalized size of antiderivative = 1.00, number of steps used = 18, number of rules used = 7, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.412$, Rules used = {275, 205, 2416, 260, 2394, 2393, 2391}

$$-\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt{-\sqrt{-a}}\,d}\right)}{4\sqrt{-a}\sqrt{b}}-\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt{-\sqrt{-a}}\,d+\sqrt[4]{b}c}\right)}{4\sqrt{-a}\sqrt{b}}+\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt[4]{-a}\,d}\right)}{4\sqrt{-a}\sqrt{b}}+\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{-a}\,d+\sqrt[4]{b}c}\right)}{4\sqrt{-a}\sqrt{b}}-$$

Antiderivative was successfully verified.

```
[In] Int[(x*Log[c + d*x])/(a + b*x^4),x]
```

```
[Out] -(Log[(d*(Sqrt[-Sqrt[-a]] - b^(1/4)*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]*d)]*Lo
g[c + d*x])/(4*Sqrt[-a]*Sqrt[b]) + (Log[(d*((-a)^(1/4) - b^(1/4)*x))/(b^(1/
4)*c + (-a)^(1/4)*d)]*Log[c + d*x])/(4*Sqrt[-a]*Sqrt[b]) - (Log[-((d*(Sqrt[
-Sqrt[-a]] + b^(1/4)*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d))]*Log[c + d*x])/(4
*Sqrt[-a]*Sqrt[b]) + (Log[-((d*((-a)^(1/4) + b^(1/4)*x))/(b^(1/4)*c - (-a)^
(1/4)*d))]*Log[c + d*x])/(4*Sqrt[-a]*Sqrt[b]) - PolyLog[2, (b^(1/4)*(c + d*
x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d)]/(4*Sqrt[-a]*Sqrt[b]) - PolyLog[2, (b^(
1/4)*(c + d*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]*d)]/(4*Sqrt[-a]*Sqrt[b]) + Pol
yLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - (-a)^(1/4)*d)]/(4*Sqrt[-a]*Sqrt[b]
) + PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + (-a)^(1/4)*d)]/(4*Sqrt[-a]*
Sqrt[b])
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 275

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k = GCD[m
+ 1, n]}, Dist[1/k, Subst[Int[x^((m + 1)/k - 1)*(a + b*x^(n/k))^p, x], x, x
```

```
^k], x] /; k != 1] /; FreeQ[{a, b, p}, x] && IGtQ[n, 0] && IntegerQ[m]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{x\log(c+dx)}{a+bx^4}\,dx = \int \left(-\frac{\sqrt{b}\,x\log(c+dx)}{2\sqrt{-a}\left(\sqrt{-a}\,\sqrt{b}-bx^2\right)} - \frac{\sqrt{b}\,x\log(c+dx)}{2\sqrt{-a}\left(\sqrt{-a}\,\sqrt{b}+bx^2\right)}\right)dx$$

$$= -\frac{\sqrt{b}\int \frac{x\log(c+dx)}{\sqrt{-a}\,\sqrt{b}-bx^2}\,dx}{2\sqrt{-a}} - \frac{\sqrt{b}\int \frac{x\log(c+dx)}{\sqrt{-a}\,\sqrt{b}+bx^2}\,dx}{2\sqrt{-a}}$$

$$= -\frac{\sqrt{b}\int \left(-\frac{\log(c+dx)}{2b^{3/4}\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)} + \frac{\log(c+dx)}{2b^{3/4}\left(\sqrt{-\sqrt{-a}}+\sqrt[4]{b}\,x\right)}\right)dx}{2\sqrt{-a}} - \frac{\sqrt{b}\int \left(\frac{\log(c+dx)}{2b^{3/4}\left(\sqrt[4]{-a}-\sqrt[4]{b}\,x\right)} - \frac{\log(c+dx}{2b^{3/4}\left(\sqrt[4]{-a}+\cdots\right.}\cdots\right.}{2\sqrt{-a}}$$

$$= \frac{\int \frac{\log(c+dx)}{\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x}\,dx}{4\sqrt{-a}\,\sqrt[4]{b}} - \frac{\int \frac{\log(c+dx)}{\sqrt[4]{-a}-\sqrt[4]{b}\,x}\,dx}{4\sqrt{-a}\,\sqrt[4]{b}} - \frac{\int \frac{\log(c+dx)}{\sqrt{-\sqrt{-a}}+\sqrt[4]{b}\,x}\,dx}{4\sqrt{-a}\,\sqrt[4]{b}} + \frac{\int \frac{\log(c+dx)}{\sqrt[4]{-a}+\sqrt[4]{b}\,x}\,dx}{4\sqrt{-a}\,\sqrt[4]{b}}$$

$$= -\frac{\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt{-\sqrt{-a}}\,d}\right)\log(c+dx)}{4\sqrt{-a}\,\sqrt{b}} + \frac{\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)\log(c+dx)}{4\sqrt{-a}\,\sqrt{b}} - \frac{\log\left(-\frac{d\left(\sqrt{-\sqrt{-a}}+\sqrt[4]{b}\,x\cdots\right.}{\sqrt[4]{b}\,c-\sqrt{-\sqrt{-a}}\,d}\cdots\right.}{4\sqrt{-a}\,\sqrt{\cdots}}$$

$$= -\frac{\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt{-\sqrt{-a}}\,d}\right)\log(c+dx)}{4\sqrt{-a}\,\sqrt{b}} + \frac{\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)\log(c+dx)}{4\sqrt{-a}\,\sqrt{b}} - \frac{\log\left(-\frac{d\left(\sqrt{-\sqrt{-a}}+\sqrt[4]{b}\,x\cdots\right.}{\sqrt[4]{b}\,c-\sqrt{-\sqrt{-a}}\,d}\cdots\right.}{4\sqrt{-a}\,\sqrt{\cdots}}$$

$$= -\frac{\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt{-\sqrt{-a}}\,d}\right)\log(c+dx)}{4\sqrt{-a}\,\sqrt{b}} + \frac{\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)\log(c+dx)}{4\sqrt{-a}\,\sqrt{b}} - \frac{\log\left(-\frac{d\left(\sqrt{-\sqrt{-a}}+\sqrt[4]{b}\,x\cdots\right.}{\sqrt[4]{b}\,c-\sqrt{-\sqrt{-a}}\,d}\cdots\right.}{4\sqrt{-a}\,\sqrt{\cdots}}$$

Mathematica [C] time = 0.12, size = 348, normalized size = 0.74

$$\frac{\mathrm{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}\,c-\sqrt[4]{-a}\,d}\right) - \mathrm{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}\,c-i\sqrt[4]{-a}\,d}\right) - \mathrm{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}\,c+i\sqrt[4]{-a}\,d}\right) + \mathrm{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right) + \log(c+dx)\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{-a}\,d+\sqrt[4]{b}\,c}\right) - \log(c\cdots}{4\sqrt{-a}\,\sqrt{b}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*Log[c + d*x])/(a + b*x^4),x]
```

```
[Out] (Log[(d*((-a)^(1/4) - b^(1/4)*x))/(b^(1/4)*c + (-a)^(1/4)*d)]*Log[c + d*x]
- Log[(d*((-a)^(1/4) - I*b^(1/4)*x))/(I*b^(1/4)*c + (-a)^(1/4)*d)]*Log[c +
d*x] - Log[(d*((-a)^(1/4) + I*b^(1/4)*x))/((-I)*b^(1/4)*c + (-a)^(1/4)*d)]*
Log[c + d*x] + Log[(d*((-a)^(1/4) + b^(1/4)*x))/(-(b^(1/4)*c) + (-a)^(1/4)*
d)]*Log[c + d*x] + PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - (-a)^(1/4)*d
)] - PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - I*(-a)^(1/4)*d)] - PolyLog
[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + I*(-a)^(1/4)*d)] + PolyLog[2, (b^(1/4)
*(c + d*x))/(b^(1/4)*c + (-a)^(1/4)*d)])/(4*Sqrt[-a]*Sqrt[b])
```

fricas [F] time = 0.47, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{x\log(dx+c)}{bx^4+a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*log(d*x+c)/(b*x^4+a),x, algorithm="fricas")
[Out] integral(x*log(d*x + c)/(b*x^4 + a), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x \log(dx + c)}{bx^4 + a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*log(d*x+c)/(b*x^4+a),x, algorithm="giac")
[Out] integrate(x*log(d*x + c)/(b*x^4 + a), x)
```

maple [C] time = 0.26, size = 102, normalized size = 0.22

$$\frac{d^2\left(\ln\left(\frac{-dx+\mathrm{RootOf}\left(\_Z^4b-4bc\,\_Z^3+6b\,c^2\_Z^2-4b\,c^3\_Z+a\,d^4+b\,c^4\right)-c}{\mathrm{RootOf}\left(\_Z^4b-4bc\,\_Z^3+6b\,c^2\_Z^2-4b\,c^3\_Z+a\,d^4+b\,c^4\right)}\right)\ln(dx+c)+\mathrm{dilog}\left(\frac{-dx+\mathrm{RootOf}\left(\_Z^4b-4bc\,\_Z^3+6b\,c^2\_\right.}{\mathrm{RootOf}\left(\_Z^4b-4bc\,\_Z^3+6b\,c^2\_Z\right.}\right.\right.}{4b\left(\mathrm{RootOf}\left(\_Z^4b-4bc\,\_Z^3+6b\,c^2\_Z^2-4b\,c^3\_Z+a\,d^4+b\,c^4\right)^2-2\,\mathrm{RootOf}\left(\_Z^4b-4bc\,\_Z^3+6b\,c^2\_Z^2-4\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*ln(d*x+c)/(b*x^4+a),x)
[Out] 1/4*d^2/b*sum(1/(_R1^2-2*_R1*c+c^2)*(ln((-d*x+_R1-c)/_R1)*ln(d*x+c)+dilog((
-d*x+_R1-c)/_R1)),_R1=RootOf(_Z^4*b-4*_Z^3*b*c+6*_Z^2*b*c^2-4*_Z*b*c^3+a*d^
4+b*c^4))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x \log(dx + c)}{bx^4 + a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*log(d*x+c)/(b*x^4+a),x, algorithm="maxima")
[Out] integrate(x*log(d*x + c)/(b*x^4 + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x\,\ln(c + d\,x)}{b\,x^4 + a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*log(c + d*x))/(a + b*x^4),x)
[Out] int((x*log(c + d*x))/(a + b*x^4), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*ln(d*x+c)/(b*x**4+a),x)
[Out] Timed out
```

3.298 $\int \frac{\log(c+dx)}{x^3\left(a+bx^4\right)}\,dx$

Optimal. Leaf size=537

$$-\frac{\sqrt{b}\,\text{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt{-\sqrt{-a}}\,d}\right)}{4(-a)^{3/2}}-\frac{\sqrt{b}\,\text{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c+\sqrt{-\sqrt{-a}}\,d}\right)}{4(-a)^{3/2}}+\frac{\sqrt{b}\,\text{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt[4]{-a}\,d}\right)}{4(-a)^{3/2}}+\frac{\sqrt{b}\,\text{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c+\sqrt[4]{-a}\,d}\right)}{4(-a)^{3/2}}-\frac{\sqrt{b}\log(c+dx)\log}{4(-a)}$$

```
[Out] -1/2*d/a/c/x-1/2*d^2*ln(x)/a/c^2+1/2*d^2*ln(d*x+c)/a/c^2-1/2*ln(d*x+c)/a/x^
2+1/4*ln(d*((-a)^(1/4)-b^(1/4)*x)/(b^(1/4)*c+(-a)^(1/4)*d))*ln(d*x+c)*b^(1/
2)/(-a)^(3/2)+1/4*ln(-d*((-a)^(1/4)+b^(1/4)*x)/(b^(1/4)*c-(-a)^(1/4)*d))*ln
(d*x+c)*b^(1/2)/(-a)^(3/2)-1/4*ln(d*x+c)*ln(-d*(b^(1/4)*x+(-(-a)^(1/2))^(1/
2))/(b^(1/4)*c-d*(-(-a)^(1/2))^(1/2)))*b^(1/2)/(-a)^(3/2)-1/4*ln(d*x+c)*ln(
d*(-b^(1/4)*x+(-(-a)^(1/2))^(1/2))/(b^(1/4)*c+d*(-(-a)^(1/2))^(1/2)))*b^(1/
2)/(-a)^(3/2)+1/4*polylog(2,b^(1/4)*(d*x+c)/(b^(1/4)*c-(-a)^(1/4)*d))*b^(1/
2)/(-a)^(3/2)+1/4*polylog(2,b^(1/4)*(d*x+c)/(b^(1/4)*c+(-a)^(1/4)*d))*b^(1/
2)/(-a)^(3/2)-1/4*polylog(2,b^(1/4)*(d*x+c)/(b^(1/4)*c-d*(-(-a)^(1/2))^(1/2
)))*b^(1/2)/(-a)^(3/2)-1/4*polylog(2,b^(1/4)*(d*x+c)/(b^(1/4)*c+d*(-(-a)^(1
/2))^(1/2)))*b^(1/2)/(-a)^(3/2)
```

Rubi [A] time = 0.65, antiderivative size = 537, normalized size of antiderivative = 1.00, number of steps used = 23, number of rules used = 10, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.526, Rules used = {275, 325, 205, 2416, 2395, 44, 260, 2394, 2393, 2391}

$$-\frac{\sqrt{b}\,\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt{-\sqrt{-a}}\,d}\right)}{4(-a)^{3/2}}-\frac{\sqrt{b}\,\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt{-\sqrt{-a}}\,d+\sqrt[4]{b}c}\right)}{4(-a)^{3/2}}+\frac{\sqrt{b}\,\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt[4]{-a}\,d}\right)}{4(-a)^{3/2}}+\frac{\sqrt{b}\,\text{PolyLog}\left(2,\right.}{4(-a)^{3/}}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c + d*x]/(x^3*(a + b*x^4)),x]
```

```
[Out] -d/(2*a*c*x) - (d^2*Log[x])/(2*a*c^2) + (d^2*Log[c + d*x])/(2*a*c^2) - Log[
c + d*x]/(2*a*x^2) - (Sqrt[b]*Log[(d*(Sqrt[-Sqrt[-a]] - b^(1/4)*x))/(b^(1/4
)*c + Sqrt[-Sqrt[-a]]*d)]*Log[c + d*x])/(4*(-a)^(3/2)) + (Sqrt[b]*Log[(d*((
-a)^(1/4) - b^(1/4)*x))/(b^(1/4)*c + (-a)^(1/4)*d)]*Log[c + d*x])/(4*(-a)^(
3/2)) - (Sqrt[b]*Log[-((d*(Sqrt[-Sqrt[-a]] + b^(1/4)*x))/(b^(1/4)*c - Sqrt[
-Sqrt[-a]]*d))]*Log[c + d*x])/(4*(-a)^(3/2)) + (Sqrt[b]*Log[-((d*((-a)^(1/4
) + b^(1/4)*x))/(b^(1/4)*c - (-a)^(1/4)*d))]*Log[c + d*x])/(4*(-a)^(3/2)) -
 (Sqrt[b]*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d)])/
(4*(-a)^(3/2)) - (Sqrt[b]*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + Sqrt[
-Sqrt[-a]]*d)])/(4*(-a)^(3/2)) + (Sqrt[b]*PolyLog[2, (b^(1/4)*(c + d*x))/(b
^(1/4)*c - (-a)^(1/4)*d)])/(4*(-a)^(3/2)) + (Sqrt[b]*PolyLog[2, (b^(1/4)*(c
 + d*x))/(b^(1/4)*c + (-a)^(1/4)*d)])/(4*(-a)^(3/2))
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 275

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k = GCD[m
+ 1, n]}, Dist[1/k, Subst[Int[x^((m + 1)/k - 1)*(a + b*x^(n/k))^p, x], x, x
^k], x] /; k != 1] /; FreeQ[{a, b, p}, x] && IGtQ[n, 0] && IntegerQ[m]
```

Rule 325

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[((c*
x)^(m + 1)*(a + b*x^n)^(p + 1))/(a*c*(m + 1)), x] - Dist[(b*(m + n*(p + 1)
+ 1))/(a*c^n*(m + 1)), Int[(c*x)^(m + n)*(a + b*x^n)^p, x], x] /; FreeQ[{a,
 b, c, p}, x] && IGtQ[n, 0] && LtQ[m, -1] && IntBinomialQ[a, b, c, n, m, p,
 x]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{\log(c+dx)}{x^3\left(a+bx^4\right)}\,dx = \int \left(\frac{\log(c+dx)}{ax^3} - \frac{bx\log(c+dx)}{a\left(a+bx^4\right)}\right)dx$$

$$= \frac{\int \frac{\log(c+dx)}{x^3}\,dx}{a} - \frac{b\int \frac{x\log(c+dx)}{a+bx^4}\,dx}{a}$$

$$= -\frac{\log(c+dx)}{2ax^2} - \frac{b\int \left(-\frac{\sqrt{b}\,x\log(c+dx)}{2\sqrt{-a}\left(\sqrt{-a}\,\sqrt{b}-bx^2\right)} - \frac{\sqrt{b}\,x\log(c+dx)}{2\sqrt{-a}\left(\sqrt{-a}\,\sqrt{b}+bx^2\right)}\right)dx}{a} + \frac{d\int \frac{1}{x^2(c+dx)}\,dx}{2a}$$

$$= -\frac{\log(c+dx)}{2ax^2} - \frac{b^{3/2}\int \frac{x\log(c+dx)}{\sqrt{-a}\,\sqrt{b}-bx^2}\,dx}{2(-a)^{3/2}} - \frac{b^{3/2}\int \frac{x\log(c+dx)}{\sqrt{-a}\,\sqrt{b}+bx^2}\,dx}{2(-a)^{3/2}} + \frac{d\int \left(\frac{1}{cx^2} - \frac{d}{c^2x} + \frac{d^2}{c^2(c+dx)}\right)dx}{2a}$$

$$= -\frac{d}{2acx} - \frac{d^2\log(x)}{2ac^2} + \frac{d^2\log(c+dx)}{2ac^2} - \frac{\log(c+dx)}{2ax^2} - \frac{b^{3/2}\int \left(-\frac{\log(c+dx)}{2b^{3/4}\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)} + \frac{\log(c}{2b^{3/4}\left(\sqrt{-}\right.}\right.}{2(-a)^{3/2}}$$

$$= -\frac{d}{2acx} - \frac{d^2\log(x)}{2ac^2} + \frac{d^2\log(c+dx)}{2ac^2} - \frac{\log(c+dx)}{2ax^2} + \frac{b^{3/4}\int \frac{\log(c+dx)}{\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x}\,dx}{4(-a)^{3/2}} - \frac{b^{3/4}\int \frac{\log(c+d}{\sqrt[4]{-a}-\sqrt[4]{}}}{4(-a)^{3/2}}$$

$$= -\frac{d}{2acx} - \frac{d^2\log(x)}{2ac^2} + \frac{d^2\log(c+dx)}{2ac^2} - \frac{\log(c+dx)}{2ax^2} - \frac{\sqrt{b}\,\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt{-\sqrt{-a}}\,d}\right)\log(c+dx)}{4(-a)^{3/2}}$$

$$= -\frac{d}{2acx} - \frac{d^2\log(x)}{2ac^2} + \frac{d^2\log(c+dx)}{2ac^2} - \frac{\log(c+dx)}{2ax^2} - \frac{\sqrt{b}\,\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt{-\sqrt{-a}}\,d}\right)\log(c+dx)}{4(-a)^{3/2}}$$

$$= -\frac{d}{2acx} - \frac{d^2\log(x)}{2ac^2} + \frac{d^2\log(c+dx)}{2ac^2} - \frac{\log(c+dx)}{2ax^2} - \frac{\sqrt{b}\,\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt{-\sqrt{-a}}\,d}\right)\log(c+dx)}{4(-a)^{3/2}}$$

Mathematica [C] time = 0.22, size = 506, normalized size = 0.94

$$\frac{\sqrt{b}\,\text{Li}_2\left(\frac{\sqrt[4]{b}\,(c+dx)}{\sqrt[4]{b}\,c-\sqrt[4]{-a}\,d}\right)}{4(-a)^{3/2}} - \frac{\sqrt{b}\,\text{Li}_2\left(\frac{\sqrt[4]{b}\,(c+dx)}{\sqrt[4]{b}\,c-i\sqrt[4]{-a}\,d}\right)}{4(-a)^{3/2}} - \frac{\sqrt{b}\,\text{Li}_2\left(\frac{\sqrt[4]{b}\,(c+dx)}{\sqrt[4]{b}\,c+i\sqrt[4]{-a}\,d}\right)}{4(-a)^{3/2}} + \frac{\sqrt{b}\,\text{Li}_2\left(\frac{\sqrt[4]{b}\,(c+dx)}{\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)}{4(-a)^{3/2}} - \frac{\sqrt{b}\,\log(c+dx)\log\left(\frac{d\left(-\sqrt[4]{b}\right.}{\sqrt[4]{b}\,c}\right.}{4(-a)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c + d*x]/(x^3*(a + b*x^4)),x]
```

```
[Out] -1/2*Log[c + d*x]/(a*x^2) - (Sqrt[b]*Log[(d*(I*(-a)^(1/4) - b^(1/4)*x))/(b^
(1/4)*c + I*(-a)^(1/4)*d)]*Log[c + d*x])/(4*(-a)^(3/2)) + (Sqrt[b]*Log[(d*(
(-a)^(1/4) - b^(1/4)*x))/(b^(1/4)*c + (-a)^(1/4)*d)]*Log[c + d*x])/(4*(-a)^
(3/2)) - (Sqrt[b]*Log[-((d*(I*(-a)^(1/4) + b^(1/4)*x))/(b^(1/4)*c - I*(-a)^
(1/4)*d))]*Log[c + d*x])/(4*(-a)^(3/2)) + (Sqrt[b]*Log[-((d*((-a)^(1/4) + b
^(1/4)*x))/(b^(1/4)*c - (-a)^(1/4)*d))]*Log[c + d*x])/(4*(-a)^(3/2)) - (d*(
1/(c*x) + (d*Log[x])/c^2 - (d*Log[c + d*x])/c^2))/(2*a) + (Sqrt[b]*PolyLog[
2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - (-a)^(1/4)*d)])/(4*(-a)^(3/2)) - (Sqrt[
b]*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - I*(-a)^(1/4)*d)])/(4*(-a)^(3
/2)) - (Sqrt[b]*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + I*(-a)^(1/4)*d)
```

```
])/(4*(-a)^(3/2)) + (Sqrt[b]*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + (-
a)^(1/4)*d)])/(4*(-a)^(3/2))
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\log(dx+c)}{bx^7+ax^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x^3/(b*x^4+a),x, algorithm="fricas")
```

```
[Out] integral(log(d*x + c)/(b*x^7 + a*x^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log(dx+c)}{(bx^4+a)x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x^3/(b*x^4+a),x, algorithm="giac")
```

```
[Out] integrate(log(d*x + c)/((b*x^4 + a)*x^3), x)
```

maple [C] time = 0.29, size = 161, normalized size = 0.30

$$-\frac{d^2\left(\ln\left(\frac{-dx+\text{RootOf}\left(\_Z^4b-4bc\_Z^3+6bc^2\_Z^2-4bc^3\_Z+ad^4+bc^4\right)-c}{\text{RootOf}\left(\_Z^4b-4bc\_Z^3+6bc^2\_Z^2-4bc^3\_Z+ad^4+bc^4\right)}\right)\ln(dx+c)+\text{dilog}\left(\frac{-dx+\text{RootOf}\left(\_Z^4b-4bc\_Z^3+6bc\right.}{\text{RootOf}\left(\_Z^4b-4bc\_Z^3+6bc^2\right.}\right.}{4a\left(\text{RootOf}\left(\_Z^4b-4bc\_Z^3+6bc^2\_Z^2-4bc^3\_Z+ad^4+bc^4\right)^2-2\,\text{RootOf}\left(\_Z^4b-4bc\_Z^3+6bc^2\_Z^2-\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(d*x+c)/x^3/(b*x^4+a),x)
```

```
[Out] -1/2/a/c^2*d^2*ln(d*x)-1/2/a/c*d/x+1/2/a/c^2*d^2*ln(d*x+c)-1/2/a/x^2*ln(d*x
+c)-1/4*d^2*sum(1/(_R1^2-2*_R1*c+c^2)*(ln((-d*x+_R1-c)/_R1)*ln(d*x+c)+dilog
((-d*x+_R1-c)/_R1)),_R1=RootOf(_Z^4*b-4*_Z^3*b*c+6*_Z^2*b*c^2-4*_Z*b*c^3+a*
d^4+b*c^4))/a
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log(dx+c)}{(bx^4+a)x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x^3/(b*x^4+a),x, algorithm="maxima")
```

```
[Out] integrate(log(d*x + c)/((b*x^4 + a)*x^3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln(c+d\,x)}{x^3\,\left(b\,x^4+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(c + d*x)/(x^3*(a + b*x^4)),x)
```

```
[Out] int(log(c + d*x)/(x^3*(a + b*x^4)), x)
```

<u>**sympy**</u> **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(d*x+c)/x**3/(b*x**4+a),x)
```

```
[Out] Timed out
```

3.299 $\int \frac{x^4 \log(c+dx)}{a+bx^4} dx$

Optimal. Leaf size=521

$$-\frac{\sqrt{-\sqrt{-a}}\,\text{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt{-\sqrt{-a}}\,d}\right)}{4b^{5/4}}+\frac{\sqrt{-\sqrt{-a}}\,\text{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c+\sqrt{-\sqrt{-a}}\,d}\right)}{4b^{5/4}}-\frac{\sqrt[4]{-a}\,\text{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt[4]{-a}\,d}\right)}{4b^{5/4}}+\frac{\sqrt[4]{-a}\,\text{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c+\sqrt[4]{-a}\,d}\right)}{4b^{5/4}}+\cdots$$

```
[Out] -x/b+(d*x+c)*ln(d*x+c)/b/d+1/4*(-a)^(1/4)*ln(d*((-a)^(1/4)-b^(1/4)*x)/(b^(1
/4)*c+(-a)^(1/4)*d))*ln(d*x+c)/b^(5/4)-1/4*(-a)^(1/4)*ln(-d*((-a)^(1/4)+b^(
1/4)*x)/(b^(1/4)*c-(-a)^(1/4)*d))*ln(d*x+c)/b^(5/4)-1/4*(-a)^(1/4)*polylog(
2,b^(1/4)*(d*x+c)/(b^(1/4)*c-(-a)^(1/4)*d))/b^(5/4)+1/4*(-a)^(1/4)*polylog(
2,b^(1/4)*(d*x+c)/(b^(1/4)*c+(-a)^(1/4)*d))/b^(5/4)-1/4*ln(d*x+c)*ln(-d*(b^
(1/4)*x+(-(-a)^(1/2))^(1/2))/(b^(1/4)*c-d*(-(-a)^(1/2))^(1/2)))*(-(-a)^(1/2
))^(1/2)/b^(5/4)+1/4*ln(d*x+c)*ln(d*(-b^(1/4)*x+(-(-a)^(1/2))^(1/2))/(b^(1/
4)*c+d*(-(-a)^(1/2))^(1/2)))*(-(-a)^(1/2))^(1/2)/b^(5/4)-1/4*polylog(2,b^(1
/4)*(d*x+c)/(b^(1/4)*c-d*(-(-a)^(1/2))^(1/2)))*(-(-a)^(1/2))^(1/2)/b^(5/4)+
1/4*polylog(2,b^(1/4)*(d*x+c)/(b^(1/4)*c+d*(-(-a)^(1/2))^(1/2)))*(-(-a)^(1/
2))^(1/2)/b^(5/4)
```

Rubi [A] time = 0.76, antiderivative size = 521, normalized size of antiderivative = 1.00, number of steps used = 22, number of rules used = 14, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.737, Rules used = {321, 211, 1165, 628, 1162, 617, 204, 2416, 2389, 2295, 2409, 2394, 2393, 2391}

$$-\frac{\sqrt{-\sqrt{-a}}\,\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt{-\sqrt{-a}}\,d}\right)}{4b^{5/4}}+\frac{\sqrt{-\sqrt{-a}}\,\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt{-\sqrt{-a}}\,d+\sqrt[4]{b}c}\right)}{4b^{5/4}}-\frac{\sqrt[4]{-a}\,\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt[4]{-a}\,d}\right)}{4b^{5/4}}+\cdots$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*Log[c + d*x])/(a + b*x^4),x]
```

```
[Out] -(x/b) + ((c + d*x)*Log[c + d*x])/(b*d) + (Sqrt[-Sqrt[-a]]*Log[(d*(Sqrt[-Sq
rt[-a]] - b^(1/4)*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]*d)]*Log[c + d*x])/(4*b^(
5/4)) + ((-a)^(1/4)*Log[(d*((-a)^(1/4) - b^(1/4)*x))/(b^(1/4)*c + (-a)^(1/4
)*d)]*Log[c + d*x])/(4*b^(5/4)) - (Sqrt[-Sqrt[-a]]*Log[-((d*(Sqrt[-Sqrt[-a]
] + b^(1/4)*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d))]*Log[c + d*x])/(4*b^(5/4))
 - ((-a)^(1/4)*Log[-((d*((-a)^(1/4) + b^(1/4)*x))/(b^(1/4)*c - (-a)^(1/4)*d
))]*Log[c + d*x])/(4*b^(5/4)) - (Sqrt[-Sqrt[-a]]*PolyLog[2, (b^(1/4)*(c + d
*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d)])/(4*b^(5/4)) + (Sqrt[-Sqrt[-a]]*PolyL
og[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]*d)])/(4*b^(5/4)) - (
(-a)^(1/4)*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - (-a)^(1/4)*d)])/(4*b
^(5/4)) + ((-a)^(1/4)*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + (-a)^(1/4
)*d)])/(4*b^(5/4))
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 211

```
Int[((a_) + (b_.)*(x_)^4)^(-1), x_Symbol] :> With[{r = Numerator[Rt[a/b, 2]
], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*r), Int[(r - s*x^2)/(a + b*x^4),
 x], x] + Dist[1/(2*r), Int[(r + s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a, b
}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &&
```

```
AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
```

```
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{x^4 \log(c+dx)}{a+bx^4}\,dx = \int \left(\frac{\log(c+dx)}{b} - \frac{a\log(c+dx)}{b\left(a+bx^4\right)}\right)dx$$

$$= \frac{\int \log(c+dx)\,dx}{b} - \frac{a\int \frac{\log(c+dx)}{a+bx^4}\,dx}{b}$$

$$= -\frac{a\int \left(\frac{\sqrt{-a}\,\log(c+dx)}{2a\left(\sqrt{-a}-\sqrt{b}\,x^2\right)} + \frac{\sqrt{-a}\,\log(c+dx)}{2a\left(\sqrt{-a}+\sqrt{b}\,x^2\right)}\right)dx}{b} + \frac{\text{Subst}(\int \log(x)\,dx, x, c+dx)}{bd}$$

$$= -\frac{x}{b} + \frac{(c+dx)\log(c+dx)}{bd} - \frac{\sqrt{-a}\int \frac{\log(c+dx)}{\sqrt{-a}-\sqrt{b}\,x^2}\,dx}{2b} - \frac{\sqrt{-a}\int \frac{\log(c+dx)}{\sqrt{-a}+\sqrt{b}\,x^2}\,dx}{2b}$$

$$= -\frac{x}{b} + \frac{(c+dx)\log(c+dx)}{bd} - \frac{\sqrt{-a}\int \left(\frac{\sqrt{-\sqrt{-a}}\,\log(c+dx)}{2\sqrt{-a}\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)} + \frac{\sqrt{-\sqrt{-a}}\,\log(c+dx)}{2\sqrt{-a}\left(\sqrt{-\sqrt{-a}}+\sqrt[4]{b}\,x\right)}\right)dx}{2b} - \frac{\sqrt{-a}\cdots}{\cdots}$$

$$= -\frac{x}{b} + \frac{(c+dx)\log(c+dx)}{bd} - \frac{\sqrt{-\sqrt{-a}}\int \frac{\log(c+dx)}{\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x}\,dx}{4b} - \frac{\sqrt{-\sqrt{-a}}\int \frac{\log(c+dx)}{\sqrt{-\sqrt{-a}}+\sqrt[4]{b}\,x}\,dx}{4b} - \cdots$$

$$= -\frac{x}{b} + \frac{(c+dx)\log(c+dx)}{bd} + \frac{\sqrt{-\sqrt{-a}}\,\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt{-\sqrt{-a}}\,d}\right)\log(c+dx)}{4b^{5/4}} + \frac{\sqrt[4]{-a}\,\log\left(\frac{d\left(\sqrt[4]{-}\cdots\right)}{\sqrt[4]{b}\,c\cdots}\right)\cdots}{\cdots}$$

$$= -\frac{x}{b} + \frac{(c+dx)\log(c+dx)}{bd} + \frac{\sqrt{-\sqrt{-a}}\,\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt{-\sqrt{-a}}\,d}\right)\log(c+dx)}{4b^{5/4}} + \frac{\sqrt[4]{-a}\,\log\left(\frac{d\left(\sqrt[4]{-}\cdots\right)}{\sqrt[4]{b}\,c\cdots}\right)\cdots}{\cdots}$$

$$= -\frac{x}{b} + \frac{(c+dx)\log(c+dx)}{bd} + \frac{\sqrt{-\sqrt{-a}}\,\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt{-\sqrt{-a}}\,d}\right)\log(c+dx)}{4b^{5/4}} + \frac{\sqrt[4]{-a}\,\log\left(\frac{d\left(\sqrt[4]{-}\cdots\right)}{\sqrt[4]{b}\,c\cdots}\right)\cdots}{\cdots}$$

Mathematica [C] time = 0.24, size = 458, normalized size = 0.88

$$\frac{-\sqrt[4]{-a}\,d\,\text{Li}_2\left(\frac{\sqrt[4]{b}\,(c+dx)}{\sqrt[4]{b}\,c-\sqrt[4]{-a}\,d}\right) - i\sqrt[4]{-a}\,d\,\text{Li}_2\left(\frac{\sqrt[4]{b}\,(c+dx)}{\sqrt[4]{b}\,c-i\sqrt[4]{-a}\,d}\right) + i\sqrt[4]{-a}\,d\,\text{Li}_2\left(\frac{\sqrt[4]{b}\,(c+dx)}{\sqrt[4]{b}\,c+i\sqrt[4]{-a}\,d}\right) + \sqrt[4]{-a}\,d\,\text{Li}_2\left(\frac{\sqrt[4]{b}\,(c+dx)}{\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right) + \sqrt[4]{-a}\,d\,\log\cdots}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*Log[c + d*x])/(a + b*x^4),x]
```

```
[Out] (-4*b^(1/4)*d*x + 4*b^(1/4)*c*Log[c + d*x] + 4*b^(1/4)*d*x*Log[c + d*x] + (
-a)^(1/4)*d*Log[(d*((-a)^(1/4) - b^(1/4)*x))/(b^(1/4)*c + (-a)^(1/4)*d)]*Lo
g[c + d*x] - I*(-a)^(1/4)*d*Log[(d*((-a)^(1/4) - I*b^(1/4)*x))/(I*b^(1/4)*c
 + (-a)^(1/4)*d)]*Log[c + d*x] + I*(-a)^(1/4)*d*Log[(d*((-a)^(1/4) + I*b^(1
/4)*x))/((-I)*b^(1/4)*c + (-a)^(1/4)*d)]*Log[c + d*x] - (-a)^(1/4)*d*Log[(d
*((-a)^(1/4) + b^(1/4)*x))/(-(b^(1/4)*c) + (-a)^(1/4)*d)]*Log[c + d*x] - (-
a)^(1/4)*d*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - (-a)^(1/4)*d)] - I*(
-a)^(1/4)*d*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - I*(-a)^(1/4)*d)] +
I*(-a)^(1/4)*d*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + I*(-a)^(1/4)*d)]
 + (-a)^(1/4)*d*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + (-a)^(1/4)*d)])
/(4*b^(5/4)*d)
```

fricas [F] time = 0.47, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{x^4 \log\left(dx + c\right)}{bx^4 + a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*log(d*x+c)/(b*x^4+a),x, algorithm="fricas")
[Out] integral(x^4*log(d*x + c)/(b*x^4 + a), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^4 \log\left(dx + c\right)}{bx^4 + a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*log(d*x+c)/(b*x^4+a),x, algorithm="giac")
[Out] integrate(x^4*log(d*x + c)/(b*x^4 + a), x)
```

maple [C] time = 0.26, size = 154, normalized size = 0.30

$$-\frac{a\,d^3\left(\ln\left(\frac{-dx+\mathrm{RootOf}\left(\_Z^4b-4bc\,\_Z^3+6b\,c^2\_Z^2-4b\,c^3\_Z+a\,d^4+b\,c^4\right)-c}{\mathrm{RootOf}\left(\_Z^4b-4bc\,\_Z^3+6b\,c^2\_Z^2-4b\,c^3\_Z+a\,d^4+b\,c^4\right)}\right)\ln\left(dx+c\right)\right.}{4b^2\left(\mathrm{RootOf}\left(\_Z^4b-4bc\,\_Z^3+6b\,c^2\_Z^2-4b\,c^3\_Z+a\,d^4+b\,c^4\right)^3-3\,\mathrm{RootOf}\left(\_Z^4b-4bc\,\_Z^3+6b\,c^2\_Z^2\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*ln(d*x+c)/(b*x^4+a),x)
[Out] 1/b*x*ln(d*x+c)+1/b*c/d*ln(d*x+c)-1/b*x-1/b*c/d-1/4*d^3/b^2*sum(1/(_R1^3-3*
_R1^2*c+3*_R1*c^2-c^3)*(ln((-d*x+_R1-c)/_R1)*ln(d*x+c)+dilog((-d*x+_R1-c)/_
R1)),_R1=RootOf(_Z^4*b-4*_Z^3*b*c+6*_Z^2*b*c^2-4*_Z*b*c^3+a*d^4+b*c^4))*a
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^4 \log\left(dx + c\right)}{bx^4 + a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*log(d*x+c)/(b*x^4+a),x, algorithm="maxima")
[Out] integrate(x^4*log(d*x + c)/(b*x^4 + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^4\,\ln\left(c+d\,x\right)}{b\,x^4+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*log(c + d*x))/(a + b*x^4),x)
[Out] int((x^4*log(c + d*x))/(a + b*x^4), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*ln(d*x+c)/(b*x**4+a),x)
[Out] Timed out
```

3.300 $\int \frac{x^2\log(c+dx)}{a+bx^4}\,dx$

Optimal. Leaf size=497

$$-\frac{\text{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt{-\sqrt{-a}}\,d}\right)}{4\sqrt{-\sqrt{-a}}\,b^{3/4}}+\frac{\text{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c+\sqrt{-\sqrt{-a}}\,d}\right)}{4\sqrt{-\sqrt{-a}}\,b^{3/4}}-\frac{\text{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt[4]{-a}\,d}\right)}{4\sqrt[4]{-a}\,b^{3/4}}+\frac{\text{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c+\sqrt[4]{-a}\,d}\right)}{4\sqrt[4]{-a}\,b^{3/4}}+\frac{\log(c+dx)\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)}{\sqrt{-\sqrt{-a}}\,d+\sqrt[4]{b}c}\right)}{4\sqrt{-\sqrt{-a}}\,b^{3/4}}-$$

```
[Out] 1/4*ln(d*((-a)^(1/4)-b^(1/4)*x)/(b^(1/4)*c+(-a)^(1/4)*d))*ln(d*x+c)/(-a)^(1
/4)/b^(3/4)-1/4*ln(-d*((-a)^(1/4)+b^(1/4)*x)/(b^(1/4)*c-(-a)^(1/4)*d))*ln(d
*x+c)/(-a)^(1/4)/b^(3/4)-1/4*polylog(2,b^(1/4)*(d*x+c)/(b^(1/4)*c-(-a)^(1/4
)*d))/(-a)^(1/4)/b^(3/4)+1/4*polylog(2,b^(1/4)*(d*x+c)/(b^(1/4)*c+(-a)^(1/4
)*d))/(-a)^(1/4)/b^(3/4)-1/4*ln(d*x+c)*ln(-d*(b^(1/4)*x+(-(-a)^(1/2))^(1/2)
)/(b^(1/4)*c-d*(-(-a)^(1/2))^(1/2)))/b^(3/4)/(-(-a)^(1/2))^(1/2)+1/4*ln(d*x
+c)*ln(d*(-b^(1/4)*x+(-(-a)^(1/2))^(1/2))/(b^(1/4)*c+d*(-(-a)^(1/2))^(1/2))
)/b^(3/4)/(-(-a)^(1/2))^(1/2)-1/4*polylog(2,b^(1/4)*(d*x+c)/(b^(1/4)*c-d*(-
(-a)^(1/2))^(1/2)))/b^(3/4)/(-(-a)^(1/2))^(1/2)+1/4*polylog(2,b^(1/4)*(d*x+
c)/(b^(1/4)*c+d*(-(-a)^(1/2))^(1/2)))/b^(3/4)/(-(-a)^(1/2))^(1/2)
```

Rubi [A] time = 0.54, antiderivative size = 497, normalized size of antiderivative = 1.00, number of steps used = 18, number of rules used = 11, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.579, Rules used = {297, 1162, 617, 204, 1165, 628, 2416, 2409, 2394, 2393, 2391}

$$-\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt{-\sqrt{-a}}\,d}\right)}{4\sqrt{-\sqrt{-a}}\,b^{3/4}}+\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt{-\sqrt{-a}}\,d+\sqrt[4]{b}c}\right)}{4\sqrt{-\sqrt{-a}}\,b^{3/4}}-\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt[4]{-a}\,d}\right)}{4\sqrt[4]{-a}\,b^{3/4}}+\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{-a}\,d+\sqrt[4]{b}c}\right)}{4\sqrt[4]{-a}\,b^{3/4}}+-$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*Log[c + d*x])/(a + b*x^4),x]
```

```
[Out] (Log[(d*(Sqrt[-Sqrt[-a]] - b^(1/4)*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]*d)]*Log
[c + d*x])/(4*Sqrt[-Sqrt[-a]]*b^(3/4)) + (Log[(d*((-a)^(1/4) - b^(1/4)*x))/
(b^(1/4)*c + (-a)^(1/4)*d)]*Log[c + d*x])/(4*(-a)^(1/4)*b^(3/4)) - (Log[-((
d*(Sqrt[-Sqrt[-a]] + b^(1/4)*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d))]*Log[c +
d*x])/(4*Sqrt[-Sqrt[-a]]*b^(3/4)) - (Log[-((d*((-a)^(1/4) + b^(1/4)*x))/(b^
(1/4)*c - (-a)^(1/4)*d))]*Log[c + d*x])/(4*(-a)^(1/4)*b^(3/4)) - PolyLog[2,
 (b^(1/4)*(c + d*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d)]/(4*Sqrt[-Sqrt[-a]]*b^
(3/4)) + PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]*d)]/(4
*Sqrt[-Sqrt[-a]]*b^(3/4)) - PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - (-a
)^(1/4)*d)]/(4*(-a)^(1/4)*b^(3/4)) + PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4
)*c + (-a)^(1/4)*d)]/(4*(-a)^(1/4)*b^(3/4))
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 297

```
Int[(x_)^2/((a_) + (b_.)*(x_)^4), x_Symbol] :> With[{r = Numerator[Rt[a/b,
2]], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*s), Int[(r + s*x^2)/(a + b*x^4
), x], x] - Dist[1/(2*s), Int[(r - s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a,
 b}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &
```

```
& AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
```

```
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{x^2\log(c+dx)}{a+bx^4}\,dx = \int\left(-\frac{\log(c+dx)}{2\sqrt{b}\left(\sqrt{-a}-\sqrt{b}\,x^2\right)}+\frac{\log(c+dx)}{2\sqrt{b}\left(\sqrt{-a}+\sqrt{b}\,x^2\right)}\right)dx$$

$$= -\frac{\int \frac{\log(c+dx)}{\sqrt{-a}-\sqrt{b}\,x^2}\,dx}{2\sqrt{b}}+\frac{\int \frac{\log(c+dx)}{\sqrt{-a}+\sqrt{b}\,x^2}\,dx}{2\sqrt{b}}$$

$$= \frac{\int\left(\frac{\sqrt{-\sqrt{-a}}\,\log(c+dx)}{2\sqrt{-a}\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}+\frac{\sqrt{-\sqrt{-a}}\,\log(c+dx)}{2\sqrt{-a}\left(\sqrt{-\sqrt{-a}}+\sqrt[4]{b}\,x\right)}\right)dx}{2\sqrt{b}} - \frac{\int\left(\frac{\log(c+dx)}{2\sqrt[4]{-a}\left(\sqrt[4]{-a}-\sqrt[4]{b}\,x\right)}+\frac{\log(c+dx)}{2\sqrt[4]{-a}\left(\sqrt[4]{-a}+\sqrt[4]{b}\,x\right)}\right)}{2\sqrt{b}}$$

$$= -\frac{\int \frac{\log(c+dx)}{\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x}\,dx}{4\sqrt{-\sqrt{-a}}\,\sqrt{b}}-\frac{\int \frac{\log(c+dx)}{\sqrt{-\sqrt{-a}}+\sqrt[4]{b}\,x}\,dx}{4\sqrt{-\sqrt{-a}}\,\sqrt{b}}-\frac{\int \frac{\log(c+dx)}{\sqrt[4]{-a}-\sqrt[4]{b}\,x}\,dx}{4\sqrt[4]{-a}\,\sqrt{b}}-\frac{\int \frac{\log(c+dx)}{\sqrt[4]{-a}+\sqrt[4]{b}\,x}\,dx}{4\sqrt[4]{-a}\,\sqrt{b}}$$

$$= \frac{\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt{-\sqrt{-a}}\,d}\right)\log(c+dx)}{4\sqrt{-\sqrt{-a}}\,b^{3/4}}+\frac{\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)\log(c+dx)}{4\sqrt[4]{-a}\,b^{3/4}}-\frac{\log\left(-\frac{d\left(\sqrt{-\sqrt{-a}}+\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c-\sqrt{-\sqrt{-a}}\,d}\right)}{4\sqrt{-\sqrt{-a}}}$$

$$= \frac{\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt{-\sqrt{-a}}\,d}\right)\log(c+dx)}{4\sqrt{-\sqrt{-a}}\,b^{3/4}}+\frac{\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)\log(c+dx)}{4\sqrt[4]{-a}\,b^{3/4}}-\frac{\log\left(-\frac{d\left(\sqrt{-\sqrt{-a}}+\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c-\sqrt{-\sqrt{-a}}\,d}\right)}{4\sqrt{-\sqrt{-a}}}$$

$$= \frac{\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt{-\sqrt{-a}}\,d}\right)\log(c+dx)}{4\sqrt{-\sqrt{-a}}\,b^{3/4}}+\frac{\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)\log(c+dx)}{4\sqrt[4]{-a}\,b^{3/4}}-\frac{\log\left(-\frac{d\left(\sqrt{-\sqrt{-a}}+\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c-\sqrt{-\sqrt{-a}}\,d}\right)}{4\sqrt{-\sqrt{-a}}}$$

Mathematica [A] time = 0.29, size = 464, normalized size = 0.93

$$-\sqrt[4]{-a}\,\mathrm{Li}_2\left(\frac{\sqrt[4]{b}\,(c+dx)}{\sqrt[4]{b}\,c-\sqrt{-\sqrt{-a}}\,d}\right)+\sqrt[4]{-a}\,\mathrm{Li}_2\left(\frac{\sqrt[4]{b}\,(c+dx)}{\sqrt[4]{b}\,c+\sqrt{-\sqrt{-a}}\,d}\right)-\sqrt{-\sqrt{-a}}\,\mathrm{Li}_2\left(\frac{\sqrt[4]{b}\,(c+dx)}{\sqrt[4]{b}\,c-\sqrt[4]{-a}\,d}\right)+\sqrt{-\sqrt{-a}}\,\mathrm{Li}_2\left(\frac{\sqrt[4]{b}\,(c+dx)}{\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)+\sqrt[4]{-}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*Log[c + d*x])/(a + b*x^4),x]
```

```
[Out] ((-a)^(1/4)*Log[(d*(Sqrt[-Sqrt[-a]] - b^(1/4)*x))/(b^(1/4)*c + Sqrt[-Sqrt[-
a]]*d)]*Log[c + d*x] + Sqrt[-Sqrt[-a]]*Log[(d*((-a)^(1/4) - b^(1/4)*x))/(b^
(1/4)*c + (-a)^(1/4)*d)]*Log[c + d*x] - (-a)^(1/4)*Log[(d*(Sqrt[-Sqrt[-a]]
+ b^(1/4)*x))/(-(b^(1/4)*c) + Sqrt[-Sqrt[-a]]*d)]*Log[c + d*x] - Sqrt[-Sqrt
[-a]]*Log[(d*((-a)^(1/4) + b^(1/4)*x))/(-(b^(1/4)*c) + (-a)^(1/4)*d)]*Log[c
 + d*x] - (-a)^(1/4)*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - Sqrt[-Sqrt
[-a]]*d)] + (-a)^(1/4)*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + Sqrt[-Sq
```

```
rt[-a]]*d)] - Sqrt[-Sqrt[-a]]*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - (
-a)^(1/4)*d)] + Sqrt[-Sqrt[-a]]*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c +
 (-a)^(1/4)*d)])/(4*Sqrt[-Sqrt[-a]]*(-a)^(1/4)*b^(3/4))
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{x^2\log(dx+c)}{bx^4+a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(d*x+c)/(b*x^4+a),x, algorithm="fricas")
[Out] integral(x^2*log(d*x + c)/(b*x^4 + a), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2\log(dx+c)}{bx^4+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(d*x+c)/(b*x^4+a),x, algorithm="giac")
[Out] integrate(x^2*log(d*x + c)/(b*x^4 + a), x)
```

maple [C] time = 0.26, size = 94, normalized size = 0.19

$$\frac{d\left(\ln\left(\frac{-dx+\mathrm{RootOf}\left(\_Z^4b-4bc\_Z^3+6bc^2\_Z^2-4bc^3\_Z+ad^4+bc^4\right)-c}{\mathrm{RootOf}\left(\_Z^4b-4bc\_Z^3+6bc^2\_Z^2-4bc^3\_Z+ad^4+bc^4\right)}\right)\ln(dx+c)+\mathrm{dilog}\left(\frac{-dx+\mathrm{RootOf}\left(\_Z^4b-4bc\_Z^3+6bc^2\_Z^2-4bc^3\right.}{\mathrm{RootOf}\left(\_Z^4b-4bc\_Z^3+6bc^2\_Z^2-4bc^3\_\right.}\right.\right.}{4b\left(\mathrm{RootOf}\left(\_Z^4b-4bc\_Z^3+6bc^2\_Z^2-4bc^3\_Z+ad^4+bc^4\right)-c\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*ln(d*x+c)/(b*x^4+a),x)
[Out] 1/4*d/b*sum(1/(_R1-c)*(ln((-d*x+_R1-c)/_R1)*ln(d*x+c)+dilog((-d*x+_R1-c)/_R
1)),_R1=RootOf(_Z^4*b-4*_Z^3*b*c+6*_Z^2*b*c^2-4*_Z*b*c^3+a*d^4+b*c^4))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2\log(dx+c)}{bx^4+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(d*x+c)/(b*x^4+a),x, algorithm="maxima")
[Out] integrate(x^2*log(d*x + c)/(b*x^4 + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^2\,\ln(c+d\,x)}{b\,x^4+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*log(c + d*x))/(a + b*x^4),x)
[Out] int((x^2*log(c + d*x))/(a + b*x^4), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*ln(d*x+c)/(b*x**4+a),x)
```

```
[Out] Timed out
```

3.301 $\int \frac{\log(c+dx)}{a+bx^4}\,dx$

Optimal. Leaf size=497

$$-\frac{\text{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt{-\sqrt{-a}}\,d}\right)}{4\left(-\sqrt{-a}\right)^{3/2}\sqrt[4]{b}}+\frac{\text{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c+\sqrt{-\sqrt{-a}}\,d}\right)}{4\left(-\sqrt{-a}\right)^{3/2}\sqrt[4]{b}}-\frac{\text{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt[4]{-a}\,d}\right)}{4(-a)^{3/4}\sqrt[4]{b}}+\frac{\text{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c+\sqrt[4]{-a}\,d}\right)}{4(-a)^{3/4}\sqrt[4]{b}}+\frac{\log(c+dx)\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)}{\sqrt{-\sqrt{-a}}\,d+\sqrt[4]{b}c}\right)}{4\left(-\sqrt{-a}\right)^{3/2}\sqrt[4]{b}}$$

```
[Out] 1/4*ln(d*((-a)^(1/4)-b^(1/4)*x)/(b^(1/4)*c+(-a)^(1/4)*d))*ln(d*x+c)/(-a)^(3
/4)/b^(1/4)-1/4*ln(-d*((-a)^(1/4)+b^(1/4)*x)/(b^(1/4)*c-(-a)^(1/4)*d))*ln(d
*x+c)/(-a)^(3/4)/b^(1/4)-1/4*polylog(2,b^(1/4)*(d*x+c)/(b^(1/4)*c-(-a)^(1/4
)*d))/(-a)^(3/4)/b^(1/4)+1/4*polylog(2,b^(1/4)*(d*x+c)/(b^(1/4)*c+(-a)^(1/4
)*d))/(-a)^(3/4)/b^(1/4)-1/4*ln(d*x+c)*ln(-d*(b^(1/4)*x+(-(-a)^(1/2))^(1/2)
)/(b^(1/4)*c-d*(-(-a)^(1/2))^(1/2)))/b^(1/4)/(-(-a)^(1/2))^(3/2)+1/4*ln(d*x
+c)*ln(d*(-b^(1/4)*x+(-(-a)^(1/2))^(1/2))/(b^(1/4)*c+d*(-(-a)^(1/2))^(1/2))
)/b^(1/4)/(-(-a)^(1/2))^(3/2)-1/4*polylog(2,b^(1/4)*(d*x+c)/(b^(1/4)*c-d*(-
(-a)^(1/2))^(1/2)))/b^(1/4)/(-(-a)^(1/2))^(3/2)+1/4*polylog(2,b^(1/4)*(d*x+
c)/(b^(1/4)*c+d*(-(-a)^(1/2))^(1/2)))/b^(1/4)/(-(-a)^(1/2))^(3/2)
```

Rubi [A] time = 0.42, antiderivative size = 497, normalized size of antiderivative = 1.00, number of steps used = 18, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {2409, 2394, 2393, 2391}

$$-\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt{-\sqrt{-a}}\,d}\right)}{4\left(-\sqrt{-a}\right)^{3/2}\sqrt[4]{b}}+\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt{-\sqrt{-a}}\,d+\sqrt[4]{b}c}\right)}{4\left(-\sqrt{-a}\right)^{3/2}\sqrt[4]{b}}-\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt[4]{-a}\,d}\right)}{4(-a)^{3/4}\sqrt[4]{b}}+\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{-a}\,d+\sqrt[4]{b}c}\right)}{4(-a)^{3/4}\sqrt[4]{b}}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c + d*x]/(a + b*x^4),x]
```

```
[Out] (Log[(d*(Sqrt[-Sqrt[-a]] - b^(1/4)*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]*d)]*Log
[c + d*x])/(4*(-Sqrt[-a])^(3/2)*b^(1/4)) + (Log[(d*((-a)^(1/4) - b^(1/4)*x)
)/(b^(1/4)*c + (-a)^(1/4)*d)]*Log[c + d*x])/(4*(-a)^(3/4)*b^(1/4)) - (Log[-
((d*(Sqrt[-Sqrt[-a]] + b^(1/4)*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d))]*Log[c
+ d*x])/(4*(-Sqrt[-a])^(3/2)*b^(1/4)) - (Log[-((d*((-a)^(1/4) + b^(1/4)*x))
/(b^(1/4)*c - (-a)^(1/4)*d))]*Log[c + d*x])/(4*(-a)^(3/4)*b^(1/4)) - PolyLo
g[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d)]/(4*(-Sqrt[-a])^(3
/2)*b^(1/4)) + PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]*
d)]/(4*(-Sqrt[-a])^(3/2)*b^(1/4)) - PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)
*c - (-a)^(1/4)*d)]/(4*(-a)^(3/4)*b^(1/4)) + PolyLog[2, (b^(1/4)*(c + d*x))
/(b^(1/4)*c + (-a)^(1/4)*d)]/(4*(-a)^(3/4)*b^(1/4))
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rubi steps

$$\int \frac{\log(c+dx)}{a+bx^4}\,dx = \int \left(\frac{\sqrt{-a}\,\log(c+dx)}{2a\left(\sqrt{-a}-\sqrt{b}\,x^2\right)}+\frac{\sqrt{-a}\,\log(c+dx)}{2a\left(\sqrt{-a}+\sqrt{b}\,x^2\right)}\right)dx$$

$$= -\frac{\int \frac{\log(c+dx)}{\sqrt{-a}-\sqrt{b}\,x^2}\,dx}{2\sqrt{-a}} - \frac{\int \frac{\log(c+dx)}{\sqrt{-a}+\sqrt{b}\,x^2}\,dx}{2\sqrt{-a}}$$

$$= -\frac{\int \left(\frac{\sqrt{-\sqrt{-a}}\,\log(c+dx)}{2\sqrt{-a}\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}+\frac{\sqrt{-\sqrt{-a}}\,\log(c+dx)}{2\sqrt{-a}\left(\sqrt{-\sqrt{-a}}+\sqrt[4]{b}\,x\right)}\right)dx}{2\sqrt{-a}} - \frac{\int \left(\frac{\log(c+dx)}{2\sqrt[4]{-a}\left(\sqrt[4]{-a}-\sqrt[4]{b}\,x\right)}+\frac{\log(c+dx)}{2\sqrt[4]{-a}\left(\sqrt[4]{-a}+\sqrt[4]{b}\,x\right)}\right)d}{2\sqrt{-a}}$$

$$= -\frac{\int \frac{\log(c+dx)}{\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x}\,dx}{4\left(-\sqrt{-a}\right)^{3/2}} - \frac{\int \frac{\log(c+dx)}{\sqrt{-\sqrt{-a}}+\sqrt[4]{b}\,x}\,dx}{4\left(-\sqrt{-a}\right)^{3/2}} - \frac{\int \frac{\log(c+dx)}{\sqrt[4]{-a}-\sqrt[4]{b}\,x}\,dx}{4(-a)^{3/4}} - \frac{\int \frac{\log(c+dx)}{\sqrt[4]{-a}+\sqrt[4]{b}\,x}\,dx}{4(-a)^{3/4}}$$

$$= \frac{\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt{-\sqrt{-a}}\,d}\right)\log(c+dx)}{4\left(-\sqrt{-a}\right)^{3/2}\sqrt[4]{b}} + \frac{\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)\log(c+dx)}{4(-a)^{3/4}\sqrt[4]{b}} - \frac{\log\left(-\frac{d\left(\sqrt{-\sqrt{-a}}+\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c-\sqrt{-\sqrt{-a}}\,d}\right)\cdots}{4\left(-\sqrt{-a}\right)^{3/2}\cdots}$$

$$= \frac{\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt{-\sqrt{-a}}\,d}\right)\log(c+dx)}{4\left(-\sqrt{-a}\right)^{3/2}\sqrt[4]{b}} + \frac{\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)\log(c+dx)}{4(-a)^{3/4}\sqrt[4]{b}} - \frac{\log\left(-\frac{d\left(\sqrt{-\sqrt{-a}}+\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c-\sqrt{-\sqrt{-a}}\,d}\right)\cdots}{4\left(-\sqrt{-a}\right)^{3/2}\cdots}$$

$$= \frac{\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt{-\sqrt{-a}}\,d}\right)\log(c+dx)}{4\left(-\sqrt{-a}\right)^{3/2}\sqrt[4]{b}} + \frac{\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c+\sqrt[4]{-a}\,d}\right)\log(c+dx)}{4(-a)^{3/4}\sqrt[4]{b}} - \frac{\log\left(-\frac{d\left(\sqrt{-\sqrt{-a}}+\sqrt[4]{b}\,x\right)}{\sqrt[4]{b}\,c-\sqrt{-\sqrt{-a}}\,d}\right)\cdots}{4\left(-\sqrt{-a}\right)^{3/2}\cdots}$$

Mathematica [C] time = 0.12, size = 359, normalized size = 0.72

$$\frac{-\text{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt[4]{-a}d}\right)-i\,\text{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-i\sqrt[4]{-a}d}\right)+i\,\text{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c+i\sqrt[4]{-a}d}\right)+\text{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c+\sqrt[4]{-a}d}\right)+\log(c+dx)\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}\,x\right)}{\sqrt[4]{-a}d+\sqrt[4]{b}c}\right)-i\,\text{l}\cdots}{4(-a)^{3/4}\sqrt[4]{b}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c + d*x]/(a + b*x^4),x]
```

```
[Out] (Log[(d*((-a)^(1/4) - b^(1/4)*x))/(b^(1/4)*c + (-a)^(1/4)*d)]*Log[c + d*x]
- I*Log[(d*((-a)^(1/4) - I*b^(1/4)*x))/(I*b^(1/4)*c + (-a)^(1/4)*d)]*Log[c
+ d*x] + I*Log[(d*((-a)^(1/4) + I*b^(1/4)*x))/((-I)*b^(1/4)*c + (-a)^(1/4)*
d)]*Log[c + d*x] - Log[(d*((-a)^(1/4) + b^(1/4)*x))/(-(b^(1/4)*c) + (-a)^(1
/4)*d)]*Log[c + d*x] - PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - (-a)^(1/
4)*d)] - I*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - I*(-a)^(1/4)*d)] + I
*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + I*(-a)^(1/4)*d)] + PolyLog[2,
(b^(1/4)*(c + d*x))/(b^(1/4)*c + (-a)^(1/4)*d)])/(4*(-a)^(3/4)*b^(1/4))
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\log\left(dx+c\right)}{bx^4+a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/(b*x^4+a),x, algorithm="fricas")
```

```
[Out] integral(log(d*x + c)/(b*x^4 + a), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log\left(dx+c\right)}{bx^4+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/(b*x^4+a),x, algorithm="giac")
```

```
[Out] integrate(log(d*x + c)/(b*x^4 + a), x)
```

maple [C] time = 0.25, size = 112, normalized size = 0.23

$$\frac{d^3\left(\ln\left(\frac{-dx+\mathrm{RootOf}\left(\_Z^4b-4bc\,\_Z^3+6b\,c^2\,\_Z^2-4b\,c^3\,\_Z+a\,d^4+b\,c^4\right)-c}{\mathrm{RootOf}\left(\_Z^4b-4bc\,\_Z^3+6b\,c^2\,\_Z^2-4b\,c^3\,\_Z+a\,d^4+b\,c^4\right)}\right)\ln\left(dx+c\right)+}{4b\left(\mathrm{RootOf}\left(\_Z^4b-4bc\,\_Z^3+6b\,c^2\,\_Z^2-4b\,c^3\,\_Z+a\,d^4+b\,c^4\right)^3-3\,\mathrm{RootOf}\left(\_Z^4b-4bc\,\_Z^3+6b\,c^2\,\_Z^2-4\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(d*x+c)/(b*x^4+a),x)
```

```
[Out] 1/4*d^3/b*sum(1/(_R1^3-3*_R1^2*c+3*_R1*c^2-c^3)*(ln((-d*x+_R1-c)/_R1)*ln(d*
x+c)+dilog((-d*x+_R1-c)/_R1)),_R1=RootOf(_Z^4*b-4*_Z^3*b*c+6*_Z^2*b*c^2-4*_
Z*b*c^3+a*d^4+b*c^4))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log\left(dx+c\right)}{bx^4+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/(b*x^4+a),x, algorithm="maxima")
```

```
[Out] integrate(log(d*x + c)/(b*x^4 + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln\left(c+d\,x\right)}{b\,x^4+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(c + d*x)/(a + b*x^4),x)
```

```
[Out] int(log(c + d*x)/(a + b*x^4), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(d*x+c)/(b*x**4+a),x)
```

```
[Out] Timed out
```

3.302 $\int \frac{\log(c+dx)}{x^2(a+bx^4)}\,dx$

Optimal. Leaf size=536

$$-\frac{\sqrt[4]{b}\,\mathrm{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt{-\sqrt{-a}}\,d}\right)}{4\left(-\sqrt{-a}\right)^{5/2}}+\frac{\sqrt[4]{b}\,\mathrm{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c+\sqrt{-\sqrt{-a}}\,d}\right)}{4\left(-\sqrt{-a}\right)^{5/2}}-\frac{\sqrt[4]{b}\,\mathrm{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt[4]{-a}\,d}\right)}{4(-a)^{5/4}}+\frac{\sqrt[4]{b}\,\mathrm{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c+\sqrt[4]{-a}\,d}\right)}{4(-a)^{5/4}}+\frac{\sqrt[4]{b}\log(c+dx)\,\mathrm{l}}{4\left(-\right.}$$

```
[Out] d*ln(x)/a/c-d*ln(d*x+c)/a/c-ln(d*x+c)/a/x+1/4*b^(1/4)*ln(d*((-a)^(1/4)-b^(1
/4)*x)/(b^(1/4)*c+(-a)^(1/4)*d))*ln(d*x+c)/(-a)^(5/4)-1/4*b^(1/4)*ln(-d*((-
a)^(1/4)+b^(1/4)*x)/(b^(1/4)*c-(-a)^(1/4)*d))*ln(d*x+c)/(-a)^(5/4)-1/4*b^(1
/4)*polylog(2,b^(1/4)*(d*x+c)/(b^(1/4)*c-(-a)^(1/4)*d))/(-a)^(5/4)+1/4*b^(1
/4)*polylog(2,b^(1/4)*(d*x+c)/(b^(1/4)*c+(-a)^(1/4)*d))/(-a)^(5/4)-1/4*b^(1
/4)*ln(d*x+c)*ln(-d*(b^(1/4)*x+(-(-a)^(1/2))^(1/2))/(b^(1/4)*c-d*(-(-a)^(1/
2))^(1/2)))/(-(-a)^(1/2))^(5/2)+1/4*b^(1/4)*ln(d*x+c)*ln(d*(-b^(1/4)*x+(-(-
a)^(1/2))^(1/2))/(b^(1/4)*c+d*(-(-a)^(1/2))^(1/2)))/(-(-a)^(1/2))^(5/2)-1/4
*b^(1/4)*polylog(2,b^(1/4)*(d*x+c)/(b^(1/4)*c-d*(-(-a)^(1/2))^(1/2)))/(-(-a
)^(1/2))^(5/2)+1/4*b^(1/4)*polylog(2,b^(1/4)*(d*x+c)/(b^(1/4)*c+d*(-(-a)^(1
/2))^(1/2)))/(-(-a)^(1/2))^(5/2)
```

Rubi [A] time = 0.82, antiderivative size = 536, normalized size of antiderivative = 1.00, number of steps used = 24, number of rules used = 16, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.842, Rules used = {325, 297, 1162, 617, 204, 1165, 628, 2416, 2395, 36, 29, 31, 2409, 2394, 2393, 2391}

$$-\frac{\sqrt[4]{b}\,\mathrm{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt{-\sqrt{-a}}\,d}\right)}{4\left(-\sqrt{-a}\right)^{5/2}}+\frac{\sqrt[4]{b}\,\mathrm{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt{-\sqrt{-a}}\,d+\sqrt[4]{b}c}\right)}{4\left(-\sqrt{-a}\right)^{5/2}}-\frac{\sqrt[4]{b}\,\mathrm{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt[4]{-a}\,d}\right)}{4(-a)^{5/4}}+\frac{\sqrt[4]{b}\,\mathrm{PolyLog}\left(\right.}{4(-}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c + d*x]/(x^2*(a + b*x^4)),x]
```

```
[Out] (d*Log[x])/(a*c) - (d*Log[c + d*x])/(a*c) - Log[c + d*x]/(a*x) + (b^(1/4)*L
og[(d*(Sqrt[-Sqrt[-a]] - b^(1/4)*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]*d)]*Log[c
 + d*x])/(4*(-Sqrt[-a])^(5/2)) + (b^(1/4)*Log[(d*((-a)^(1/4) - b^(1/4)*x))/
(b^(1/4)*c + (-a)^(1/4)*d)]*Log[c + d*x])/(4*(-a)^(5/4)) - (b^(1/4)*Log[-((
d*(Sqrt[-Sqrt[-a]] + b^(1/4)*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d))]*Log[c +
d*x])/(4*(-Sqrt[-a])^(5/2)) - (b^(1/4)*Log[-((d*((-a)^(1/4) + b^(1/4)*x))/(
b^(1/4)*c - (-a)^(1/4)*d))]*Log[c + d*x])/(4*(-a)^(5/4)) - (b^(1/4)*PolyLog
[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d)])/(4*(-Sqrt[-a])^(5
/2)) + (b^(1/4)*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]
*d)])/(4*(-Sqrt[-a])^(5/2)) - (b^(1/4)*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1
/4)*c - (-a)^(1/4)*d)])/(4*(-a)^(5/4)) + (b^(1/4)*PolyLog[2, (b^(1/4)*(c +
d*x))/(b^(1/4)*c + (-a)^(1/4)*d)])/(4*(-a)^(5/4))
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 297

```
Int[(x_)^2/((a_) + (b_.)*(x_)^4), x_Symbol] :> With[{r = Numerator[Rt[a/b,
2]], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*s), Int[(r + s*x^2)/(a + b*x^4
), x], x] - Dist[1/(2*s), Int[(r - s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a,
 b}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &
& AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 325

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[((c*
x)^(m + 1)*(a + b*x^n)^(p + 1))/(a*c*(m + 1)), x] - Dist[(b*(m + n*(p + 1)
+ 1))/(a*c^n*(m + 1)), Int[(c*x)^(m + n)*(a + b*x^n)^p, x], x] /; FreeQ[{a,
 b, c, p}, x] && IGtQ[n, 0] && LtQ[m, -1] && IntBinomialQ[a, b, c, n, m, p,
 x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\int \frac{\log(c+dx)}{x^2\left(a+bx^4\right)}dx = \int\left(\frac{\log(c+dx)}{ax^2}-\frac{bx^2\log(c+dx)}{a\left(a+bx^4\right)}\right)dx$$

$$= \frac{\int \frac{\log(c+dx)}{x^2}dx}{a} - \frac{b\int \frac{x^2\log(c+dx)}{a+bx^4}dx}{a}$$

$$= -\frac{\log(c+dx)}{ax} - \frac{b\int\left(-\frac{\log(c+dx)}{2\sqrt{b}\left(\sqrt{-a}-\sqrt{b}x^2\right)}+\frac{\log(c+dx)}{2\sqrt{b}\left(\sqrt{-a}+\sqrt{b}x^2\right)}\right)dx}{a} + \frac{d\int \frac{1}{x(c+dx)}dx}{a}$$

$$= -\frac{\log(c+dx)}{ax} + \frac{\sqrt{b}\int \frac{\log(c+dx)}{\sqrt{-a}-\sqrt{b}x^2}dx}{2a} - \frac{\sqrt{b}\int \frac{\log(c+dx)}{\sqrt{-a}+\sqrt{b}x^2}dx}{2a} + \frac{d\int \frac{1}{x}dx}{ac} - \frac{d^2\int \frac{1}{c+dx}dx}{ac}$$

$$= \frac{d\log(x)}{ac} - \frac{d\log(c+dx)}{ac} - \frac{\log(c+dx)}{ax} - \frac{\sqrt{b}\int\left(\frac{\sqrt{-\sqrt{-a}}\log(c+dx)}{2\sqrt{-a}\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)}+\frac{\sqrt{-\sqrt{-a}}\log(c+dx)}{2\sqrt{-a}\left(\sqrt{-\sqrt{-a}}+\sqrt[4]{b}x\right)}\right)}{2a}$$

$$= \frac{d\log(x)}{ac} - \frac{d\log(c+dx)}{ac} - \frac{\log(c+dx)}{ax} - \frac{\sqrt{b}\int \frac{\log(c+dx)}{\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x}dx}{4\left(-\sqrt{-a}\right)^{5/2}} - \frac{\sqrt{b}\int \frac{\log(c+dx)}{\sqrt{-\sqrt{-a}}+\sqrt[4]{b}x}dx}{4\left(-\sqrt{-a}\right)^{5/2}} - $$

$$= \frac{d\log(x)}{ac} - \frac{d\log(c+dx)}{ac} - \frac{\log(c+dx)}{ax} + \frac{\sqrt[4]{b}\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt{-\sqrt{-a}}d}\right)\log(c+dx)}{4\left(-\sqrt{-a}\right)^{5/2}} + \frac{\sqrt[4]{b}\log\left(\right.}{}$$

$$= \frac{d\log(x)}{ac} - \frac{d\log(c+dx)}{ac} - \frac{\log(c+dx)}{ax} + \frac{\sqrt[4]{b}\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt{-\sqrt{-a}}d}\right)\log(c+dx)}{4\left(-\sqrt{-a}\right)^{5/2}} + \frac{\sqrt[4]{b}\log\left(\right.}{}$$

$$= \frac{d\log(x)}{ac} - \frac{d\log(c+dx)}{ac} - \frac{\log(c+dx)}{ax} + \frac{\sqrt[4]{b}\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt{-\sqrt{-a}}d}\right)\log(c+dx)}{4\left(-\sqrt{-a}\right)^{5/2}} + \frac{\sqrt[4]{b}\log\left(\right.}{}$$

Mathematica [A] time = 0.63, size = 525, normalized size = 0.98

$$\frac{1}{4}\left(\frac{\sqrt[4]{b}\,\text{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt{-\sqrt{-a}}d}\right)}{\sqrt{-\sqrt{-a}}\,a} - \frac{\sqrt[4]{b}\,\text{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c+\sqrt{-\sqrt{-a}}d}\right)}{\sqrt{-\sqrt{-a}}\,a} + \frac{a\sqrt[4]{b}\,\text{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt[4]{-a}d}\right)}{(-a)^{9/4}} + \frac{\sqrt[4]{b}\,\text{Li}_2\left(\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c+\sqrt[4]{-a}d}\right)}{(-a)^{5/4}} - \frac{\sqrt[4]{b}\log(c+}{}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c + d*x]/(x^2*(a + b*x^4)),x]
```

```
[Out] ((4*d*(Log[x] - Log[c + d*x]))/(a*c) - (4*Log[c + d*x])/(a*x) - (b^(1/4)*Lo
g[(d*(Sqrt[-Sqrt[-a]] - b^(1/4)*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]*d)]*Log[c
+ d*x])/(Sqrt[-Sqrt[-a]]*a) + (b^(1/4)*Log[(d*((-a)^(1/4) - b^(1/4)*x))/(b^
(1/4)*c + (-a)^(1/4)*d)]*Log[c + d*x])/(-a)^(5/4) + (b^(1/4)*Log[(d*(Sqrt[-
Sqrt[-a]] + b^(1/4)*x))/(-(b^(1/4)*c) + Sqrt[-Sqrt[-a]]*d)]*Log[c + d*x])/(
```

```
Sqrt[-Sqrt[-a]]*a) + (a*b^(1/4)*Log[(d*((-a)^(1/4) + b^(1/4)*x))/(-(b^(1/4)
*c) + (-a)^(1/4)*d)]*Log[c + d*x])/(-a)^(9/4) + (b^(1/4)*PolyLog[2, (b^(1/4
)*(c + d*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d)])/(Sqrt[-Sqrt[-a]]*a) - (b^(1/
4)*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]*d)])/(Sqrt[-
Sqrt[-a]]*a) + (a*b^(1/4)*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - (-a)^
(1/4)*d)])/(-a)^(9/4) + (b^(1/4)*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c
+ (-a)^(1/4)*d)])/(-a)^(5/4))/4
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\log\left(dx+c\right)}{bx^6+ax^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x^2/(b*x^4+a),x, algorithm="fricas")
```

```
[Out] integral(log(d*x + c)/(b*x^6 + a*x^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log\left(dx+c\right)}{\left(bx^4+a\right)x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x^2/(b*x^4+a),x, algorithm="giac")
```

```
[Out] integrate(log(d*x + c)/((b*x^4 + a)*x^2), x)
```

maple [C] time = 0.28, size = 136, normalized size = 0.25

$$-\frac{d\left(\ln\left(\frac{-dx+\mathrm{RootOf}\left(\_Z^4b-4bc\_Z^3+6bc^2\_Z^2-4bc^3\_Z+ad^4+bc^4\right)-c}{\mathrm{RootOf}\left(\_Z^4b-4bc\_Z^3+6bc^2\_Z^2-4bc^3\_Z+ad^4+bc^4\right)}\right)\ln\left(dx+c\right)+\mathrm{dilog}\left(\frac{-dx+\mathrm{RootOf}\left(\_Z^4b-4bc\_Z^3+6bc^2\_Z^2-4b\right.}{\mathrm{RootOf}\left(\_Z^4b-4bc\_Z^3+6bc^2\_Z^2-4bc^3\right.}\right.\right.}{4a\left(\mathrm{RootOf}\left(\_Z^4b-4bc\_Z^3+6bc^2\_Z^2-4bc^3\_Z+ad^4+bc^4\right)-c\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(d*x+c)/x^2/(b*x^4+a),x)
```

```
[Out] -1/4*d*sum(1/(_R1-c)*(ln((-d*x+_R1-c)/_R1)*ln(d*x+c)+dilog((-d*x+_R1-c)/_R1
)),_R1=RootOf(_Z^4*b-4*_Z^3*b*c+6*_Z^2*b*c^2-4*_Z*b*c^3+a*d^4+b*c^4))/a+1/a
/c*d*ln(d*x)-1/a/c*d*ln(d*x+c)-1/a/x*ln(d*x+c)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log\left(dx+c\right)}{\left(bx^4+a\right)x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x^2/(b*x^4+a),x, algorithm="maxima")
```

```
[Out] integrate(log(d*x + c)/((b*x^4 + a)*x^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln\left(c+d\,x\right)}{x^2\,\left(b\,x^4+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(c + d*x)/(x^2*(a + b*x^4)),x)
```

```
[Out] int(log(c + d*x)/(x^2*(a + b*x^4)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(d*x+c)/x**2/(b*x**4+a),x)
```

```
[Out] Timed out
```

3.303 $\int \left(f+\frac{g}{x}\right) x \left(a+b\log \left(c(d+ex)^n\right)\right) \, dx$

Optimal. Leaf size=91

$$\frac{(fx+g)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2f}-\frac{bn(df-eg)^2\log(d+ex)}{2e^2f}+\frac{bnx(df-eg)}{2e}-\frac{bn(fx+g)^2}{4f}$$

```
[Out] 1/2*b*(d*f-e*g)*n*x/e-1/4*b*n*(f*x+g)^2/f-1/2*b*(d*f-e*g)^2*n*ln(e*x+d)/e^2
/f+1/2*(f*x+g)^2*(a+b*ln(c*(e*x+d)^n))/f
```

Rubi [A] time = 0.06, antiderivative size = 91, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.130, Rules used = {2412, 2395, 43}

$$\frac{(fx+g)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2f}-\frac{bn(df-eg)^2\log(d+ex)}{2e^2f}+\frac{bnx(df-eg)}{2e}-\frac{bn(fx+g)^2}{4f}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g/x)*x*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] (b*(d*f - e*g)*n*x)/(2*e) - (b*n*(g + f*x)^2)/(4*f) - (b*(d*f - e*g)^2*n*Lo
g[d + e*x])/(2*e^2*f) + ((g + f*x)^2*(a + b*Log[c*(d + e*x)^n]))/(2*f)
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2412

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)/(x_))^(q_.)*(x_)^(m_.), x_Symbol] :> Int[(g + f*x)^q*(a + b*Log[c*(d + e*
x)^n])^p, x] /; FreeQ[{a, b, c, d, e, f, g, m, n, p, q}, x] && EqQ[m, q] &&
 IntegerQ[q]
```

Rubi steps

$$\begin{aligned}
\int \left(f+\frac{g}{x}\right) x \left(a+b\log\left(c(d+ex)^n\right)\right) \, dx &= \int (g+fx)\left(a+b\log\left(c(d+ex)^n\right)\right) \, dx\\
&= \frac{(g+fx)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2f}-\frac{(ben)\int \frac{(g+fx)^2}{d+ex}\,dx}{2f}\\
&= \frac{(g+fx)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2f}-\frac{(ben)\int \left(\frac{f(-df+eg)}{e^2}+\frac{(-df+eg)^2}{e^2(d+ex)}+\right.}{2f}\\
&= \frac{b(df-eg)nx}{2e}-\frac{bn(g+fx)^2}{4f}-\frac{b(df-eg)^2n\log(d+ex)}{2e^2f}+\frac{(g+fx)}{}
\end{aligned}$$

Mathematica [A] time = 0.06, size = 101, normalized size = 1.11

$$\frac{1}{2}afx^2+agx+\frac{1}{2}bfx^2\log\left(c(d+ex)^n\right)+\frac{bg(d+ex)\log\left(c(d+ex)^n\right)}{e}-\frac{bd^2fn\log(d+ex)}{2e^2}+\frac{bdfnx}{2e}-\frac{1}{4}bfnx^2-bgnx$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g/x)*x*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] a*g*x + (b*d*f*n*x)/(2*e) - b*g*n*x + (a*f*x^2)/2 - (b*f*n*x^2)/4 - (b*d^2*
f*n*Log[d + e*x])/(2*e^2) + (b*f*x^2*Log[c*(d + e*x)^n])/2 + (b*g*(d + e*x)
*Log[c*(d + e*x)^n])/e
```

fricas [A] time = 0.44, size = 117, normalized size = 1.29

$$-\frac{\left(be^2fn-2\,ae^2f\right)x^2-2\left(2\,ae^2g+\left(bdef-2\,be^2g\right)n\right)x-2\left(be^2fnx^2+2\,be^2gnx-\left(bd^2f-2\,bdeg\right)n\right)\log\left(ex+d\right)\cdots}{4\,e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f+g/x)*x*(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
```

```
[Out] -1/4*((b*e^2*f*n - 2*a*e^2*f)*x^2 - 2*(2*a*e^2*g + (b*d*e*f - 2*b*e^2*g)*n)
*x - 2*(b*e^2*f*n*x^2 + 2*b*e^2*g*n*x - (b*d^2*f - 2*b*d*e*g)*n)*log(e*x +
d) - 2*(b*e^2*f*x^2 + 2*b*e^2*g*x)*log(c))/e^2
```

giac [B] time = 0.18, size = 186, normalized size = 2.04

$$\frac{1}{2}\left(xe+d\right)^2bfne^{(-2)}\log\left(xe+d\right)-(xe+d)bdfne^{(-2)}\log\left(xe+d\right)-\frac{1}{4}\left(xe+d\right)^2bfne^{(-2)}+(xe+d)bdfne^{(-2)}+(xe+d)b\cdots$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f+g/x)*x*(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
```

```
[Out] 1/2*(x*e + d)^2*b*f*n*e^(-2)*log(x*e + d) - (x*e + d)*b*d*f*n*e^(-2)*log(x*
e + d) - 1/4*(x*e + d)^2*b*f*n*e^(-2) + (x*e + d)*b*d*f*n*e^(-2) + (x*e + d
)*b*g*n*e^(-1)*log(x*e + d) + 1/2*(x*e + d)^2*b*f*e^(-2)*log(c) - (x*e + d)
*b*d*f*e^(-2)*log(c) - (x*e + d)*b*g*n*e^(-1) + 1/2*(x*e + d)^2*a*f*e^(-2)
- (x*e + d)*a*d*f*e^(-2) + (x*e + d)*b*g*e^(-1)*log(c) + (x*e + d)*a*g*e^(-
1)
```

maple [A] time = 0.08, size = 101, normalized size = 1.11

$$-\frac{bfn\,x^2}{4}+\frac{bf\,x^2\ln\left(c\,\mathrm{e}^{n\ln(ex+d)}\right)}{2}+\frac{af\,x^2}{2}-\frac{b\,d^2fn\ln\left(ex+d\right)}{2e^2}+\frac{bdfnx}{2e}+\frac{bdgn\ln\left(ex+d\right)}{e}-bgnx+bgx\ln\left(c\left(ex+d\right)^n\right)\cdots$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f+g/x)*x*(b*ln(c*(e*x+d)^n)+a),x)
```

```
[Out] a*g*x+1/2*a*x^2*f+b*g*x*ln(c*(e*x+d)^n)-b*g*n*x+b*g/e*n*d*ln(e*x+d)+1/2*b*f
*x^2*ln(c*exp(n*ln(e*x+d)))-1/4*n*b*f*x^2-1/2*n*b*d^2*f/e^2*ln(e*x+d)+1/2*b
*d*f*n*x/e
```

maxima [A] time = 0.47, size = 102, normalized size = 1.12

$$-begn\left(\frac{x}{e}-\frac{d\log\left(ex+d\right)}{e^2}\right)-\frac{1}{4}\,befn\left(\frac{2\,d^2\log\left(ex+d\right)}{e^3}+\frac{ex^2-2\,dx}{e^2}\right)+\frac{1}{2}\,bfx^2\log\left(\left(ex+d\right)^nc\right)+\frac{1}{2}\,afx^2+bgx\log\left(\left(\cdots\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f+g/x)*x*(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
```

```
[Out] -b*e*g*n*(x/e - d*log(e*x + d)/e^2) - 1/4*b*e*f*n*(2*d^2*log(e*x + d)/e^3 +
 (e*x^2 - 2*d*x)/e^2) + 1/2*b*f*x^2*log((e*x + d)^n*c) + 1/2*a*f*x^2 + b*g*
x*log((e*x + d)^n*c) + a*g*x
```

mupad [B] time = 0.27, size = 104, normalized size = 1.14

$$x\left(\frac{2\,a\,d\,f+2\,a\,e\,g-2\,b\,e\,g\,n}{2\,e}-\frac{d\,f\,\left(2\,a-b\,n\right)}{2\,e}\right)+\ln\left(c\,{\left(d+e\,x\right)}^n\right)\,\left(\frac{b\,f\,x^2}{2}+b\,g\,x\right)-\frac{\ln\left(d+e\,x\right)\,\left(b\,d^2\,f\,n-2\,b\,d\right.}{2\,e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(f + g/x)*(a + b*log(c*(d + e*x)^n)),x)
```

```
[Out] x*((2*a*d*f + 2*a*e*g - 2*b*e*g*n)/(2*e) - (d*f*(2*a - b*n))/(2*e)) + log(c
*(d + e*x)^n)*(b*g*x + (b*f*x^2)/2) - (log(d + e*x)*(b*d^2*f*n - 2*b*d*e*g*
n))/(2*e^2) + (f*x^2*(2*a - b*n))/4
```

sympy [A] time = 3.01, size = 148, normalized size = 1.63

$$\begin{cases}\frac{afx^2}{2}+agx-\frac{bd^2fn\log(d+ex)}{2e^2}+\frac{bdfnx}{2e}+\frac{bdgn\log(d+ex)}{e}+\frac{bfnx^2\log(d+ex)}{2}-\frac{bfnx^2}{4}+\frac{bfx^2\log(c)}{2}+bgnx\log(d+ex)-b \\ \left(a+b\log(cd^n)\right)\left(\frac{fx^2}{2}+gx\right)\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f+g/x)*x*(a+b*ln(c*(e*x+d)**n)),x)
```

```
[Out] Piecewise((a*f*x**2/2 + a*g*x - b*d**2*f*n*log(d + e*x)/(2*e**2) + b*d*f*n*
x/(2*e) + b*d*g*n*log(d + e*x)/e + b*f*n*x**2*log(d + e*x)/2 - b*f*n*x**2/4
 + b*f*x**2*log(c)/2 + b*g*n*x*log(d + e*x) - b*g*n*x + b*g*x*log(c), Ne(e,
 0)), ((a + b*log(c*d**n))*(f*x**2/2 + g*x), True))
```

3.304 $\int \left(f+\frac{g}{x}\right)^2 x^2 \left(a+b\log\left(c(d+ex)^n\right)\right) dx$

Optimal. Leaf size=120

$$\frac{(fx+g)^3\left(a+b\log\left(c(d+ex)^n\right)\right)}{3f}+\frac{bn(df-eg)^3\log(d+ex)}{3e^3f}-\frac{bnx(df-eg)^2}{3e^2}+\frac{bn(fx+g)^2(df-eg)}{6ef}-\frac{bn(fx+g)^3}{9f}$$

```
[Out] -1/3*b*(d*f-e*g)^2*n*x/e^2+1/6*b*(d*f-e*g)*n*(f*x+g)^2/e/f-1/9*b*n*(f*x+g)^
3/f+1/3*b*(d*f-e*g)^3*n*ln(e*x+d)/e^3/f+1/3*(f*x+g)^3*(a+b*ln(c*(e*x+d)^n))
/f
```

Rubi [A] time = 0.11, antiderivative size = 120, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {2412, 2395, 43}

$$\frac{(fx+g)^3\left(a+b\log\left(c(d+ex)^n\right)\right)}{3f}-\frac{bnx(df-eg)^2}{3e^2}+\frac{bn(df-eg)^3\log(d+ex)}{3e^3f}+\frac{bn(fx+g)^2(df-eg)}{6ef}-\frac{bn(fx+g)^3}{9f}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g/x)^2*x^2*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] -(b*(d*f - e*g)^2*n*x)/(3*e^2) + (b*(d*f - e*g)*n*(g + f*x)^2)/(6*e*f) - (b
*n*(g + f*x)^3)/(9*f) + (b*(d*f - e*g)^3*n*Log[d + e*x])/(3*e^3*f) + ((g +
f*x)^3*(a + b*Log[c*(d + e*x)^n]))/(3*f)
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2412

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)/(x_))^(q_.)*(x_)^(m_.), x_Symbol] :> Int[(g + f*x)^q*(a + b*Log[c*(d + e*
x)^n])^p, x] /; FreeQ[{a, b, c, d, e, f, g, m, n, p, q}, x] && EqQ[m, q] &&
 IntegerQ[q]
```

Rubi steps

$$\int \left(f+\frac{g}{x}\right)^2 x^2 \left(a+b\log \left(c(d+ex)^n\right)\right) dx = \int (g+fx)^2 \left(a+b\log \left(c(d+ex)^n\right)\right) dx$$
$$= \frac{(g+fx)^3 \left(a+b\log \left(c(d+ex)^n\right)\right)}{3f} - \frac{(ben)\int \frac{(g+fx)^3}{d+ex}dx}{3f}$$
$$= \frac{(g+fx)^3 \left(a+b\log \left(c(d+ex)^n\right)\right)}{3f} - \frac{(ben)\int \left(\frac{f(-df+eg)^2}{e^3} + \frac{(-df+eg)^3}{e^3(d+ex)}\right.}{}$$
$$= -\frac{b(df-eg)^2nx}{3e^2} + \frac{b(df-eg)n(g+fx)^2}{6ef} - \frac{bn(g+fx)^3}{9f} + \frac{b(df-}{}$$

Mathematica [A] time = 0.15, size = 150, normalized size = 1.25

$$\frac{e\left(x\left(6ae^2\left(f^2x^2+3fgx+3g^2\right)-bn\left(6d^2f^2-3def(fx+6g)+e^2\left(2f^2x^2+9fgx+18g^2\right)\right)\right)+6be\left(3dg^2+ex\left(\right.\right.\right.}{18e^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g/x)^2*x^2*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] (6*b*d^2*f*(d*f - 3*e*g)*n*Log[d + e*x] + e*(x*(6*a*e^2*(3*g^2 + 3*f*g*x +
f^2*x^2) - b*n*(6*d^2*f^2 - 3*d*e*f*(6*g + f*x) + e^2*(18*g^2 + 9*f*g*x + 2
*f^2*x^2))) + 6*b*e*(3*d*g^2 + e*x*(3*g^2 + 3*f*g*x + f^2*x^2))*Log[c*(d +
e*x)^n]))/(18*e^3)
```

fricas [A] time = 0.43, size = 219, normalized size = 1.82

$$-\frac{2\left(be^3f^2n-3\,ae^3f^2\right)x^3-3\left(6\,ae^3fg+\left(bde^2f^2-3\,be^3fg\right)n\right)x^2-6\left(3\,ae^3g^2-\left(bd^2ef^2-3\,bde^2fg+3\,be^3g^2\right)n\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f+g/x)^2*x^2*(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
```

```
[Out] -1/18*(2*(b*e^3*f^2*n - 3*a*e^3*f^2)*x^3 - 3*(6*a*e^3*f*g + (b*d*e^2*f^2 -
3*b*e^3*f*g)*n)*x^2 - 6*(3*a*e^3*g^2 - (b*d^2*e*f^2 - 3*b*d*e^2*f*g + 3*b*e
^3*g^2)*n)*x - 6*(b*e^3*f^2*n*x^3 + 3*b*e^3*f*g*n*x^2 + 3*b*e^3*g^2*n*x + (
b*d^3*f^2 - 3*b*d^2*e*f*g + 3*b*d*e^2*g^2)*n)*log(e*x + d) - 6*(b*e^3*f^2*x
^3 + 3*b*e^3*f*g*x^2 + 3*b*e^3*g^2*x)*log(c))/e^3
```

giac [B] time = 0.20, size = 430, normalized size = 3.58

$$\frac{1}{3}(xe+d)^3bf^2ne^{(-3)}\log(xe+d)-(xe+d)^2bdf^2ne^{(-3)}\log(xe+d)+(xe+d)bd^2f^2ne^{(-3)}\log(xe+d)-\frac{1}{9}(xe+d$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f+g/x)^2*x^2*(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
```

```
[Out] 1/3*(x*e + d)^3*b*f^2*n*e^(-3)*log(x*e + d) - (x*e + d)^2*b*d*f^2*n*e^(-3)*
log(x*e + d) + (x*e + d)*b*d^2*f^2*n*e^(-3)*log(x*e + d) - 1/9*(x*e + d)^3*
b*f^2*n*e^(-3) + 1/2*(x*e + d)^2*b*d*f^2*n*e^(-3) - (x*e + d)*b*d^2*f^2*n*e
^(-3) + (x*e + d)^2*b*f*g*n*e^(-2)*log(x*e + d) - 2*(x*e + d)*b*d*f*g*n*e^(
-2)*log(x*e + d) + 1/3*(x*e + d)^3*b*f^2*e^(-3)*log(c) - (x*e + d)^2*b*d*f^
2*e^(-3)*log(c) + (x*e + d)*b*d^2*f^2*e^(-3)*log(c) - 1/2*(x*e + d)^2*b*f*g
*n*e^(-2) + 2*(x*e + d)*b*d*f*g*n*e^(-2) + 1/3*(x*e + d)^3*a*f^2*e^(-3) - (
x*e + d)^2*a*d*f^2*e^(-3) + (x*e + d)*a*d^2*f^2*e^(-3) + (x*e + d)*b*g^2*n*
e^(-1)*log(x*e + d) + (x*e + d)^2*b*f*g*e^(-2)*log(c) - 2*(x*e + d)*b*d*f*g
```

```
*e^(-2)*log(c) - (x*e + d)*b*g^2*n*e^(-1) + (x*e + d)^2*a*f*g*e^(-2) - 2*(x
*e + d)*a*d*f*g*e^(-2) + (x*e + d)*b*g^2*e^(-1)*log(c) + (x*e + d)*a*g^2*e^
(-1)
```

maple [C] time = 0.34, size = 585, normalized size = 4.88

$$\frac{a f^2x^3}{3}+b g^2x\ln(c)+\frac{b f^2x^3\ln(c)}{3}+\frac{\left(fx+g\right)^3 b\ln\left((ex+d)^n\right)}{3f}+\frac{bd g^2n\ln(ex+d)}{e}+\frac{b d^3f^2n\ln(ex+d)}{3e^3}+\frac{bd f^2n x^2}{6e}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f+g/x)^2*x^2*(b*ln(c*(e*x+d)^n)+a),x)
```

```
[Out] 1/3*f^2*a*x^3+ln(c)*b*g^2*x+1/3*f^2*ln(c)*b*x^3+1/3*(f*x+g)^3*b/f*ln((e*x+d
)^n)-1/6*I*f^2*Pi*b*x^3*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/2
*I*Pi*b*g^2*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/2*I*f*Pi*b*
g*x^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/2*I*f*Pi*b*g*x^2*csgn(I*(e*x+d)^n)*
csgn(I*c*(e*x+d)^n)^2+1/e*ln(e*x+d)*b*d*g^2*n+1/3/e^3*f^2*ln(e*x+d)*b*d^3*n
-1/2*I*Pi*b*g^2*x*csgn(I*c*(e*x+d)^n)^3-1/6*I*f^2*Pi*b*x^3*csgn(I*c*(e*x+d)
^n)^3+1/2*I*Pi*b*g^2*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/2*I*Pi*b*g^2*x*csg
n(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/6*I*f^2*Pi*b*x^3*csgn(I*c)*csgn(I*c*
(e*x+d)^n)^2+1/6*I*f^2*Pi*b*x^3*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/2
*I*f*Pi*b*g*x^2*csgn(I*c*(e*x+d)^n)^3-1/2*I*f*Pi*b*g*x^2*csgn(I*c)*csgn(I*(
e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/6/e*f^2*b*d*n*x^2-1/2*f*b*g*n*x^2-1/3/e^2*f
^2*b*d^2*n*x-b*g^2*n*x+f*a*g*x^2+a*g^2*x+f*ln(c)*b*g*x^2-1/3/f*ln(e*x+d)*b*
g^3*n-1/9*f^2*b*n*x^3+1/e*f*b*d*g*n*x-1/e^2*f*ln(e*x+d)*b*d^2*g*n
```

maxima [A] time = 0.49, size = 187, normalized size = 1.56

$$\frac{1}{3}\,bf^2x^3\log\left((ex+d)^nc\right)+\frac{1}{3}\,af^2x^3-beg^2n\left(\frac{x}{e}-\frac{d\log(ex+d)}{e^2}\right)+\frac{1}{18}\,bef^2n\left(\frac{6\,d^3\log(ex+d)}{e^4}-\frac{2\,e^2x^3-3\,dex^2+6\,}{e^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f+g/x)^2*x^2*(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
```

```
[Out] 1/3*b*f^2*x^3*log((e*x + d)^n*c) + 1/3*a*f^2*x^3 - b*e*g^2*n*(x/e - d*log(e
*x + d)/e^2) + 1/18*b*e*f^2*n*(6*d^3*log(e*x + d)/e^4 - (2*e^2*x^3 - 3*d*e*
x^2 + 6*d^2*x)/e^3) - 1/2*b*e*f*g*n*(2*d^2*log(e*x + d)/e^3 + (e*x^2 - 2*d*
x)/e^2) + b*f*g*x^2*log((e*x + d)^n*c) + a*f*g*x^2 + b*g^2*x*log((e*x + d)^
n*c) + a*g^2*x
```

mupad [B] time = 0.30, size = 212, normalized size = 1.77

$$x^2\left(\frac{f\,\left(a\,d\,f+2\,a\,e\,g-b\,e\,g\,n\right)}{2\,e}-\frac{d\,f^2\,\left(3\,a-b\,n\right)}{6\,e}\right)+x\left(\frac{3\,a\,e\,g^2-3\,b\,e\,g^2\,n+6\,a\,d\,f\,g}{3\,e}-\frac{d\,\left(\frac{f\,\left(a\,d\,f+2\,a\,e\,g-b\,e\,g\,n\right)}{e}-\frac{d\,f}{}\right.}{e}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(f + g/x)^2*(a + b*log(c*(d + e*x)^n)),x)
```

```
[Out] x^2*((f*(a*d*f + 2*a*e*g - b*e*g*n))/(2*e) - (d*f^2*(3*a - b*n))/(6*e)) + x
*((3*a*e*g^2 - 3*b*e*g^2*n + 6*a*d*f*g)/(3*e) - (d*((f*(a*d*f + 2*a*e*g - b
*e*g*n))/e - (d*f^2*(3*a - b*n))/(3*e)))/e) + log(c*(d + e*x)^n)*((b*f^2*x^
3)/3 + b*g^2*x + b*f*g*x^2) + (f^2*x^3*(3*a - b*n))/9 + (log(d + e*x)*(b*d^
3*f^2*n + 3*b*d*e^2*g^2*n - 3*b*d^2*e*f*g*n))/(3*e^3)
```

sympy [A] time = 16.43, size = 277, normalized size = 2.31

$$\begin{cases} \frac{af^2x^3}{3} + afgx^2 + ag^2x + \frac{bd^3f^2n\log(d+ex)}{3e^3} - \frac{bd^2f^2nx}{3e^2} - \frac{bd^2fgn\log(d+ex)}{e^2} + \frac{bdf^2nx^2}{6e} + \frac{bdfgnx}{e} + \frac{bdg^2n\log(d+ex)}{e} + \frac{bf^2nx^3\,\mathrm{l}}{} \\ \left(a + b\log(cd^n)\right)\left(\frac{f^2x^3}{3} + fgx^2 + g^2x\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f+g/x)**2*x**2*(a+b*ln(c*(e*x+d)**n)),x)
```

```
[Out] Piecewise((a*f**2*x**3/3 + a*f*g*x**2 + a*g**2*x + b*d**3*f**2*n*log(d + e*
x)/(3*e**3) - b*d**2*f**2*n*x/(3*e**2) - b*d**2*f*g*n*log(d + e*x)/e**2 + b
*d*f**2*n*x**2/(6*e) + b*d*f*g*n*x/e + b*d*g**2*n*log(d + e*x)/e + b*f**2*n
*x**3*log(d + e*x)/3 - b*f**2*n*x**3/9 + b*f**2*x**3*log(c)/3 + b*f*g*n*x**
2*log(d + e*x) - b*f*g*n*x**2/2 + b*f*g*x**2*log(c) + b*g**2*n*x*log(d + e*
x) - b*g**2*n*x + b*g**2*x*log(c), Ne(e, 0)), ((a + b*log(c*d**n))*(f**2*x*
*3/3 + f*g*x**2 + g**2*x), True))
```

3.305 $\int \left(f+\frac{g}{x}\right)^3 x^3 \left(a+b\log\left(c(d+ex)^n\right)\right)\,dx$

Optimal. Leaf size=149

$$\frac{(fx+g)^4\left(a+b\log\left(c(d+ex)^n\right)\right)}{4f}-\frac{bn(df-eg)^4\log(d+ex)}{4e^4f}+\frac{bnx(df-eg)^3}{4e^3}-\frac{bn(fx+g)^2(df-eg)^2}{8e^2f}+\frac{bn(fx+g)}{12}$$

```
[Out] 1/4*b*(d*f-e*g)^3*n*x/e^3-1/8*b*(d*f-e*g)^2*n*(f*x+g)^2/e^2/f+1/12*b*(d*f-e
*g)*n*(f*x+g)^3/e/f-1/16*b*n*(f*x+g)^4/f-1/4*b*(d*f-e*g)^4*n*ln(e*x+d)/e^4/
f+1/4*(f*x+g)^4*(a+b*ln(c*(e*x+d)^n))/f
```

Rubi [A] time = 0.12, antiderivative size = 149, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {2412, 2395, 43}

$$\frac{(fx+g)^4\left(a+b\log\left(c(d+ex)^n\right)\right)}{4f}+\frac{bnx(df-eg)^3}{4e^3}-\frac{bn(fx+g)^2(df-eg)^2}{8e^2f}-\frac{bn(df-eg)^4\log(d+ex)}{4e^4f}+\frac{bn(fx+g)}{12}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g/x)^3*x^3*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] (b*(d*f - e*g)^3*n*x)/(4*e^3) - (b*(d*f - e*g)^2*n*(g + f*x)^2)/(8*e^2*f) +
 (b*(d*f - e*g)*n*(g + f*x)^3)/(12*e*f) - (b*n*(g + f*x)^4)/(16*f) - (b*(d*
f - e*g)^4*n*Log[d + e*x])/(4*e^4*f) + ((g + f*x)^4*(a + b*Log[c*(d + e*x)^
n]))/(4*f)
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2412

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)/(x_))^(q_.)*(x_)^(m_.), x_Symbol] :> Int[(g + f*x)^q*(a + b*Log[c*(d + e*
x)^n])^p, x] /; FreeQ[{a, b, c, d, e, f, g, m, n, p, q}, x] && EqQ[m, q] &&
 IntegerQ[q]
```

Rubi steps

$$\int \left(f+\frac{g}{x}\right)^3 x^3 \left(a+b\log\left(c(d+ex)^n\right)\right)\,dx = \int (g+fx)^3\left(a+b\log\left(c(d+ex)^n\right)\right)\,dx$$
$$= \frac{(g+fx)^4\left(a+b\log\left(c(d+ex)^n\right)\right)}{4f} - \frac{(ben)\int \frac{(g+fx)^4}{d+ex}\,dx}{4f}$$
$$= \frac{(g+fx)^4\left(a+b\log\left(c(d+ex)^n\right)\right)}{4f} - \frac{(ben)\int \left(\frac{f(-df+eg)^3}{e^4} + \frac{(-df+eg)^4}{e^4(d+ex)}\right.}{}$$
$$= \frac{b(df-eg)^3nx}{4e^3} - \frac{b(df-eg)^2n(g+fx)^2}{8e^2f} + \frac{b(df-eg)n(g+fx)^3}{12ef}$$

Mathematica [A] time = 0.22, size = 226, normalized size = 1.52

$$\frac{ex\left(12ae^3\left(f^3x^3+4f^2gx^2+6fg^2x+4g^3\right)+bn\left(12d^3f^3-6d^2ef^2(fx+8g)+4de^2f\left(f^2x^2+6fgx+18g^2\right)-\left(\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g/x)^3*x^3*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] (e*x*(12*a*e^3*(4*g^3 + 6*f*g^2*x + 4*f^2*g*x^2 + f^3*x^3) + b*n*(12*d^3*f^
3 - 6*d^2*e*f^2*(8*g + f*x) + 4*d*e^2*f*(18*g^2 + 6*f*g*x + f^2*x^2) - e^3*
(48*g^3 + 36*f*g^2*x + 16*f^2*g*x^2 + 3*f^3*x^3))) - 12*b*d^2*f*(d^2*f^2 -
4*d*e*f*g + 6*e^2*g^2)*n*Log[d + e*x] + 12*b*e^3*(4*d*g^3 + e*x*(4*g^3 + 6*
f*g^2*x + 4*f^2*g*x^2 + f^3*x^3))*Log[c*(d + e*x)^n])/(48*e^4)
```

fricas [B] time = 0.45, size = 336, normalized size = 2.26

$$-\frac{3\left(be^4f^3n-4\,ae^4f^3\right)x^4-4\left(12\,ae^4f^2g+\left(bde^3f^3-4\,be^4f^2g\right)n\right)x^3-6\left(12\,ae^4fg^2-\left(bd^2e^2f^3-4\,bde^3f^2g+6\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f+g/x)^3*x^3*(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
```

```
[Out] -1/48*(3*(b*e^4*f^3*n - 4*a*e^4*f^3)*x^4 - 4*(12*a*e^4*f^2*g + (b*d*e^3*f^3
 - 4*b*e^4*f^2*g)*n)*x^3 - 6*(12*a*e^4*f*g^2 - (b*d^2*e^2*f^3 - 4*b*d*e^3*f
^2*g + 6*b*e^4*f*g^2)*n)*x^2 - 12*(4*a*e^4*g^3 + (b*d^3*e*f^3 - 4*b*d^2*e^2
*f^2*g + 6*b*d*e^3*f*g^2 - 4*b*e^4*g^3)*n)*x - 12*(b*e^4*f^3*n*x^4 + 4*b*e^
4*f^2*g*n*x^3 + 6*b*e^4*f*g^2*n*x^2 + 4*b*e^4*g^3*n*x - (b*d^4*f^3 - 4*b*d^
3*e*f^2*g + 6*b*d^2*e^2*f*g^2 - 4*b*d*e^3*g^3)*n)*log(e*x + d) - 12*(b*e^4*
f^3*x^4 + 4*b*e^4*f^2*g*x^3 + 6*b*e^4*f*g^2*x^2 + 4*b*e^4*g^3*x)*log(c))/e^
4
```

giac [B] time = 0.28, size = 780, normalized size = 5.23

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f+g/x)^3*x^3*(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
```

```
[Out] 1/4*(x*e + d)^4*b*f^3*n*e^(-4)*log(x*e + d) - (x*e + d)^3*b*d*f^3*n*e^(-4)*
log(x*e + d) + 3/2*(x*e + d)^2*b*d^2*f^3*n*e^(-4)*log(x*e + d) - (x*e + d)*
b*d^3*f^3*n*e^(-4)*log(x*e + d) - 1/16*(x*e + d)^4*b*f^3*n*e^(-4) + 1/3*(x*
e + d)^3*b*d*f^3*n*e^(-4) - 3/4*(x*e + d)^2*b*d^2*f^3*n*e^(-4) + (x*e + d)*
b*d^3*f^3*n*e^(-4) + (x*e + d)^3*b*f^2*g*n*e^(-3)*log(x*e + d) - 3*(x*e + d
)^2*b*d*f^2*g*n*e^(-3)*log(x*e + d) + 3*(x*e + d)*b*d^2*f^2*g*n*e^(-3)*log(
```

```
x*e + d) + 1/4*(x*e + d)^4*b*f^3*e^(-4)*log(c) - (x*e + d)^3*b*d*f^3*e^(-4)
*log(c) + 3/2*(x*e + d)^2*b*d^2*f^3*e^(-4)*log(c) - (x*e + d)*b*d^3*f^3*e^(
-4)*log(c) - 1/3*(x*e + d)^3*b*f^2*g*n*e^(-3) + 3/2*(x*e + d)^2*b*d*f^2*g*n
*e^(-3) - 3*(x*e + d)*b*d^2*f^2*g*n*e^(-3) + 1/4*(x*e + d)^4*a*f^3*e^(-4) -
 (x*e + d)^3*a*d*f^3*e^(-4) + 3/2*(x*e + d)^2*a*d^2*f^3*e^(-4) - (x*e + d)*
a*d^3*f^3*e^(-4) + 3/2*(x*e + d)^2*b*f*g^2*n*e^(-2)*log(x*e + d) - 3*(x*e +
 d)*b*d*f*g^2*n*e^(-2)*log(x*e + d) + (x*e + d)^3*b*f^2*g*e^(-3)*log(c) - 3
*(x*e + d)^2*b*d*f^2*g*e^(-3)*log(c) + 3*(x*e + d)*b*d^2*f^2*g*e^(-3)*log(c
) - 3/4*(x*e + d)^2*b*f*g^2*n*e^(-2) + 3*(x*e + d)*b*d*f*g^2*n*e^(-2) + (x*
e + d)^3*a*f^2*g*e^(-3) - 3*(x*e + d)^2*a*d*f^2*g*e^(-3) + 3*(x*e + d)*a*d^
2*f^2*g*e^(-3) + (x*e + d)*b*g^3*n*e^(-1)*log(x*e + d) + 3/2*(x*e + d)^2*b*
f*g^2*e^(-2)*log(c) - 3*(x*e + d)*b*d*f*g^2*e^(-2)*log(c) - (x*e + d)*b*g^3
*n*e^(-1) + 3/2*(x*e + d)^2*a*f*g^2*e^(-2) - 3*(x*e + d)*a*d*f*g^2*e^(-2) +
 (x*e + d)*b*g^3*e^(-1)*log(c) + (x*e + d)*a*g^3*e^(-1)
```

maple [C] time = 0.36, size = 836, normalized size = 5.61

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f+g/x)^3*x^3*(b*ln(c*(e*x+d)^n)+a),x)
```

```
[Out] 1/4*f^3*a*x^4+1/4*f^3*ln(c)*b*x^4+ln(c)*b*g^3*x+1/4*(f*x+g)^4*b/f*ln((e*x+d
)^n)+3/4*I*f*Pi*b*g^2*x^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+3/2/e*f*b*d*g^2*n
*x+1/2/e*f^2*b*d*g*n*x^2-1/e^2*f^2*b*d^2*g*n*x-3/2/e^2*f*ln(e*x+d)*b*d^2*g^
2*n+3/2*f*a*g^2*x^2-1/16*f^3*b*n*x^4+f^2*a*g*x^3+a*g^3*x-1/4/f*ln(e*x+d)*b*
g^4*n+f^2*ln(c)*b*g*x^3+3/2*f*ln(c)*b*g^2*x^2+1/e^3*f^2*ln(e*x+d)*b*d^3*g*n
+3/4*I*f*Pi*b*g^2*x^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/8*I*f^3*Pi*
b*x^4*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/2*I*f^2*Pi*b*g*x^3*
csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/2*I*f^2*Pi*b*g*x^3*csgn(I*c)*csgn(I*(e*x+
d)^n)*csgn(I*c*(e*x+d)^n)-3/4*I*f*Pi*b*g^2*x^2*csgn(I*c)*csgn(I*(e*x+d)^n)*
csgn(I*c*(e*x+d)^n)-1/2*I*Pi*b*g^3*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(
e*x+d)^n)-3/4*f*b*g^2*n*x^2+1/12/e*f^3*b*d*n*x^3-1/3*f^2*b*g*n*x^3-1/8/e^2*
f^3*b*d^2*n*x^2+1/4/e^3*f^3*b*d^3*n*x-b*g^3*n*x+1/e*ln(e*x+d)*b*d*g^3*n-1/4
/e^4*f^3*ln(e*x+d)*b*d^4*n-1/2*I*Pi*b*g^3*x*csgn(I*c*(e*x+d)^n)^3-1/8*I*f^3
*Pi*b*x^4*csgn(I*c*(e*x+d)^n)^3+1/8*I*f^3*Pi*b*x^4*csgn(I*(e*x+d)^n)*csgn(I
*c*(e*x+d)^n)^2-1/2*I*f^2*Pi*b*g*x^3*csgn(I*c*(e*x+d)^n)^3-3/4*I*f*Pi*b*g^2
*x^2*csgn(I*c*(e*x+d)^n)^3+1/8*I*f^3*Pi*b*x^4*csgn(I*c)*csgn(I*c*(e*x+d)^n)
^2+1/2*I*Pi*b*g^3*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/2*I*Pi*b*g^3*x*csgn(I
*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/2*I*f^2*Pi*b*g*x^3*csgn(I*(e*x+d)^n)*cs
gn(I*c*(e*x+d)^n)^2
```

maxima [B] time = 0.51, size = 284, normalized size = 1.91

$$\frac{1}{4}bf^3x^4\log\left((ex+d)^n c\right)+\frac{1}{4}af^3x^4+bf^2gx^3\log\left((ex+d)^n c\right)+af^2gx^3-beg^3n\left(\frac{x}{e}-\frac{d\log(ex+d)}{e^2}\right)-\frac{1}{48}bef^3n\left(\frac{12d^4}{\cdots}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f+g/x)^3*x^3*(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
```

```
[Out] 1/4*b*f^3*x^4*log((e*x + d)^n*c) + 1/4*a*f^3*x^4 + b*f^2*g*x^3*log((e*x + d
)^n*c) + a*f^2*g*x^3 - b*e*g^3*n*(x/e - d*log(e*x + d)/e^2) - 1/48*b*e*f^3*
n*(12*d^4*log(e*x + d)/e^5 + (3*e^3*x^4 - 4*d*e^2*x^3 + 6*d^2*e*x^2 - 12*d^
3*x)/e^4) + 1/6*b*e*f^2*g*n*(6*d^3*log(e*x + d)/e^4 - (2*e^2*x^3 - 3*d*e*x^
2 + 6*d^2*x)/e^3) - 3/4*b*e*f*g^2*n*(2*d^2*log(e*x + d)/e^3 + (e*x^2 - 2*d*
x)/e^2) + 3/2*b*f*g^2*x^2*log((e*x + d)^n*c) + 3/2*a*f*g^2*x^2 + b*g^3*x*lo
g((e*x + d)^n*c) + a*g^3*x
```

mupad [B] time = 0.37, size = 352, normalized size = 2.36

$$x\left(\frac{4\,a\,e\,g^3+12\,a\,d\,f\,g^2-4\,b\,e\,g^3\,n}{4\,e}+\frac{d\left(\frac{d\left(\frac{f^2\left(a\,d\,f+3\,a\,e\,g-b\,e\,g\,n\right)}{e}-\frac{d\,f^3\,(4\,a-b\,n)}{4\,e}\right)}{e}-\frac{3\,f\,g\left(2\,a\,d\,f+2\,a\,e\,g-b\,e\,g\,n\right)}{2\,e}\right)}{e}\right)+x^3\left(\frac{f^2\,\left(a\,d\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(f + g/x)^3*(a + b*log(c*(d + e*x)^n)),x)
```

```
[Out] x*((4*a*e*g^3 + 12*a*d*f*g^2 - 4*b*e*g^3*n)/(4*e) + (d*((d*((f^2*(a*d*f + 3
*a*e*g - b*e*g*n))/e - (d*f^3*(4*a - b*n))/(4*e)))/e - (3*f*g*(2*a*d*f + 2*
a*e*g - b*e*g*n))/(2*e)))/e) + x^3*((f^2*(a*d*f + 3*a*e*g - b*e*g*n))/(3*e)
 - (d*f^3*(4*a - b*n))/(12*e)) + log(c*(d + e*x)^n)*((b*f^3*x^4)/4 + b*g^3*
x + (3*b*f*g^2*x^2)/2 + b*f^2*g*x^3) - x^2*((d*((f^2*(a*d*f + 3*a*e*g - b*e
*g*n))/e - (d*f^3*(4*a - b*n))/(4*e)))/(2*e) - (3*f*g*(2*a*d*f + 2*a*e*g -
b*e*g*n))/(4*e)) - (log(d + e*x)*(b*d^4*f^3*n - 4*b*d*e^3*g^3*n - 4*b*d^3*e
*f^2*g*n + 6*b*d^2*e^2*f*g^2*n))/(4*e^4) + (f^3*x^4*(4*a - b*n))/16
```

sympy [A] time = 63.04, size = 450, normalized size = 3.02

$$\begin{cases} \frac{af^3x^4}{4}+af^2gx^3+\frac{3afg^2x^2}{2}+ag^3x-\frac{bd^4f^3n\log{(d+ex)}}{4e^4}+\frac{bd^3f^3nx}{4e^3}+\frac{bd^3f^2gn\log{(d+ex)}}{e^3}-\frac{bd^2f^3nx^2}{8e^2}-\frac{bd^2f^2gnx}{e^2}-\frac{3bd^2fg^2n\log}{2e^2} \\ \left(a+b\log{(cd^n)}\right)\left(\frac{f^3x^4}{4}+f^2gx^3+\frac{3fg^2x^2}{2}+g^3x\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f+g/x)**3*x**3*(a+b*ln(c*(e*x+d)**n)),x)
```

```
[Out] Piecewise((a*f**3*x**4/4 + a*f**2*g*x**3 + 3*a*f*g**2*x**2/2 + a*g**3*x - b
*d**4*f**3*n*log(d + e*x)/(4*e**4) + b*d**3*f**3*n*x/(4*e**3) + b*d**3*f**2
*g*n*log(d + e*x)/e**3 - b*d**2*f**3*n*x**2/(8*e**2) - b*d**2*f**2*g*n*x/e*
*2 - 3*b*d**2*f*g**2*n*log(d + e*x)/(2*e**2) + b*d*f**3*n*x**3/(12*e) + b*d
*f**2*g*n*x**2/(2*e) + 3*b*d*f*g**2*n*x/(2*e) + b*d*g**3*n*log(d + e*x)/e +
 b*f**3*n*x**4*log(d + e*x)/4 - b*f**3*n*x**4/16 + b*f**3*x**4*log(c)/4 + b
*f**2*g*n*x**3*log(d + e*x) - b*f**2*g*n*x**3/3 + b*f**2*g*x**3*log(c) + 3*
b*f*g**2*n*x**2*log(d + e*x)/2 - 3*b*f*g**2*n*x**2/4 + 3*b*f*g**2*x**2*log(
c)/2 + b*g**3*n*x*log(d + e*x) - b*g**3*n*x + b*g**3*x*log(c), Ne(e, 0)), (
(a + b*log(c*d**n))*(f**3*x**4/4 + f**2*g*x**3 + 3*f*g**2*x**2/2 + g**3*x),
 True))
```

3.306 $\int \frac{a+b\log(c(d+ex)^n)}{\left(f+\frac{g}{x}\right)x}\,dx$

Optimal. Leaf size=63

$$\frac{\log\left(-\frac{e(fx+g)}{df-eg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f}+\frac{bn\text{Li}_2\left(\frac{f(d+ex)}{df-eg}\right)}{f}$$

```
[Out] (a+b*ln(c*(e*x+d)^n))*ln(-e*(f*x+g)/(d*f-e*g))/f+b*n*polylog(2,f*(e*x+d)/(d
*f-e*g))/f
```

Rubi [A] time = 0.10, antiderivative size = 63, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {2412, 2394, 2393, 2391}

$$\frac{bn\text{PolyLog}\left(2,\frac{f(d+ex)}{df-eg}\right)}{f}+\frac{\log\left(-\frac{e(fx+g)}{df-eg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/((f + g/x)*x),x]
```

```
[Out] ((a + b*Log[c*(d + e*x)^n])*Log[-((e*(g + f*x))/(d*f - e*g))])/f + (b*n*Pol
yLog[2, (f*(d + e*x))/(d*f - e*g)])/f
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2412

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)/(x_))^(q_.)*(x_)^(m_.), x_Symbol] :> Int[(g + f*x)^q*(a + b*Log[c*(d + e*
x)^n])^p, x] /; FreeQ[{a, b, c, d, e, f, g, m, n, p, q}, x] && EqQ[m, q] &&
 IntegerQ[q]
```

Rubi steps

$$\int \frac{a+b\log(c(d+ex)^n)}{\left(f+\frac{g}{x}\right)x}\,dx = \int \frac{a+b\log(c(d+ex)^n)}{g+fx}\,dx$$
$$= \frac{\left(a+b\log(c(d+ex)^n)\right)\log\left(-\frac{e(g+fx)}{df-eg}\right)}{f} - \frac{(ben)\int \frac{\log\left(\frac{e(g+fx)}{-df+eg}\right)}{d+ex}\,dx}{f}$$
$$= \frac{\left(a+b\log(c(d+ex)^n)\right)\log\left(-\frac{e(g+fx)}{df-eg}\right)}{f} - \frac{(bn)\,\text{Subst}\left(\int \frac{\log\left(1+\frac{fx}{-df+eg}\right)}{x}\,dx, x, d+ex\right)}{f}$$
$$= \frac{\left(a+b\log(c(d+ex)^n)\right)\log\left(-\frac{e(g+fx)}{df-eg}\right)}{f} + \frac{bn\text{Li}_2\left(\frac{f(d+ex)}{df-eg}\right)}{f}$$

Mathematica [A] time = 0.01, size = 62, normalized size = 0.98

$$\frac{\log\left(\frac{e(fx+g)}{eg-df}\right)\left(a+b\log(c(d+ex)^n)\right)}{f} + \frac{bn\text{Li}_2\left(\frac{f(d+ex)}{df-eg}\right)}{f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/((f + g/x)*x),x]
[Out] ((a + b*Log[c*(d + e*x)^n])*Log[(e*(g + f*x))/(-(d*f) + e*g)])/f + (b*n*Pol
yLog[2, (f*(d + e*x))/(d*f - e*g)])/f
```

fricas [F] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b\log\left((ex+d)^n c\right)+a}{fx+g}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(f+g/x)/x,x, algorithm="fricas")
[Out] integral((b*log((e*x + d)^n*c) + a)/(f*x + g), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b\log\left((ex+d)^n c\right)+a}{\left(f+\frac{g}{x}\right)x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(f+g/x)/x,x, algorithm="giac")
[Out] integrate((b*log((e*x + d)^n*c) + a)/((f + g/x)*x), x)
```

maple [C] time = 0.28, size = 261, normalized size = 4.14

$$-\frac{i\pi b\,\text{csgn}(ic)\,\text{csgn}\left(i(ex+d)^n\right)\text{csgn}\left(ic(ex+d)^n\right)\ln\left(fx+g\right)}{2f} + \frac{i\pi b\,\text{csgn}(ic)\,\text{csgn}\left(ic(ex+d)^n\right)^2\ln\left(fx+g\right)}{2f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)/(f+g/x)/x,x)
```

```
[Out] b*ln(f*x+g)/f*ln((e*x+d)^n)-b/f*n*dilog(((f*x+g)*e+d*f-e*g)/(d*f-e*g))-b/f*
n*ln(f*x+g)*ln(((f*x+g)*e+d*f-e*g)/(d*f-e*g))-1/2*I*ln(f*x+g)/f*b*Pi*csgn(I
*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/2*I*ln(f*x+g)/f*b*Pi*csgn(I*c)*
csgn(I*c*(e*x+d)^n)^2+1/2*I*ln(f*x+g)/f*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*
x+d)^n)^2-1/2*I*ln(f*x+g)/f*b*Pi*csgn(I*c*(e*x+d)^n)^3+ln(f*x+g)/f*b*ln(c)+
a*ln(f*x+g)/f
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$b\int \frac{\log\left((ex+d)^n\right)+\log(c)}{fx+g}\,dx+\frac{a\log\left(fx+g\right)}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(f+g/x)/x,x, algorithm="maxima")
```

```
[Out] b*integrate((log((e*x + d)^n) + log(c))/(f*x + g), x) + a*log(f*x + g)/f
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{a+b\,\ln\left(c\,{(d+e\,x)}^n\right)}{x\,\left(f+\frac{g}{x}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/(x*(f + g/x)),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))/(x*(f + g/x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a+b\log\left(c\,(d+ex)^n\right)}{fx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(f+g/x)/x,x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))/(f*x + g), x)
```

3.307 $\int \frac{a+b\log(c(d+ex)^n)}{\left(f+\frac{g}{x}\right)^2 x^2}\,dx$

Optimal. Leaf size=74

$$-\frac{a+b\log\left(c(d+ex)^n\right)}{f(fx+g)}-\frac{ben\log(d+ex)}{f(df-eg)}+\frac{ben\log(fx+g)}{f(df-eg)}$$

```
[Out] -b*e*n*ln(e*x+d)/f/(d*f-e*g)+(-a-b*ln(c*(e*x+d)^n))/f/(f*x+g)+b*e*n*ln(f*x+
g)/f/(d*f-e*g)
```

Rubi [A] time = 0.08, antiderivative size = 74, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {2412, 2395, 36, 31}

$$-\frac{a+b\log\left(c(d+ex)^n\right)}{f(fx+g)}-\frac{ben\log(d+ex)}{f(df-eg)}+\frac{ben\log(fx+g)}{f(df-eg)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/((f + g/x)^2*x^2),x]
```

```
[Out] -((b*e*n*Log[d + e*x])/(f*(d*f - e*g))) - (a + b*Log[c*(d + e*x)^n])/(f*(g
+ f*x)) + (b*e*n*Log[g + f*x])/(f*(d*f - e*g))
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2412

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)/(x_))^(q_.)*(x_)^(m_.), x_Symbol] :> Int[(g + f*x)^q*(a + b*Log[c*(d + e*
x)^n])^p, x] /; FreeQ[{a, b, c, d, e, f, g, m, n, p, q}, x] && EqQ[m, q] &&
 IntegerQ[q]
```

Rubi steps

$$\int \frac{a+b\log\left(c(d+ex)^n\right)}{\left(f+\frac{g}{x}\right)^2 x^2}\,dx = \int \frac{a+b\log\left(c(d+ex)^n\right)}{(g+fx)^2}\,dx$$
$$= -\frac{a+b\log\left(c(d+ex)^n\right)}{f(g+fx)} + \frac{(ben)\int \frac{1}{(d+ex)(g+fx)}\,dx}{f}$$
$$= -\frac{a+b\log\left(c(d+ex)^n\right)}{f(g+fx)} + \frac{(ben)\int \frac{1}{g+fx}\,dx}{df-eg} - \frac{\left(be^2n\right)\int \frac{1}{d+ex}\,dx}{f(df-eg)}$$
$$= -\frac{ben\log(d+ex)}{f(df-eg)} - \frac{a+b\log\left(c(d+ex)^n\right)}{f(g+fx)} + \frac{ben\log(g+fx)}{f(df-eg)}$$

Mathematica [A] time = 0.07, size = 57, normalized size = 0.77

$$\frac{\frac{ben(\log(d+ex)-\log(fx+g))}{eg-df} - \frac{a+b\log(c(d+ex)^n)}{fx+g}}{f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/((f + g/x)^2*x^2),x]
```

```
[Out] (-((a + b*Log[c*(d + e*x)^n])/(g + f*x)) + (b*e*n*(Log[d + e*x] - Log[g + f
*x]))/(-(d*f) + e*g))/f
```

fricas [A] time = 0.49, size = 95, normalized size = 1.28

$$-\frac{adf - aeg + \left(befnx + bdfn\right)\log\left(ex+d\right) - \left(befnx + begn\right)\log\left(fx+g\right) + \left(bdf - beg\right)\log(c)}{df^2g - efg^2 + \left(df^3 - ef^2g\right)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(f+g/x)^2/x^2,x, algorithm="fricas")
```

```
[Out] -(a*d*f - a*e*g + (b*e*f*n*x + b*d*f*n)*log(e*x + d) - (b*e*f*n*x + b*e*g*n
)*log(f*x + g) + (b*d*f - b*e*g)*log(c))/(d*f^2*g - e*f*g^2 + (d*f^3 - e*f^
2*g)*x)
```

giac [A] time = 0.18, size = 111, normalized size = 1.50

$$\frac{bfnxe\log\left(fx+g\right) - bfnxe\log\left(xe+d\right) + bgne\log\left(fx+g\right) - bdfn\log\left(xe+d\right) - bdf\log(c) + bge\log(c) - adf}{df^3x - f^2gxe + df^2g - fg^2e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(f+g/x)^2/x^2,x, algorithm="giac")
```

```
[Out] (b*f*n*x*e*log(f*x + g) - b*f*n*x*e*log(x*e + d) + b*g*n*e*log(f*x + g) - b
*d*f*n*log(x*e + d) - b*d*f*log(c) + b*g*e*log(c) - a*d*f + a*g*e)/(d*f^3*x
 - f^2*g*x*e + d*f^2*g - f*g^2*e)
```

maple [C] time = 0.36, size = 354, normalized size = 4.78

$$-\frac{b\ln\left((ex+d)^n\right)}{\left(fx+g\right)f} - \frac{-i\pi bdf\,\mathrm{csgn}\left(ic\right)\mathrm{csgn}\left(i\left(ex+d\right)^n\right)\mathrm{csgn}\left(ic\left(ex+d\right)^n\right) + i\pi bdf\,\mathrm{csgn}\left(ic\right)\mathrm{csgn}\left(ic\left(ex+d\right)^n\right)^2 +$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)/(f+g/x)^2/x^2,x)
```

```
[Out] -b/f/(f*x+g)*ln((e*x+d)^n)-1/2*(I*Pi*b*e*g*csgn(I*c*(e*x+d)^n)^3-I*Pi*b*d*f
*csgn(I*c*(e*x+d)^n)^3-I*Pi*b*e*g*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*Pi*b*d*
f*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*Pi*b*d*f*csgn(I*(e*x+d)^n)*csgn(I*c*(e*
x+d)^n)^2-I*Pi*b*e*g*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*Pi*b*d*f*csg
n(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*Pi*b*e*g*csgn(I*c)*csgn(I*(e
*x+d)^n)*csgn(I*c*(e*x+d)^n)-2*ln(-f*x-g)*b*e*f*n*x+2*ln(e*x+d)*b*e*f*n*x-2
*ln(-f*x-g)*b*e*g*n+2*ln(e*x+d)*b*e*g*n+2*ln(c)*b*d*f-2*ln(c)*b*e*g+2*a*d*f
-2*a*e*g)/(f*x+g)/f/(d*f-e*g)
```

maxima [A] time = 0.47, size = 86, normalized size = 1.16

$$-ben\left(\frac{\log(ex+d)}{df^2-efg}-\frac{\log\left(fx+g\right)}{df^2-efg}\right)-\frac{b\log\left((ex+d)^nc\right)}{f^2x+fg}-\frac{a}{f^2x+fg}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(f+g/x)^2/x^2,x, algorithm="maxima")
```

```
[Out] -b*e*n*(log(e*x + d)/(d*f^2 - e*f*g) - log(f*x + g)/(d*f^2 - e*f*g)) - b*lo
g((e*x + d)^n*c)/(f^2*x + f*g) - a/(f^2*x + f*g)
```

mupad [B] time = 0.90, size = 84, normalized size = 1.14

$$-\frac{a}{x\,f^2+g\,f}-\frac{b\,\ln\left(c\,(d+e\,x)^n\right)}{f\,\left(g+f\,x\right)}+\frac{b\,e\,n\,\mathrm{atan}\left(\frac{e\,g\,2\mathrm{i}+e\,f\,x\,2\mathrm{i}}{d\,f-e\,g}+1\mathrm{i}\right)\,2\mathrm{i}}{f\,\left(d\,f-e\,g\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/(x^2*(f + g/x)^2),x)
```

```
[Out] (b*e*n*atan((e*g*2i + e*f*x*2i)/(d*f - e*g) + 1i)*2i)/(f*(d*f - e*g)) - (b*
log(c*(d + e*x)^n))/(f*(g + f*x)) - a/(f*g + f^2*x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(f+g/x)**2/x**2,x)
```

```
[Out] Exception raised: NotImplementedError
```

3.308 $\int \frac{a+b\log(c(d+ex)^n)}{\left(f+\frac{g}{x}\right)^3 x^3}\,dx$

Optimal. Leaf size=112

$$-\frac{a+b\log\left(c(d+ex)^n\right)}{2f(fx+g)^2}+\frac{be^2n\log(d+ex)}{2f(df-eg)^2}-\frac{be^2n\log(fx+g)}{2f(df-eg)^2}-\frac{ben}{2f(fx+g)(df-eg)}$$

```
[Out] -1/2*b*e*n/f/(d*f-e*g)/(f*x+g)+1/2*b*e^2*n*ln(e*x+d)/f/(d*f-e*g)^2+1/2*(-a-
b*ln(c*(e*x+d)^n))/f/(f*x+g)^2-1/2*b*e^2*n*ln(f*x+g)/f/(d*f-e*g)^2
```

Rubi [A] time = 0.12, antiderivative size = 112, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.111$, Rules used = {2412, 2395, 44}

$$-\frac{a+b\log\left(c(d+ex)^n\right)}{2f(fx+g)^2}+\frac{be^2n\log(d+ex)}{2f(df-eg)^2}-\frac{be^2n\log(fx+g)}{2f(df-eg)^2}-\frac{ben}{2f(fx+g)(df-eg)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/((f + g/x)^3*x^3),x]
```

```
[Out] -(b*e*n)/(2*f*(d*f - e*g)*(g + f*x)) + (b*e^2*n*Log[d + e*x])/(2*f*(d*f - e
*g)^2) - (a + b*Log[c*(d + e*x)^n])/(2*f*(g + f*x)^2) - (b*e^2*n*Log[g + f*
x])/(2*f*(d*f - e*g)^2)
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2412

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)/(x_))^(q_.)*(x_)^(m_.), x_Symbol] :> Int[(g + f*x)^q*(a + b*Log[c*(d + e*
x)^n])^p, x] /; FreeQ[{a, b, c, d, e, f, g, m, n, p, q}, x] && EqQ[m, q] &&
 IntegerQ[q]
```

Rubi steps

$$\int \frac{a+b\log\left(c(d+ex)^n\right)}{\left(f+\frac{g}{x}\right)^3x^3}\,dx=\int \frac{a+b\log\left(c(d+ex)^n\right)}{(g+fx)^3}\,dx$$
$$=-\frac{a+b\log\left(c(d+ex)^n\right)}{2f(g+fx)^2}+\frac{(ben)\int \frac{1}{(d+ex)(g+fx)^2}\,dx}{2f}$$
$$=-\frac{a+b\log\left(c(d+ex)^n\right)}{2f(g+fx)^2}+\frac{(ben)\int \left(\frac{e^2}{(df-eg)^2(d+ex)}+\frac{f}{(df-eg)(g+fx)^2}-\frac{ef}{(df-eg)^2(g+fx)}\right)$$
$$=-\frac{ben}{2f(df-eg)(g+fx)}+\frac{be^2n\log(d+ex)}{2f(df-eg)^2}-\frac{a+b\log\left(c(d+ex)^n\right)}{2f(g+fx)^2}-\frac{be^2n\log(g}{2f(df-}$$

Mathematica [A] time = 0.11, size = 83, normalized size = 0.74

$$-\frac{a+b\log\left(c(d+ex)^n\right)-\frac{ben(fx+g)(e(fx+g)\log(d+ex)-df-e(fx+g)\log(fx+g)+eg)}{(df-eg)^2}}{2f(fx+g)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/((f + g/x)^3*x^3),x]
```

```
[Out] -1/2*(a + b*Log[c*(d + e*x)^n] - (b*e*n*(g + f*x)*(-(d*f) + e*g + e*(g + f*
x)*Log[d + e*x] - e*(g + f*x)*Log[g + f*x]))/(d*f - e*g)^2)/(f*(g + f*x)^2)
```

fricas [B] time = 0.46, size = 272, normalized size = 2.43

$$-\frac{ad^2f^2-2\,adefg+ae^2g^2+\left(bdef^2-be^2fg\right)nx+\left(bdefg-be^2g^2\right)n-\left(be^2f^2nx^2+2\,be^2fgnx-\left(bd^2f^2-2\,bd\right.\right.}{2\left(d^2f^3g^2-2\,def^2g^3+e^2fg^4+\left(d^2f^5-2\,def^4g+\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(f+g/x)^3/x^3,x, algorithm="fricas")
```

```
[Out] -1/2*(a*d^2*f^2 - 2*a*d*e*f*g + a*e^2*g^2 + (b*d*e*f^2 - b*e^2*f*g)*n*x + (
b*d*e*f*g - b*e^2*g^2)*n - (b*e^2*f^2*n*x^2 + 2*b*e^2*f*g*n*x - (b*d^2*f^2
- 2*b*d*e*f*g)*n)*log(e*x + d) + (b*e^2*f^2*n*x^2 + 2*b*e^2*f*g*n*x + b*e^2
*g^2*n)*log(f*x + g) + (b*d^2*f^2 - 2*b*d*e*f*g + b*e^2*g^2)*log(c))/(d^2*f
^3*g^2 - 2*d*e*f^2*g^3 + e^2*f*g^4 + (d^2*f^5 - 2*d*e*f^4*g + e^2*f^3*g^2)*
x^2 + 2*(d^2*f^4*g - 2*d*e*f^3*g^2 + e^2*f^2*g^3)*x)
```

giac [B] time = 0.19, size = 302, normalized size = 2.70

$$-\frac{bf^2nx^2e^2\log\left(fx+g\right)-bf^2nx^2e^2\log\left(xe+d\right)+bdf^2nxe+2\,bfgnxe^2\log\left(fx+g\right)+bd^2f^2n\log\left(xe+d\right)-}{2\left(d^2f^5x^2-2\,df^4\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(f+g/x)^3/x^3,x, algorithm="giac")
```

```
[Out] -1/2*(b*f^2*n*x^2*e^2*log(f*x + g) - b*f^2*n*x^2*e^2*log(x*e + d) + b*d*f^2
*n*x*e + 2*b*f*g*n*x*e^2*log(f*x + g) + b*d^2*f^2*n*log(x*e + d) - 2*b*f*g*
n*x*e^2*log(x*e + d) - 2*b*d*f*g*n*e*log(x*e + d) - b*f*g*n*x*e^2 + b*d*f*g
*n*e + b*g^2*n*e^2*log(f*x + g) + b*d^2*f^2*log(c) - 2*b*d*f*g*e*log(c) + a
*d^2*f^2 - b*g^2*n*e^2 - 2*a*d*f*g*e + b*g^2*e^2*log(c) + a*g^2*e^2)/(d^2*f
^5*x^2 - 2*d*f^4*g*x^2*e + 2*d^2*f^4*g*x + f^3*g^2*x^2*e^2 - 4*d*f^3*g^2*x*
e + d^2*f^3*g^2 + 2*f^2*g^3*x*e^2 - 2*d*f^2*g^3*e + f*g^4*e^2)
```

maple [C] time = 0.42, size = 633, normalized size = 5.65

$$-\frac{b\ln\left((ex+d)^n\right)}{2\left(fx+g\right)^2 f}-\frac{2a\,d^2f^2+2bdefgn-2b\,e^2fgnx-2b\,e^2g^2n+2a\,e^2g^2+2b\,d^2f^2\ln(c)+2b\,e^2g^2\ln(c)-4adefg}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)/(f+g/x)^3/x^3,x)
```

```
[Out] -1/2*b/f/(f*x+g)^2*ln((e*x+d)^n)-1/4*(2*I*Pi*b*d*e*f*g*csgn(I*c)*csgn(I*(e*
x+d)^n)*csgn(I*c*(e*x+d)^n)-I*Pi*b*d^2*f^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn
(I*c*(e*x+d)^n)+2*a*f^2*d^2+2*b*d*e*f*g*n-2*b*e^2*f*g*n*x-2*b*e^2*g^2*n+2*a
*e^2*g^2+2*ln(c)*b*d^2*f^2+2*ln(c)*b*e^2*g^2-4*a*d*e*f*g+2*ln(f*x+g)*b*e^2*
g^2*n-2*ln(-e*x-d)*b*e^2*g^2*n-I*Pi*b*e^2*g^2*csgn(I*c*(e*x+d)^n)^3+I*Pi*b*
d^2*f^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+2*I*Pi*b*d*e*f*g*csgn(I*c*(e*x+d)^n
)^3-4*b*e^2*f*g*n*x*ln(-e*x-d)-2*I*Pi*b*d*e*f*g*csgn(I*(e*x+d)^n)*csgn(I*c*
(e*x+d)^n)^2+2*ln(f*x+g)*b*e^2*f^2*n*x^2-2*ln(-e*x-d)*b*e^2*f^2*n*x^2-I*Pi*
b*d^2*f^2*csgn(I*c*(e*x+d)^n)^3+2*b*d*e*f^2*n*x+4*ln(f*x+g)*b*e^2*f*g*n*x-I
*Pi*b*e^2*g^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-4*b*d*e*f*g*l
n(c)+I*Pi*b*e^2*g^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*Pi*b*e^2*g^2*csgn(I*(
e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-2*I*Pi*b*d*e*f*g*csgn(I*c)*csgn(I*c*(e*x+d)
^n)^2+I*Pi*b*d^2*f^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2)/(f*x+g)^2/(d*
f-e*g)^2/f
```

maxima [A] time = 0.51, size = 169, normalized size = 1.51

$$\frac{1}{2}ben\left(\frac{e\log\left(ex+d\right)}{d^2f^3-2\,def^2g+e^2fg^2}-\frac{e\log\left(fx+g\right)}{d^2f^3-2\,def^2g+e^2fg^2}-\frac{1}{df^2g-efg^2+\left(df^3-ef^2g\right)x}\right)-\frac{b\log\left((ex+d)^nc\right)}{2\left(f^3x^2+2\,f^2gx+f\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(f+g/x)^3/x^3,x, algorithm="maxima")
```

```
[Out] 1/2*b*e*n*(e*log(e*x + d)/(d^2*f^3 - 2*d*e*f^2*g + e^2*f*g^2) - e*log(f*x +
 g)/(d^2*f^3 - 2*d*e*f^2*g + e^2*f*g^2) - 1/(d*f^2*g - e*f*g^2 + (d*f^3 - e
*f^2*g)*x)) - 1/2*b*log((e*x + d)^n*c)/(f^3*x^2 + 2*f^2*g*x + f*g^2) - 1/2*
a/(f^3*x^2 + 2*f^2*g*x + f*g^2)
```

mupad [B] time = 0.67, size = 173, normalized size = 1.54

$$\frac{b\,e^2\,n\,\mathrm{atanh}\left(\frac{2\,d^2\,f^3-2\,e^2\,f\,g^2}{2\,f\,\left(d\,f-e\,g\right)^2}+\frac{2\,e\,f\,x}{d\,f-e\,g}\right)}{f\,\left(d\,f-e\,g\right)^2}-\frac{b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)}{2\,f\,\left(f^2\,x^2+2\,f\,g\,x+g^2\right)}-\frac{\frac{a\,d\,f-a\,e\,g+b\,e\,g\,n}{d\,f-e\,g}+\frac{b\,e\,f\,n\,x}{d\,f-e\,g}}{2\,f^3\,x^2+4\,f^2\,g\,x+2\,f\,g^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))/(x^3*(f + g/x)^3),x)
```

```
[Out] (b*e^2*n*atanh((2*d^2*f^3 - 2*e^2*f*g^2)/(2*f*(d*f - e*g)^2) + (2*e*f*x)/(d
*f - e*g)))/(f*(d*f - e*g)^2) - (b*log(c*(d + e*x)^n))/(2*f*(g^2 + f^2*x^2
+ 2*f*g*x)) - ((a*d*f - a*e*g + b*e*g*n)/(d*f - e*g) + (b*e*f*n*x)/(d*f - e
*g))/(2*f*g^2 + 2*f^3*x^2 + 4*f^2*g*x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(f+g/x)**3/x**3,x)
```

```
[Out] Timed out
```

3.309 $\int \frac{\log(a+bx)}{c+\frac{d}{x^2}}\,dx$

Optimal. Leaf size=247

$$\frac{\sqrt{d}\,\mathrm{Li}_2\left(\frac{\sqrt{-c}\,(a+bx)}{a\sqrt{-c}-b\sqrt{d}}\right)}{2(-c)^{3/2}}-\frac{\sqrt{d}\,\mathrm{Li}_2\left(\frac{\sqrt{-c}\,(a+bx)}{\sqrt{-c}\,a+b\sqrt{d}}\right)}{2(-c)^{3/2}}-\frac{\sqrt{d}\,\log(a+bx)\log\left(\frac{b\left(\sqrt{d}-\sqrt{-c}\,x\right)}{a\sqrt{-c}+b\sqrt{d}}\right)}{2(-c)^{3/2}}+\frac{\sqrt{d}\,\log(a+bx)\log\left(-\frac{b\left(\sqrt{-c}\,x+\sqrt{d}\right)}{a\sqrt{-c}-b\sqrt{d}}\right)}{2(-c)^{3/2}}$$

```
[Out] -x/c+(b*x+a)*ln(b*x+a)/b/c+1/2*ln(b*x+a)*ln(-b*(x*(-c)^(1/2)+d^(1/2))/(a*(-
c)^(1/2)-b*d^(1/2)))*d^(1/2)/(-c)^(3/2)-1/2*ln(b*x+a)*ln(b*(-x*(-c)^(1/2)+d
^(1/2))/(a*(-c)^(1/2)+b*d^(1/2)))*d^(1/2)/(-c)^(3/2)+1/2*polylog(2,(b*x+a)*
(-c)^(1/2)/(a*(-c)^(1/2)-b*d^(1/2)))*d^(1/2)/(-c)^(3/2)-1/2*polylog(2,(b*x+
a)*(-c)^(1/2)/(a*(-c)^(1/2)+b*d^(1/2)))*d^(1/2)/(-c)^(3/2)
```

Rubi [A] time = 0.34, antiderivative size = 247, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 6, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.375, Rules used = {2409, 2389, 2295, 2394, 2393, 2391}

$$\frac{\sqrt{d}\,\mathrm{PolyLog}\left(2,\frac{\sqrt{-c}\,(a+bx)}{a\sqrt{-c}-b\sqrt{d}}\right)}{2(-c)^{3/2}}-\frac{\sqrt{d}\,\mathrm{PolyLog}\left(2,\frac{\sqrt{-c}\,(a+bx)}{a\sqrt{-c}+b\sqrt{d}}\right)}{2(-c)^{3/2}}-\frac{\sqrt{d}\,\log(a+bx)\log\left(\frac{b\left(\sqrt{d}-\sqrt{-c}\,x\right)}{a\sqrt{-c}+b\sqrt{d}}\right)}{2(-c)^{3/2}}+\frac{\sqrt{d}\,\log(a+bx)\ldots}{2(\ldots}$$

Antiderivative was successfully verified.

```
[In] Int[Log[a + b*x]/(c + d/x^2),x]
```

```
[Out] -(x/c) + ((a + b*x)*Log[a + b*x])/(b*c) - (Sqrt[d]*Log[a + b*x]*Log[(b*(Sqr
t[d] - Sqrt[-c]*x))/(a*Sqrt[-c] + b*Sqrt[d])]])/(2*(-c)^(3/2)) + (Sqrt[d]*Lo
g[a + b*x]*Log[-((b*(Sqrt[d] + Sqrt[-c]*x))/(a*Sqrt[-c] - b*Sqrt[d]))]])/(2*
(-c)^(3/2)) + (Sqrt[d]*PolyLog[2, (Sqrt[-c]*(a + b*x))/(a*Sqrt[-c] - b*Sqrt
[d])]])/(2*(-c)^(3/2)) - (Sqrt[d]*PolyLog[2, (Sqrt[-c]*(a + b*x))/(a*Sqrt[-c
] + b*Sqrt[d])]])/(2*(-c)^(3/2))
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rubi steps

$$\int \frac{\log(a+bx)}{c+\frac{d}{x^2}}\,dx = \int \left(\frac{\log(a+bx)}{c}-\frac{d\log(a+bx)}{c\left(d+cx^2\right)}\right)dx$$

$$=\frac{\int \log(a+bx)\,dx}{c}-\frac{d\int \frac{\log(a+bx)}{d+cx^2}\,dx}{c}$$

$$=\frac{\text{Subst}(\int \log(x)\,dx,x,a+bx)}{bc}-\frac{d\int \left(\frac{\log(a+bx)}{2\sqrt{d}\left(\sqrt{d}-\sqrt{-c}\,x\right)}+\frac{\log(a+bx)}{2\sqrt{d}\left(\sqrt{d}+\sqrt{-c}\,x\right)}\right)dx}{c}$$

$$=-\frac{x}{c}+\frac{(a+bx)\log(a+bx)}{bc}-\frac{\sqrt{d}\int \frac{\log(a+bx)}{\sqrt{d}-\sqrt{-c}\,x}\,dx}{2c}-\frac{\sqrt{d}\int \frac{\log(a+bx)}{\sqrt{d}+\sqrt{-c}\,x}\,dx}{2c}$$

$$=-\frac{x}{c}+\frac{(a+bx)\log(a+bx)}{bc}-\frac{\sqrt{d}\log(a+bx)\log\left(\frac{b\left(\sqrt{d}-\sqrt{-c}\,x\right)}{a\sqrt{-c}+b\sqrt{d}}\right)}{2(-c)^{3/2}}+\frac{\sqrt{d}\log(a+bx)\log\left(-\frac{b(\sqrt{\cdots}}{a\sqrt{\cdots}}\right.}{2(-c)^{3/2}}$$

$$=-\frac{x}{c}+\frac{(a+bx)\log(a+bx)}{bc}-\frac{\sqrt{d}\log(a+bx)\log\left(\frac{b\left(\sqrt{d}-\sqrt{-c}\,x\right)}{a\sqrt{-c}+b\sqrt{d}}\right)}{2(-c)^{3/2}}+\frac{\sqrt{d}\log(a+bx)\log\left(-\frac{b(\sqrt{\cdots}}{a\sqrt{\cdots}}\right.}{2(-c)^{3/2}}$$

$$=-\frac{x}{c}+\frac{(a+bx)\log(a+bx)}{bc}-\frac{\sqrt{d}\log(a+bx)\log\left(\frac{b\left(\sqrt{d}-\sqrt{-c}\,x\right)}{a\sqrt{-c}+b\sqrt{d}}\right)}{2(-c)^{3/2}}+\frac{\sqrt{d}\log(a+bx)\log\left(-\frac{b(\sqrt{\cdots}}{a\sqrt{\cdots}}\right.}{2(-c)^{3/2}}$$

Mathematica [A] time = 0.18, size = 247, normalized size = 1.00

$$\frac{\sqrt{d}\,\text{Li}_2\left(\frac{\sqrt{-c}\,(a+bx)}{a\sqrt{-c}-b\sqrt{d}}\right)}{2(-c)^{3/2}}-\frac{\sqrt{d}\,\text{Li}_2\left(\frac{\sqrt{-c}\,(a+bx)}{\sqrt{-c}\,a+b\sqrt{d}}\right)}{2(-c)^{3/2}}-\frac{\sqrt{d}\log(a+bx)\log\left(\frac{b\left(\sqrt{d}-\sqrt{-c}\,x\right)}{a\sqrt{-c}+b\sqrt{d}}\right)}{2(-c)^{3/2}}+\frac{\sqrt{d}\log(a+bx)\log\left(-\frac{b\left(\sqrt{-c}\,x+\sqrt{d}\right)}{a\sqrt{-c}-b\sqrt{d}}\right)}{2(-c)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[a + b*x]/(c + d/x^2),x]
```

```
[Out] -(x/c) + ((a + b*x)*Log[a + b*x])/(b*c) - (Sqrt[d]*Log[a + b*x]*Log[(b*(Sqr
t[d] - Sqrt[-c]*x))/(a*Sqrt[-c] + b*Sqrt[d])])/(2*(-c)^(3/2)) + (Sqrt[d]*Lo
g[a + b*x]*Log[-((b*(Sqrt[d] + Sqrt[-c]*x))/(a*Sqrt[-c] - b*Sqrt[d]))])/(2*
(-c)^(3/2)) + (Sqrt[d]*PolyLog[2, (Sqrt[-c]*(a + b*x))/(a*Sqrt[-c] - b*Sqrt
[d])])/(2*(-c)^(3/2)) - (Sqrt[d]*PolyLog[2, (Sqrt[-c]*(a + b*x))/(a*Sqrt[-c
] + b*Sqrt[d])])/(2*(-c)^(3/2))
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{x^2\log(bx+a)}{cx^2+d},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)/(c+d/x^2),x, algorithm="fricas")
```

```
[Out] integral(x^2*log(b*x + a)/(c*x^2 + d), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log(bx+a)}{c+\frac{d}{x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)/(c+d/x^2),x, algorithm="giac")
```

```
[Out] integrate(log(b*x + a)/(c + d/x^2), x)
```

maple [A] time = 0.06, size = 248, normalized size = 1.00

$$-\frac{d\ln\left(\frac{ac+\sqrt{-cd}\,b-(bx+a)c}{ac+\sqrt{-cd}\,b}\right)\ln(bx+a)}{2\sqrt{-cd}\,c}+\frac{d\ln\left(\frac{-ac+\sqrt{-cd}\,b+(bx+a)c}{-ac+\sqrt{-cd}\,b}\right)\ln(bx+a)}{2\sqrt{-cd}\,c}-\frac{d\,\mathrm{dilog}\left(\frac{ac+\sqrt{-cd}\,b-(bx+a)c}{ac+\sqrt{-cd}\,b}\right)}{2\sqrt{-cd}\,c}+\frac{d\,\mathrm{dilog}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(b*x+a)/(c+d/x^2),x)
```

```
[Out] 1/c*ln(b*x+a)*x+1/b/c*ln(b*x+a)*a-1/c*x-1/b*a/c-1/2*d/c*ln(b*x+a)/(-c*d)^(1
/2)*ln((b*(-c*d)^(1/2)-(b*x+a)*c+a*c)/(b*(-c*d)^(1/2)+a*c))+1/2*d/c*ln(b*x+
a)/(-c*d)^(1/2)*ln((b*(-c*d)^(1/2)+(b*x+a)*c-a*c)/(b*(-c*d)^(1/2)-a*c))-1/2
*d/c/(-c*d)^(1/2)*dilog((b*(-c*d)^(1/2)-(b*x+a)*c+a*c)/(b*(-c*d)^(1/2)+a*c)
)+1/2*d/c/(-c*d)^(1/2)*dilog((b*(-c*d)^(1/2)+(b*x+a)*c-a*c)/(b*(-c*d)^(1/2)
-a*c))
```

maxima [C] time = 1.24, size = 298, normalized size = 1.21

$$-\left(\frac{d\arctan\left(\frac{cx}{\sqrt{cd}}\right)}{\sqrt{cd}\,c}-\frac{x}{c}\right)\log(bx+a)-\frac{2\,bcx-2\,ac\log(bx+a)+\left(b\arctan\left(\frac{(b^2x+ab)\sqrt{c}\,\sqrt{d}}{a^2c+b^2d},\frac{abcx+a^2c}{a^2c+b^2d}\right)\log\left(cx^2+d\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)/(c+d/x^2),x, algorithm="maxima")
```

```
[Out] -(d*arctan(c*x/sqrt(c*d))/(sqrt(c*d)*c) - x/c)*log(b*x + a) - 1/2*(2*b*c*x
- 2*a*c*log(b*x + a) + (b*arctan2((b^2*x + a*b)*sqrt(c)*sqrt(d)/(a^2*c + b^
2*d), (a*b*c*x + a^2*c)/(a^2*c + b^2*d))*log(c*x^2 + d) - b*arctan(sqrt(c)*
x/sqrt(d))*log((b^2*c*x^2 + 2*a*b*c*x + a^2*c)/(a^2*c + b^2*d)) + I*b*dilog
(-(a*b*c*x + b^2*d + (I*b^2*x - I*a*b)*sqrt(c)*sqrt(d))/(a^2*c + 2*I*a*b*sq
rt(c)*sqrt(d) - b^2*d)) - I*b*dilog(-(a*b*c*x + b^2*d - (I*b^2*x - I*a*b)*s
qrt(c)*sqrt(d))/(a^2*c - 2*I*a*b*sqrt(c)*sqrt(d) - b^2*d)))*sqrt(c)*sqrt(d)
)/(b*c^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln(a+b\,x)}{c+\frac{d}{x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(a + b*x)/(c + d/x^2),x)
```

```
[Out] int(log(a + b*x)/(c + d/x^2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2 \log (a + bx)}{cx^2 + d}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(b*x+a)/(c+d/x**2),x)
```

```
[Out] Integral(x**2*log(a + b*x)/(c*x**2 + d), x)
```

3.310 $\int \frac{x^5\left(a+b\log(c(d+ex)^n)\right)^2}{f+gx^2}\,dx$

Optimal. Leaf size=831

$$\frac{b^2n^2\log^2(d+ex)d^4}{4e^4g}-\frac{bn\log(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)d^4}{2e^4g}-\frac{2b^2n^2xd^3}{e^3g}+\frac{2bn(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right.}{e^4g}$$

```
[Out] -2*a*b*d*f*n*x/e/g^2+2*b^2*d*f*n^2*x/e/g^2-2*b^2*d^3*n^2*x/e^3/g-1/4*b^2*f*
n^2*(e*x+d)^2/e^2/g^2+3/4*b^2*d^2*n^2*(e*x+d)^2/e^4/g-2/9*b^2*d*n^2*(e*x+d)
^3/e^4/g+1/32*b^2*n^2*(e*x+d)^4/e^4/g+1/4*b^2*d^4*n^2*ln(e*x+d)^2/e^4/g-2*b
^2*d*f*n*(e*x+d)*ln(c*(e*x+d)^n)/e^2/g^2+2*b*d^3*n*(e*x+d)*(a+b*ln(c*(e*x+d
)^n))/e^4/g+1/2*b*f*n*(e*x+d)^2*(a+b*ln(c*(e*x+d)^n))/e^2/g^2-3/2*b*d^2*n*(
e*x+d)^2*(a+b*ln(c*(e*x+d)^n))/e^4/g+2/3*b*d*n*(e*x+d)^3*(a+b*ln(c*(e*x+d)^
n))/e^4/g-1/8*b*n*(e*x+d)^4*(a+b*ln(c*(e*x+d)^n))/e^4/g-1/2*b*d^4*n*ln(e*x+
d)*(a+b*ln(c*(e*x+d)^n))/e^4/g+1/4*x^4*(a+b*ln(c*(e*x+d)^n))^2/g+d*f*(e*x+d
)*(a+b*ln(c*(e*x+d)^n))^2/e^2/g^2-1/2*f*(e*x+d)^2*(a+b*ln(c*(e*x+d)^n))^2/e
^2/g^2+1/2*f^2*(a+b*ln(c*(e*x+d)^n))^2*ln(e*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^
(1/2)+d*g^(1/2)))/g^3+1/2*f^2*(a+b*ln(c*(e*x+d)^n))^2*ln(e*((-f)^(1/2)+x*g^
(1/2))/(e*(-f)^(1/2)-d*g^(1/2)))/g^3+b*f^2*n*(a+b*ln(c*(e*x+d)^n))*polylog(
2,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))/g^3+b*f^2*n*(a+b*ln(c*(e*x+d)^
n))*polylog(2,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))/g^3-b^2*f^2*n^2*pol
ylog(3,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))/g^3-b^2*f^2*n^2*polylog(3
,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))/g^3
```

Rubi [A] time = 1.09, antiderivative size = 752, normalized size of antiderivative = 0.90, number of steps used = 28, number of rules used = 19, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.655, Rules used = {2416, 2401, 2389, 2296, 2295, 2390, 2305, 2304, 2398, 2411, 43, 2334, 12, 14, 2301, 2396, 2433, 2374, 6589}

$$\frac{bf^2n\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^3}+\frac{bf^2n\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^3}-$$

Antiderivative was successfully verified.

```
[In] Int[(x^5*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2),x]
```

```
[Out] (-2*a*b*d*f*n*x)/(e*g^2) + (2*b^2*d*f*n^2*x)/(e*g^2) - (2*b^2*d^3*n^2*x)/(e
^3*g) - (b^2*f*n^2*(d + e*x)^2)/(4*e^2*g^2) + (3*b^2*d^2*n^2*(d + e*x)^2)/(
4*e^4*g) - (2*b^2*d*n^2*(d + e*x)^3)/(9*e^4*g) + (b^2*n^2*(d + e*x)^4)/(32*
e^4*g) + (b^2*d^4*n^2*Log[d + e*x]^2)/(4*e^4*g) - (2*b^2*d*f*n*(d + e*x)*Lo
g[c*(d + e*x)^n])/(e^2*g^2) + (b*f*n*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n])
)/(2*e^2*g^2) + (b*n*((48*d^3*(d + e*x))/e^4 - (36*d^2*(d + e*x)^2)/e^4 + (
16*d*(d + e*x)^3)/e^4 - (3*(d + e*x)^4)/e^4 - (12*d^4*Log[d + e*x])/e^4)*(a
 + b*Log[c*(d + e*x)^n]))/(24*g) + (x^4*(a + b*Log[c*(d + e*x)^n])^2)/(4*g)
 + (d*f*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(e^2*g^2) - (f*(d + e*x)^2*
(a + b*Log[c*(d + e*x)^n])^2)/(2*e^2*g^2) + (f^2*(a + b*Log[c*(d + e*x)^n])
^2*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*g^3) + (f^2
*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] -
d*Sqrt[g])])/(2*g^3) + (b*f^2*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((Sq
rt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/g^3 + (b*f^2*n*(a + b*Log[c*(d
 + e*x)^n])*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/g^3 -
 (b^2*f^2*n^2*PolyLog[3, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/
g^3 - (b^2*f^2*n^2*PolyLog[3, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])]
)/g^3
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2334

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*(x_)^(m_.)*((d_) + (e_.)*(x_)^(r_
.))^(q_.), x_Symbol] :> With[{u = IntHide[x^m*(d + e*x^r)^q, x]}, Simp[u*(a
 + b*Log[c*x^n]), x] - Dist[b*n, Int[SimplifyIntegrand[u/x, x], x], x]] /;
FreeQ[{a, b, c, d, e, n, r}, x] && IGtQ[q, 0] && IntegerQ[m] &&  !(EqQ[q, 1
] && EqQ[m, -1])
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
```

```
&& EqQ[d*e, 1]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
```

```
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{x^5 \left(a+b\log\left(c(d+ex)^n\right)\right)^2}{f+gx^2}\,dx = \int \left(-\frac{fx\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{g^2}+\frac{x^3\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{g}+\frac{f^2x\left(a+b\right.}{g^2}\right.$$

$$=-\frac{f\int x\left(a+b\log\left(c(d+ex)^n\right)\right)^2\,dx}{g^2}+\frac{f^2\int\frac{x\left(a+b\log(c(d+ex)^n)\right)^2}{f+gx^2}\,dx}{g^2}+\frac{\int x^3\left(a+\right.}{}$$

$$=\frac{x^4\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{4g}-\frac{f\int\left(-\frac{d\left(a+b\log(c(d+ex)^n)\right)^2}{e}+\frac{(d+ex)\left(a+b\log(c(d+ex)^n)\right)}{e}\right.}{g^2}$$

$$=\frac{x^4\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{4g}-\frac{f^2\int\frac{\left(a+b\log(c(d+ex)^n)\right)^2}{\sqrt{-f}-\sqrt{g}\,x}\,dx}{2g^{5/2}}+\frac{f^2\int\frac{\left(a+b\log(c(d+ex)^n\right.}{\sqrt{-f}+\sqrt{g}\,x}}{2g^{5/2}}$$

$$=\frac{bn\left(\frac{48d^3(d+ex)}{e^4}-\frac{36d^2(d+ex)^2}{e^4}+\frac{16d(d+ex)^3}{e^4}-\frac{3(d+ex)^4}{e^4}-\frac{12d^4\log(d+ex)}{e^4}\right)\left(a+b\log\left(c(\right.\right.}{24g}$$

$$=\frac{bn\left(\frac{48d^3(d+ex)}{e^4}-\frac{36d^2(d+ex)^2}{e^4}+\frac{16d(d+ex)^3}{e^4}-\frac{3(d+ex)^4}{e^4}-\frac{12d^4\log(d+ex)}{e^4}\right)\left(a+b\log\left(c(\right.\right.}{24g}$$

$$=-\frac{2abdfnx}{eg^2}-\frac{b^2fn^2(d+ex)^2}{4e^2g^2}+\frac{bfn(d+ex)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2e^2g^2}+\frac{bn\left(4\right.}{}$$

$$=-\frac{2abdfnx}{eg^2}+\frac{2b^2dfn^2x}{eg^2}-\frac{2b^2d^3n^2x}{e^3g}-\frac{b^2fn^2(d+ex)^2}{4e^2g^2}+\frac{3b^2d^2n^2(d+ex)^2}{4e^4g}-$$

$$=-\frac{2abdfnx}{eg^2}+\frac{2b^2dfn^2x}{eg^2}-\frac{2b^2d^3n^2x}{e^3g}-\frac{b^2fn^2(d+ex)^2}{4e^2g^2}+\frac{3b^2d^2n^2(d+ex)^2}{4e^4g}-$$

Mathematica [C] time = 1.10, size = 862, normalized size = 1.04

$$\frac{72g^2x^4\left(a-bn\log(d+ex)+b\log\left(c(d+ex)^n\right)\right)^2e^4-144fgx^2\left(a-bn\log(d+ex)+b\log\left(c(d+ex)^n\right)\right)^2e^4+144}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^5*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2),x]
```

```
[Out] (-144*e^4*f*g*x^2*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 + 72*e^4*
g^2*x^4*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 + 144*e^4*f^2*(a -
b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2*Log[f + g*x^2] - 12*b*n*(a - b*n
*Log[d + e*x] + b*Log[c*(d + e*x)^n])*(12*e^2*f*g*(e*x*(2*d - e*x) - 2*(d^2
 - e^2*x^2)*Log[d + e*x]) + g^2*(e*x*(-12*d^3 + 6*d^2*e*x - 4*d*e^2*x^2 + 3
*e^3*x^3) + 12*(d^4 - e^4*x^4)*Log[d + e*x]) - 24*e^4*f^2*(Log[d + e*x]*Log
[1 - (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] + PolyLog[2, (Sqrt[g
]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])]) - 24*e^4*f^2*(Log[d + e*x]*Log[
1 - (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] + PolyLog[2, (Sqrt[g]*(d
 + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])])) + b^2*n^2*(-72*e^2*f*g*(e*x*(-6*d + e
*x) + (6*d^2 + 4*d*e*x - 2*e^2*x^2)*Log[d + e*x] - 2*(d^2 - e^2*x^2)*Log[d
+ e*x]^2) - g^2*(e*x*(300*d^3 - 78*d^2*e*x + 28*d*e^2*x^2 - 9*e^3*x^3) - 12
*(25*d^4 + 12*d^3*e*x - 6*d^2*e^2*x^2 + 4*d*e^3*x^3 - 3*e^4*x^4)*Log[d + e*
x] + 72*(d^4 - e^4*x^4)*Log[d + e*x]^2) + 144*e^4*f^2*(Log[d + e*x]^2*Log[1
 - (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyL
og[2, (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sqr
t[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])]) + 144*e^4*f^2*(Log[d + e*x]^
2*Log[1 - (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*P
olyLog[2, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sq
rt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])])))/(288*e^4*g^3)
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b^2x^5\log\left((ex+d)^nc\right)^2+2\,abx^5\log\left((ex+d)^nc\right)+a^2x^5}{gx^2+f},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f),x, algorithm="fricas")
```

```
[Out] integral((b^2*x^5*log((e*x + d)^n*c)^2 + 2*a*b*x^5*log((e*x + d)^n*c) + a^2
*x^5)/(g*x^2 + f), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(b\log\left((ex+d)^nc\right)+a\right)^2x^5}{gx^2+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2*x^5/(g*x^2 + f), x)
```

maple [F] time = 1.30, size = 0, normalized size = 0.00

$$\int\frac{\left(b\ln\left(c\,(ex+d)^n\right)+a\right)^2x^5}{g\,x^2+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*(b*ln(c*(e*x+d)^n)+a)^2/(g*x^2+f),x)
```

```
[Out] int(x^5*(b*ln(c*(e*x+d)^n)+a)^2/(g*x^2+f),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{4}a^2\left(\frac{2f^2\log\left(gx^2+f\right)}{g^3}+\frac{gx^4-2fx^2}{g^2}\right)+\int\frac{b^2x^5\log\left((ex+d)^n\right)^2+2\left(b^2\log(c)+ab\right)x^5\log\left((ex+d)^n\right)+\left(b^2\right.}{gx^2+f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f),x, algorithm="maxima")
```

```
[Out] 1/4*a^2*(2*f^2*log(g*x^2 + f)/g^3 + (g*x^4 - 2*f*x^2)/g^2) + integrate((b^2
*x^5*log((e*x + d)^n)^2 + 2*(b^2*log(c) + a*b)*x^5*log((e*x + d)^n) + (b^2*
log(c)^2 + 2*a*b*log(c))*x^5)/(g*x^2 + f), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^5\,{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^2}{g\,x^2+f} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^5*(a + b*log(c*(d + e*x)^n))^2)/(f + g*x^2),x)
```

```
[Out] int((x^5*(a + b*log(c*(d + e*x)^n))^2)/(f + g*x^2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**5*(a+b*ln(c*(e*x+d)**n))**2/(g*x**2+f),x)
```

```
[Out] Timed out
```

3.311 $\int \frac{x^3(a+b\log(c(d+ex)^n))^2}{f+gx^2} dx$

Optimal. Leaf size=499

$$-\frac{bn(d+ex)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2e^2g}+\frac{(d+ex)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2e^2g}-\frac{d(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{e^2g}-$$

```
[Out] 2*a*b*d*n*x/e/g-2*b^2*d*n^2*x/e/g+1/4*b^2*n^2*(e*x+d)^2/e^2/g+2*b^2*d*n*(e*
x+d)*ln(c*(e*x+d)^n)/e^2/g-1/2*b*n*(e*x+d)^2*(a+b*ln(c*(e*x+d)^n))/e^2/g-d*
(e*x+d)*(a+b*ln(c*(e*x+d)^n))^2/e^2/g+1/2*(e*x+d)^2*(a+b*ln(c*(e*x+d)^n))^2
/e^2/g-1/2*f*(a+b*ln(c*(e*x+d)^n))^2*ln(e*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1
/2)+d*g^(1/2)))/g^2-1/2*f*(a+b*ln(c*(e*x+d)^n))^2*ln(e*((-f)^(1/2)+x*g^(1/2
))/(e*(-f)^(1/2)-d*g^(1/2)))/g^2-b*f*n*(a+b*ln(c*(e*x+d)^n))*polylog(2,-(e*
x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))/g^2-b*f*n*(a+b*ln(c*(e*x+d)^n))*poly
log(2,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))/g^2+b^2*f*n^2*polylog(3,-(e
*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))/g^2+b^2*f*n^2*polylog(3,(e*x+d)*g^(
1/2)/(e*(-f)^(1/2)+d*g^(1/2)))/g^2
```

Rubi [A] time = 0.69, antiderivative size = 499, normalized size of antiderivative = 1.00, number of steps used = 21, number of rules used = 12, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.414, Rules used = {2416, 2401, 2389, 2296, 2295, 2390, 2305, 2304, 2396, 2433, 2374, 6589}

$$-\frac{bfn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^2}-\frac{bfn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^2}+$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2),x]
```

```
[Out] (2*a*b*d*n*x)/(e*g) - (2*b^2*d*n^2*x)/(e*g) + (b^2*n^2*(d + e*x)^2)/(4*e^2*
g) + (2*b^2*d*n*(d + e*x)*Log[c*(d + e*x)^n])/(e^2*g) - (b*n*(d + e*x)^2*(a
 + b*Log[c*(d + e*x)^n]))/(2*e^2*g) - (d*(d + e*x)*(a + b*Log[c*(d + e*x)^n
])^2)/(e^2*g) + ((d + e*x)^2*(a + b*Log[c*(d + e*x)^n])^2)/(2*e^2*g) - (f*(
a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*
Sqrt[g])])/(2*g^2) - (f*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] + Sqr
t[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*g^2) - (b*f*n*(a + b*Log[c*(d + e*x)
^n])*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/g^2 - (b*
f*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] +
 d*Sqrt[g])])/g^2 + (b^2*f*n^2*PolyLog[3, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f]
 - d*Sqrt[g]))])/g^2 + (b^2*f*n^2*PolyLog[3, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f
] + d*Sqrt[g])])/g^2
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
```

```
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
```

```
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{x^3\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{f+gx^2}\,dx = \int\left(\frac{x\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{g} - \frac{fx\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{g\left(f+gx^2\right)}\right)dx$$

$$= \frac{\int x\left(a+b\log\left(c(d+ex)^n\right)\right)^2\,dx}{g} - \frac{f\int \frac{x\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{f+gx^2}\,dx}{g}$$

$$= \frac{\int\left(-\frac{d\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{e} + \frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{e}\right)dx}{g} - \frac{f\int\left(-\frac{\left(a+b\log\left(c(d+ex)\right.\right.}{2\sqrt{g}\left(\sqrt{-f}-\sqrt{g}\right.}\right.}{}$$

$$= \frac{f\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{\sqrt{-f}-\sqrt{g}x}\,dx}{2g^{3/2}} - \frac{f\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{\sqrt{-f}+\sqrt{g}x}\,dx}{2g^{3/2}} + \frac{\int (d+ex)\left(a+b\log\right.}{eg}$$

$$= -\frac{f\left(a+b\log\left(c(d+ex)^n\right)\right)^2\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2g^2} - \frac{f\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g^2}$$

$$= -\frac{d(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{e^2g} + \frac{(d+ex)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2e^2g}$$

$$= \frac{2abdnx}{eg} + \frac{b^2n^2(d+ex)^2}{4e^2g} - \frac{bn(d+ex)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2e^2g} - \frac{d(d+ex}{}$$

$$= \frac{2abdnx}{eg} - \frac{2b^2dn^2x}{eg} + \frac{b^2n^2(d+ex)^2}{4e^2g} + \frac{2b^2dn(d+ex)\log\left(c(d+ex)^n\right)}{e^2g} - \frac{b}{}$$

Mathematica [C] time = 0.54, size = 637, normalized size = 1.28

$$\frac{2bn\left(-2g\left(d^2-e^2x^2\right)\log(d+ex) - 2e^2f\left(\text{Li}_2\left(\frac{\sqrt{g}(d+ex)}{d\sqrt{g}-ie\sqrt{f}}\right) + \log(d+ex)\log\left(1-\frac{\sqrt{g}(d+ex)}{d\sqrt{g}-ie\sqrt{f}}\right)\right) - 2e^2f\left(\text{Li}_2\left(\frac{\sqrt{g}(}{\sqrt{g}d+}\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2),x]
```

```
[Out] (2*e^2*g*x^2*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 - 2*e^2*f*(a -
 b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2*Log[f + g*x^2] + 2*b*n*(a - b*n
```

```
*Log[d + e*x] + b*Log[c*(d + e*x)^n])*(e*g*x*(2*d - e*x) - 2*g*(d^2 - e^2*x
^2)*Log[d + e*x] - 2*e^2*f*(Log[d + e*x]*Log[1 - (Sqrt[g]*(d + e*x))/((-I)*
e*Sqrt[f] + d*Sqrt[g])] + PolyLog[2, (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] +
d*Sqrt[g])]) - 2*e^2*f*(Log[d + e*x]*Log[1 - (Sqrt[g]*(d + e*x))/(I*e*Sqrt[
f] + d*Sqrt[g])] + PolyLog[2, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])
])) - b^2*n^2*(g*(e*x*(6*d - e*x) + (-6*d^2 - 4*d*e*x + 2*e^2*x^2)*Log[d +
e*x] + 2*(d^2 - e^2*x^2)*Log[d + e*x]^2) + 2*e^2*f*(Log[d + e*x]^2*Log[1 -
(Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[
2, (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sqrt[g
]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])]) + 2*e^2*f*(Log[d + e*x]^2*Log[1
 - (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[
2, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sqrt[g]*(
d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])])))/(4*e^2*g^2)
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{b^2x^3\log\left((ex+d)^n c\right)^2+2\,abx^3\log\left((ex+d)^n c\right)+a^2x^3}{gx^2+f},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f),x, algorithm="fricas")
```

```
[Out] integral((b^2*x^3*log((e*x + d)^n*c)^2 + 2*a*b*x^3*log((e*x + d)^n*c) + a^2
*x^3)/(g*x^2 + f), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(b\log\left((ex+d)^n c\right)+a\right)^2x^3}{gx^2+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2*x^3/(g*x^2 + f), x)
```

maple [F] time = 1.57, size = 0, normalized size = 0.00

$$\int\frac{\left(b\ln\left(c\,(ex+d)^n\right)+a\right)^2x^3}{g\,x^2+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(b*ln(c*(e*x+d)^n)+a)^2/(g*x^2+f),x)
```

```
[Out] int(x^3*(b*ln(c*(e*x+d)^n)+a)^2/(g*x^2+f),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{2}\,a^2\left(\frac{x^2}{g}-\frac{f\log\left(gx^2+f\right)}{g^2}\right)+\int\frac{b^2x^3\log\left((ex+d)^n\right)^2+2\left(b^2\log(c)+ab\right)x^3\log\left((ex+d)^n\right)+\left(b^2\log(c)^2+2\,ab\log\right.}{gx^2+f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f),x, algorithm="maxima")
```

```
[Out] 1/2*a^2*(x^2/g - f*log(g*x^2 + f)/g^2) + integrate((b^2*x^3*log((e*x + d)^n
)^2 + 2*(b^2*log(c) + a*b)*x^3*log((e*x + d)^n) + (b^2*log(c)^2 + 2*a*b*log
(c))*x^3)/(g*x^2 + f), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^3 \left(a + b \ln \left(c \left(d + e x\right)^n\right)\right)^2}{g x^2 + f} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(a + b*log(c*(d + e*x)^n))^2)/(f + g*x^2),x)
[Out] int((x^3*(a + b*log(c*(d + e*x)^n))^2)/(f + g*x^2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(a+b*ln(c*(e*x+d)**n))**2/(g*x**2+f),x)
[Out] Timed out
```

3.312 $\int \frac{x\left(a+b\log(c(d+ex)^n)\right)^2}{f+gx^2}\,dx$

Optimal. Leaf size=317

$$\frac{bn\text{Li}_2\left(-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g}+\frac{bn\text{Li}_2\left(\frac{\sqrt{g}(d+ex)}{\sqrt{g}d+e\sqrt{-f}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g}+\frac{\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+\right.}{2g}$$

```
[Out] 1/2*(a+b*ln(c*(e*x+d)^n))^2*ln(e*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(
1/2)))/g+1/2*(a+b*ln(c*(e*x+d)^n))^2*ln(e*((-f)^(1/2)+x*g^(1/2))/(e*(-f)^(1
/2)-d*g^(1/2)))/g+b*n*(a+b*ln(c*(e*x+d)^n))*polylog(2,-(e*x+d)*g^(1/2)/(e*(
-f)^(1/2)-d*g^(1/2)))/g+b*n*(a+b*ln(c*(e*x+d)^n))*polylog(2,(e*x+d)*g^(1/2)
/(e*(-f)^(1/2)+d*g^(1/2)))/g-b^2*n^2*polylog(3,-(e*x+d)*g^(1/2)/(e*(-f)^(1/
2)-d*g^(1/2)))/g-b^2*n^2*polylog(3,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2))
)/g
```

Rubi [A] time = 0.37, antiderivative size = 317, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {2416, 2396, 2433, 2374, 6589}

$$\frac{bn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g}+\frac{bn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g}-\frac{b^2n^2\text{Pc}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2),x]
```

```
[Out] ((a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] +
d*Sqrt[g])])/(2*g) + ((a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] + Sqrt[
g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*g) + (b*n*(a + b*Log[c*(d + e*x)^n])*P
olyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/g + (b*n*(a + b
*Log[c*(d + e*x)^n])*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g]
)])/g - (b^2*n^2*PolyLog[3, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))
])/g - (b^2*n^2*PolyLog[3, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/g
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{x\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{f+gx^2}\,dx = \int \left(-\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2\sqrt{g}\left(\sqrt{-f}-\sqrt{g}\,x\right)}+\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2\sqrt{g}\left(\sqrt{-f}+\sqrt{g}\,x\right)}\right)dx$$

$$= -\frac{\int \frac{\left(a+b\log(c(d+ex)^n)\right)^2}{\sqrt{-f}-\sqrt{g}\,x}\,dx}{2\sqrt{g}}+\frac{\int \frac{\left(a+b\log(c(d+ex)^n)\right)^2}{\sqrt{-f}+\sqrt{g}\,x}\,dx}{2\sqrt{g}}$$

$$= \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2g}+\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2\log\left(\right.}{2g}$$

$$= \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2g}+\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2\log\left(\right.}{2g}$$

$$= \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2g}+\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2\log\left(\right.}{2g}$$

$$= \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2g}+\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2\log\left(\right.}{2g}$$

Mathematica [C] time = 0.28, size = 464, normalized size = 1.46

$$2bn\left(\text{Li}_2\left(\frac{\sqrt{g}(d+ex)}{d\sqrt{g}-ie\sqrt{f}}\right)+\text{Li}_2\left(\frac{\sqrt{g}(d+ex)}{\sqrt{g}d+ie\sqrt{f}}\right)+\log(d+ex)\left(\log\left(1-\frac{\sqrt{g}(d+ex)}{d\sqrt{g}-ie\sqrt{f}}\right)+\log\left(1-\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+ie\sqrt{f}}\right)\right)\right)\left(a+b\log\left(\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2),x]
```

```
[Out] ((a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2*Log[f + g*x^2] + 2*b*n*(a
- b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*(Log[d + e*x]*(Log[1 - (Sqrt[g]*
(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] + Log[1 - (Sqrt[g]*(d + e*x))/(I*e
*Sqrt[f] + d*Sqrt[g])]) + PolyLog[2, (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] +
```

```
d*Sqrt[g])] + PolyLog[2, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])]) +
b^2*n^2*(Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqr
t[g])] + Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g
])] + 2*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqr
t[g])] + 2*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqr
t[g])] - 2*PolyLog[3, (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] - 2
*PolyLog[3, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])]))/(2*g)
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b^2x\log\left((ex+d)^nc\right)^2+2\,abx\log\left((ex+d)^nc\right)+a^2x}{gx^2+f},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f),x, algorithm="fricas")
```

```
[Out] integral((b^2*x*log((e*x + d)^n*c)^2 + 2*a*b*x*log((e*x + d)^n*c) + a^2*x)/
(g*x^2 + f), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(b\log\left((ex+d)^nc\right)+a\right)^2x}{gx^2+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2*x/(g*x^2 + f), x)
```

maple [F] time = 0.98, size = 0, normalized size = 0.00

$$\int\frac{\left(b\ln\left(c\,(ex+d)^n\right)+a\right)^2x}{g\,x^2+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(b*ln(c*(e*x+d)^n)+a)^2/(g*x^2+f),x)
```

```
[Out] int(x*(b*ln(c*(e*x+d)^n)+a)^2/(g*x^2+f),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{a^2\log\left(gx^2+f\right)}{2g}+\int\frac{b^2x\log\left((ex+d)^n\right)^2+2\left(b^2\log(c)+ab\right)x\log\left((ex+d)^n\right)+\left(b^2\log(c)^2+2\,ab\log(c)\right)x}{gx^2+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f),x, algorithm="maxima")
```

```
[Out] 1/2*a^2*log(g*x^2 + f)/g + integrate((b^2*x*log((e*x + d)^n)^2 + 2*(b^2*log
(c) + a*b)*x*log((e*x + d)^n) + (b^2*log(c)^2 + 2*a*b*log(c))*x)/(g*x^2 + f
), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{x\left(a+b\,\ln\left(c\,(d+e\,x)^n\right)\right)^2}{g\,x^2+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(a + b*log(c*(d + e*x)^n))^2)/(f + g*x^2),x)
```

```
[Out] int((x*(a + b*log(c*(d + e*x)^n))^2)/(f + g*x^2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x\left(a+b\log\left(c\left(d+ex\right)^{n}\right)\right)^{2}}{f+gx^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*ln(c*(e*x+d)**n))**2/(g*x**2+f),x)
```

```
[Out] Integral(x*(a + b*log(c*(d + e*x)**n))**2/(f + g*x**2), x)
```

3.313 $\int \frac{(a+b\log(c(d+ex)^n))^2}{x(f+gx^2)}\,dx$

Optimal. Leaf size=397

$$-\frac{bn\text{Li}_2\left(-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f}-\frac{bn\text{Li}_2\left(\frac{\sqrt{g}(d+ex)}{\sqrt{g}d+e\sqrt{-f}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f}-\frac{\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+\right.}{2f}$$

```
[Out] ln(-e*x/d)*(a+b*ln(c*(e*x+d)^n))^2/f-1/2*(a+b*ln(c*(e*x+d)^n))^2*ln(e*((-f)
^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(1/2)))/f-1/2*(a+b*ln(c*(e*x+d)^n))^2*l
n(e*((-f)^(1/2)+x*g^(1/2))/(e*(-f)^(1/2)-d*g^(1/2)))/f+2*b*n*(a+b*ln(c*(e*x
+d)^n))*polylog(2,1+e*x/d)/f-b*n*(a+b*ln(c*(e*x+d)^n))*polylog(2,-(e*x+d)*g
^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))/f-b*n*(a+b*ln(c*(e*x+d)^n))*polylog(2,(e*x
+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))/f-2*b^2*n^2*polylog(3,1+e*x/d)/f+b^2*
n^2*polylog(3,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))/f+b^2*n^2*polylog(
3,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))/f
```

Rubi [A] time = 0.60, antiderivative size = 397, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.172$, Rules used = {2416, 2396, 2433, 2374, 6589}

$$-\frac{bn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f}-\frac{bn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f}+\frac{2bnP}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^2/(x*(f + g*x^2)),x]
```

```
[Out] (Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n])^2)/f - ((a + b*Log[c*(d + e*x)^
n])^2*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*f) - ((a
 + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*S
qrt[g])])/(2*f) - (b*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((Sqrt[g]*(d
+ e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/f - (b*n*(a + b*Log[c*(d + e*x)^n])*Pol
yLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/f + (2*b*n*(a + b*Lo
g[c*(d + e*x)^n])*PolyLog[2, 1 + (e*x)/d])/f + (b^2*n^2*PolyLog[3, -((Sqrt[
g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/f + (b^2*n^2*PolyLog[3, (Sqrt[g]*
(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/f - (2*b^2*n^2*PolyLog[3, 1 + (e*x)/d
])/f
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{x\left(f+gx^2\right)}\,dx=\int\left(\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{fx}-\frac{gx\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{f\left(f+gx^2\right)}\right)dx$$

$$=\frac{\int\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{x}\,dx}{f}-\frac{g\int\frac{x\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{f+gx^2}\,dx}{f}$$

$$=\frac{\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{f}-\frac{g\int\left(-\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2\sqrt{g}\left(\sqrt{-f}-\sqrt{g}\,x\right)}+\frac{\left(a+b\log\left(c(d+ex)\right.\right.}{2\sqrt{g}\left(\sqrt{-f}+\sqrt{g}\right.}\right.}{f}$$

$$=\frac{\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{f}+\frac{\sqrt{g}\int\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{\sqrt{-f}-\sqrt{g}\,x}\,dx}{2f}-\frac{\sqrt{g}\int\frac{\left(a+b\right.}{}}{}$$

$$=\frac{\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{f}-\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\right.}{e\sqrt{-f}+d\sqrt{}}\right.}{2f}$$

$$=\frac{\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{f}-\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\right.}{e\sqrt{-f}+d\sqrt{}}\right.}{2f}$$

$$=\frac{\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{f}-\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\right.}{e\sqrt{-f}+d\sqrt{}}\right.}{2f}$$

$$=\frac{\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{f}-\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\right.}{e\sqrt{-f}+d\sqrt{}}\right.}{2f}$$

Mathematica [C] time = 0.41, size = 576, normalized size = 1.45

$$-\frac{2bn\left(\text{Li}_2\left(\frac{\sqrt{g}(d+ex)}{d\sqrt{g}-ie\sqrt{f}}\right)+\text{Li}_2\left(\frac{\sqrt{g}(d+ex)}{\sqrt{g}d+ie\sqrt{f}}\right)+\log(d+ex)\log\left(1-\frac{\sqrt{g}(d+ex)}{d\sqrt{g}-ie\sqrt{f}}\right)+\log(d+ex)\log\left(1-\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+ie\sqrt{f}}\right)-2\left(\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^2/(x*(f + g*x^2)),x]
```

```
[Out] -1/2*(-2*Log[x]*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 + (a - b*n*
Log[d + e*x] + b*Log[c*(d + e*x)^n])^2*Log[f + g*x^2] + 2*b*n*(a - b*n*Log[
d + e*x] + b*Log[c*(d + e*x)^n])*(Log[d + e*x]*Log[1 - (Sqrt[g]*(d + e*x))/
((-I)*e*Sqrt[f] + d*Sqrt[g])] + Log[d + e*x]*Log[1 - (Sqrt[g]*(d + e*x))/(I
*e*Sqrt[f] + d*Sqrt[g])] + PolyLog[2, (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] +
 d*Sqrt[g])] + PolyLog[2, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] -
2*(Log[-((e*x)/d)]*Log[d + e*x] + PolyLog[2, 1 + (e*x)/d])) + b^2*n^2*(-2*L
og[-((e*x)/d)]*Log[d + e*x]^2 + Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d + e*x))/
((-I)*e*Sqrt[f] + d*Sqrt[g])] + Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d + e*x))/
(I*e*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d + e*x))/
((-I)*e*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d + e*x
))/(I*e*Sqrt[f] + d*Sqrt[g])] - 4*Log[d + e*x]*PolyLog[2, 1 + (e*x)/d] - 2*
PolyLog[3, (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] - 2*PolyLog[3,
 (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] + 4*PolyLog[3, 1 + (e*x)/d]
))/f
```

fricas [F] time = 0.47, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b^2\log\left((ex+d)^n c\right)^2+2\,ab\log\left((ex+d)^n c\right)+a^2}{gx^3+fx},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x/(g*x^2+f),x, algorithm="fricas")
```

```
[Out] integral((b^2*log((e*x + d)^n*c)^2 + 2*a*b*log((e*x + d)^n*c) + a^2)/(g*x^3
 + f*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(b\log\left((ex+d)^n c\right)+a\right)^2}{\left(gx^2+f\right)x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x/(g*x^2+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2/((g*x^2 + f)*x), x)
```

maple [F] time = 1.11, size = 0, normalized size = 0.00

$$\int\frac{\left(b\ln\left(c\,(ex+d)^n\right)+a\right)^2}{\left(g\,x^2+f\right)x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)^2/x/(g*x^2+f),x)
```

```
[Out] int((b*ln(c*(e*x+d)^n)+a)^2/x/(g*x^2+f),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{2}a^2\left(\frac{\log\left(gx^2+f\right)}{f}-\frac{2\log(x)}{f}\right)+\int\frac{b^2\log\left((ex+d)^n\right)^2+b^2\log(c)^2+2\,ab\log(c)+2\left(b^2\log(c)+ab\right)\log\left((e$$
$$gx^3+fx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x/(g*x^2+f),x, algorithm="maxima")
```

```
[Out] -1/2*a^2*(log(g*x^2 + f)/f - 2*log(x)/f) + integrate((b^2*log((e*x + d)^n)^
2 + b^2*log(c)^2 + 2*a*b*log(c) + 2*(b^2*log(c) + a*b)*log((e*x + d)^n))/(g
*x^3 + f*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{\left(a+b\,\ln\left(c\,(d+e\,x)^n\right)\right)^2}{x\,\left(g\,x^2+f\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^2/(x*(f + g*x^2)),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))^2/(x*(f + g*x^2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(a+b\log\left(c\,(d+ex)^n\right)\right)^2}{x\left(f+gx^2\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2/x/(g*x**2+f),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**2/(x*(f + g*x**2)), x)
```

3.314 $\int \frac{\left(a+b\log(c(d+ex)^n)\right)^2}{x^3\left(f+gx^2\right)}\,dx$

Optimal. Leaf size=551

$$-\frac{be^2n\log\left(1-\frac{d}{d+ex}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{d^2f}-\frac{ben(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)}{d^2fx}+\frac{bgn\text{Li}_2\left(-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2}$$

```
[Out] b^2*e^2*n^2*ln(x)/d^2/f-b*e*n*(e*x+d)*(a+b*ln(c*(e*x+d)^n))/d^2/f/x-1/2*(a+
b*ln(c*(e*x+d)^n))^2/f/x^2-g*ln(-e*x/d)*(a+b*ln(c*(e*x+d)^n))^2/f^2-b*e^2*n
*(a+b*ln(c*(e*x+d)^n))*ln(1-d/(e*x+d))/d^2/f+1/2*g*(a+b*ln(c*(e*x+d)^n))^2*
ln(e*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(1/2)))/f^2+1/2*g*(a+b*ln(c*(
e*x+d)^n))^2*ln(e*((-f)^(1/2)+x*g^(1/2))/(e*(-f)^(1/2)-d*g^(1/2)))/f^2+b^2*
e^2*n^2*polylog(2,d/(e*x+d))/d^2/f-2*b*g*n*(a+b*ln(c*(e*x+d)^n))*polylog(2,
1+e*x/d)/f^2+b*g*n*(a+b*ln(c*(e*x+d)^n))*polylog(2,-(e*x+d)*g^(1/2)/(e*(-f)
^(1/2)-d*g^(1/2)))/f^2+b*g*n*(a+b*ln(c*(e*x+d)^n))*polylog(2,(e*x+d)*g^(1/2
)/(e*(-f)^(1/2)+d*g^(1/2)))/f^2+2*b^2*g*n^2*polylog(3,1+e*x/d)/f^2-b^2*g*n^
2*polylog(3,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))/f^2-b^2*g*n^2*polylo
g(3,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))/f^2
```

Rubi [A] time = 0.95, antiderivative size = 575, normalized size of antiderivative = 1.04, number of steps used = 25, number of rules used = 14, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.483, Rules used = {2416, 2398, 2411, 2347, 2344, 2301, 2317, 2391, 2314, 31, 2396, 2433, 2374, 6589}

$$\frac{bgn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2}+\frac{bgn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2}-2bg$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^2/(x^3*(f + g*x^2)),x]
```

```
[Out] (b^2*e^2*n^2*Log[x])/(d^2*f) - (b*e*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n]))
/(d^2*f*x) - (b*e^2*n*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]))/(d^2*f) +
 (e^2*(a + b*Log[c*(d + e*x)^n])^2)/(2*d^2*f) - (a + b*Log[c*(d + e*x)^n])^
2/(2*f*x^2) - (g*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n])^2)/f^2 + (g*(a
+ b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sq
rt[g])])/(2*f^2) + (g*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] + Sqrt[
g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*f^2) + (b*g*n*(a + b*Log[c*(d + e*x)^n
])*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/f^2 + (b*g*
n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d
*Sqrt[g])])/f^2 - (b^2*e^2*n^2*PolyLog[2, 1 + (e*x)/d])/(d^2*f) - (2*b*g*n*
(a + b*Log[c*(d + e*x)^n])*PolyLog[2, 1 + (e*x)/d])/f^2 - (b^2*g*n^2*PolyLo
g[3, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/f^2 - (b^2*g*n^2*Pol
yLog[3, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/f^2 + (2*b^2*g*n^2*P
olyLog[3, 1 + (e*x)/d])/f^2
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2314

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_), x
_Symbol] :> Simp[(x*(d + e*x^r)^(q + 1)*(a + b*Log[c*x^n]))/d, x] - Dist[(b
*n)/d, Int[(d + e*x^r)^(q + 1), x], x] /; FreeQ[{a, b, c, d, e, n, q, r}, x
] && EqQ[r*(q + 1) + 1, 0]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2347

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/x
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^2}{x^3(f+gx^2)}\,dx = \int \left(\frac{(a+b\log(c(d+ex)^n))^2}{fx^3} - \frac{g(a+b\log(c(d+ex)^n))^2}{f^2x} + \frac{g^2x(a+b\log(c\right.$$

$$= \frac{\int \frac{(a+b\log(c(d+ex)^n))^2}{x^3}dx}{f} - \frac{g\int \frac{(a+b\log(c(d+ex)^n))^2}{x}dx}{f^2} + \frac{g^2\int \frac{x(a+b\log(c(d+ex)^n))^2}{f+gx^2}dx}{f^2}$$

$$= -\frac{(a+b\log(c(d+ex)^n))^2}{2fx^2} - \frac{g\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))^2}{f^2} + \frac{g^2\int\left(-\right.}{}$$

$$= -\frac{(a+b\log(c(d+ex)^n))^2}{2fx^2} - \frac{g\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))^2}{f^2} - \frac{g^{3/2}\int}{}$$

$$= -\frac{(a+b\log(c(d+ex)^n))^2}{2fx^2} - \frac{g\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))^2}{f^2} + \frac{g(a+b}{}$$

$$= -\frac{ben(d+ex)(a+b\log(c(d+ex)^n))}{d^2fx} - \frac{(a+b\log(c(d+ex)^n))^2}{2fx^2} - \frac{g\log\left(-\right.}{}$$

$$= \frac{b^2e^2n^2\log(x)}{d^2f} - \frac{ben(d+ex)(a+b\log(c(d+ex)^n))}{d^2fx} - \frac{be^2n\log\left(-\frac{ex}{d}\right)(a+b}{d^2f}$$

$$= \frac{b^2e^2n^2\log(x)}{d^2f} - \frac{ben(d+ex)(a+b\log(c(d+ex)^n))}{d^2fx} - \frac{be^2n\log\left(-\frac{ex}{d}\right)(a+b}{d^2f}$$

Mathematica [C] time = 0.77, size = 811, normalized size = 1.47

$$\frac{b^2\left(d^2g\left(\log\left(1-\frac{\sqrt{g}(d+ex)}{d\sqrt{g}-ie\sqrt{f}}\right)\log^2(d+ex)+2\text{Li}_2\left(\frac{\sqrt{g}(d+ex)}{d\sqrt{g}-ie\sqrt{f}}\right)\log(d+ex)-2\text{Li}_3\left(\frac{\sqrt{g}(d+ex)}{d\sqrt{g}-ie\sqrt{f}}\right)\right)x^2+d^2g\left(\log\left(1-\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^2/(x^3*(f + g*x^2)),x]
```

```
[Out] (-(d^2*f*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2) - 2*d^2*g*x^2*Log
[x]*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 + d^2*g*x^2*(a - b*n*Lo
g[d + e*x] + b*Log[c*(d + e*x)^n])^2*Log[f + g*x^2] - 2*b*n*(a - b*n*Log[d
+ e*x] + b*Log[c*(d + e*x)^n])*(f*(d*e*x + e^2*x^2*Log[x] + (d^2 - e^2*x^2)
*Log[d + e*x]) - d^2*g*x^2*(Log[d + e*x]*Log[(e*(Sqrt[f] + I*Sqrt[g]*x))/(e
*Sqrt[f] - I*d*Sqrt[g])] + PolyLog[2, ((-I)*Sqrt[g]*(d + e*x))/(e*Sqrt[f] -
 I*d*Sqrt[g])]) - d^2*g*x^2*(Log[d + e*x]*Log[(e*(Sqrt[f] - I*Sqrt[g]*x))/(
e*Sqrt[f] + I*d*Sqrt[g])] + PolyLog[2, (I*Sqrt[g]*(d + e*x))/(e*Sqrt[f] + I
*d*Sqrt[g])]) + 2*d^2*g*x^2*(Log[-((e*x)/d)]*Log[d + e*x] + PolyLog[2, 1 +
```

```
(e*x)/d])) + b^2*n^2*(f*(2*e^2*x^2*Log[x] - Log[d + e*x]*(2*e^2*x^2*Log[-((
e*x)/d)] + (d + e*x)*(2*e*x + (d - e*x)*Log[d + e*x])) - 2*e^2*x^2*PolyLog[
2, 1 + (e*x)/d]) + d^2*g*x^2*(Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d + e*x))/((
-I)*e*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d + e*x))
/((-I)*e*Sqrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sqrt[g]*(d + e*x))/((-I)*e*S
qrt[f] + d*Sqrt[g])]) + d^2*g*x^2*(Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d + e*x
))/(I*e*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d + e*x
))/(I*e*Sqrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[
f] + d*Sqrt[g])]) - 2*d^2*g*x^2*(Log[-((e*x)/d)]*Log[d + e*x]^2 + 2*Log[d +
 e*x]*PolyLog[2, 1 + (e*x)/d] - 2*PolyLog[3, 1 + (e*x)/d])))/(2*d^2*f^2*x^2
)
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b^2\log\left((ex+d)^n c\right)^2 + 2\,ab\log\left((ex+d)^n c\right) + a^2}{gx^5 + fx^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x^3/(g*x^2+f),x, algorithm="fricas")
```

```
[Out] integral((b^2*log((e*x + d)^n*c)^2 + 2*a*b*log((e*x + d)^n*c) + a^2)/(g*x^5
 + f*x^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\log\left((ex+d)^n c\right) + a\right)^2}{\left(gx^2 + f\right)x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x^3/(g*x^2+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2/((g*x^2 + f)*x^3), x)
```

maple [F] time = 1.25, size = 0, normalized size = 0.00

$$\int \frac{\left(b\ln\left(c\,(ex+d)^n\right) + a\right)^2}{\left(g\,x^2 + f\right)x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)^2/x^3/(g*x^2+f),x)
```

```
[Out] int((b*ln(c*(e*x+d)^n)+a)^2/x^3/(g*x^2+f),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{2}\,a^2\left(\frac{g\log\left(gx^2+f\right)}{f^2} - \frac{2\,g\log(x)}{f^2} - \frac{1}{fx^2}\right) + \int \frac{b^2\log\left((ex+d)^n\right)^2 + b^2\log(c)^2 + 2\,ab\log(c) + 2\left(b^2\log(c) + ab\right)\mathrm{l}}{gx^5 + fx^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x^3/(g*x^2+f),x, algorithm="maxima")
```

```
[Out] 1/2*a^2*(g*log(g*x^2 + f)/f^2 - 2*g*log(x)/f^2 - 1/(f*x^2)) + integrate((b^
2*log((e*x + d)^n)^2 + b^2*log(c)^2 + 2*a*b*log(c) + 2*(b^2*log(c) + a*b)*l
og((e*x + d)^n))/(g*x^5 + f*x^3), x)
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a+b\,\ln\left(c\,(d+e\,x)^n\right)\right)^2}{x^3\,\left(g\,x^2+f\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^2/(x^3*(f + g*x^2)),x)
[Out] int((a + b*log(c*(d + e*x)^n))^2/(x^3*(f + g*x^2)), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2/x**3/(g*x**2+f),x)
[Out] Timed out
```

3.315 $\int \frac{x^4\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{f+gx^2}\,dx$

Optimal. Leaf size=701

$$\frac{2bd^3n\log(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)}{3e^3g}-\frac{2bd^2n(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)}{e^3g}+\frac{bdn(d+ex)^2\left(a+b\log\left(c(d+\right.\right.}{e^3g}$$

```
[Out] 2*a*b*f*n*x/g^2-2*b^2*f*n^2*x/g^2+2*b^2*d^2*n^2*x/e^2/g-1/2*b^2*d*n^2*(e*x+
d)^2/e^3/g+2/27*b^2*n^2*(e*x+d)^3/e^3/g-1/3*b^2*d^3*n^2*ln(e*x+d)^2/e^3/g+2
*b^2*f*n*(e*x+d)*ln(c*(e*x+d)^n)/e/g^2-2*b*d^2*n*(e*x+d)*(a+b*ln(c*(e*x+d)^
n))/e^3/g+b*d*n*(e*x+d)^2*(a+b*ln(c*(e*x+d)^n))/e^3/g-2/9*b*n*(e*x+d)^3*(a+
b*ln(c*(e*x+d)^n))/e^3/g+2/3*b*d^3*n*ln(e*x+d)*(a+b*ln(c*(e*x+d)^n))/e^3/g+
1/3*x^3*(a+b*ln(c*(e*x+d)^n))^2/g-f*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^2/e/g^2+1
/2*(-f)^(3/2)*(a+b*ln(c*(e*x+d)^n))^2*ln(e*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(
1/2)+d*g^(1/2)))/g^(5/2)-1/2*(-f)^(3/2)*(a+b*ln(c*(e*x+d)^n))^2*ln(e*((-f)^
(1/2)+x*g^(1/2))/(e*(-f)^(1/2)-d*g^(1/2)))/g^(5/2)-b*(-f)^(3/2)*n*(a+b*ln(c
*(e*x+d)^n))*polylog(2,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))/g^(5/2)+b
*(-f)^(3/2)*n*(a+b*ln(c*(e*x+d)^n))*polylog(2,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)
+d*g^(1/2)))/g^(5/2)+b^2*(-f)^(3/2)*n^2*polylog(3,-(e*x+d)*g^(1/2)/(e*(-f)^
(1/2)-d*g^(1/2)))/g^(5/2)-b^2*(-f)^(3/2)*n^2*polylog(3,(e*x+d)*g^(1/2)/(e*(
-f)^(1/2)+d*g^(1/2)))/g^(5/2)
```

Rubi [A] time = 0.92, antiderivative size = 646, normalized size of antiderivative = 0.92, number of steps used = 23, number of rules used = 16, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.552, Rules used = {2416, 2389, 2296, 2295, 2398, 2411, 43, 2334, 12, 14, 2301, 2409, 2396, 2433, 2374, 6589}

$$-\frac{b(-f)^{3/2}n\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^{5/2}}+\frac{b(-f)^{3/2}n\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\log\left(c(d+\right.\right.}{g^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2),x]
```

```
[Out] (2*a*b*f*n*x)/g^2 - (2*b^2*f*n^2*x)/g^2 + (2*b^2*d^2*n^2*x)/(e^2*g) - (b^2*
d*n^2*(d + e*x)^2)/(2*e^3*g) + (2*b^2*n^2*(d + e*x)^3)/(27*e^3*g) - (b^2*d^
3*n^2*Log[d + e*x]^2)/(3*e^3*g) + (2*b^2*f*n*(d + e*x)*Log[c*(d + e*x)^n])/
(e*g^2) - (b*n*((18*d^2*(d + e*x))/e^3 - (9*d*(d + e*x)^2)/e^3 + (2*(d + e*
x)^3)/e^3 - (6*d^3*Log[d + e*x])/e^3)*(a + b*Log[c*(d + e*x)^n]))/(9*g) + (
x^3*(a + b*Log[c*(d + e*x)^n])^2)/(3*g) - (f*(d + e*x)*(a + b*Log[c*(d + e*
x)^n])^2)/(e*g^2) + ((-f)^(3/2)*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-
f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*g^(5/2)) - ((-f)^(3/2)*(a +
b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt
[g])])/(2*g^(5/2)) - (b*(-f)^(3/2)*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2,
-((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/g^(5/2) + (b*(-f)^(3/2)*n
*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*
Sqrt[g])])/g^(5/2) + (b^2*(-f)^(3/2)*n^2*PolyLog[3, -((Sqrt[g]*(d + e*x))/(
e*Sqrt[-f] - d*Sqrt[g]))])/g^(5/2) - (b^2*(-f)^(3/2)*n^2*PolyLog[3, (Sqrt[g
]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/g^(5/2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2334

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*(x_)^(m_.)*((d_) + (e_.)*(x_)^(r_
.))^(q_.), x_Symbol] :> With[{u = IntHide[x^m*(d + e*x^r)^q, x]}, Simp[u*(a
 + b*Log[c*x^n]), x] - Dist[b*n, Int[SimplifyIntegrand[u/x, x], x], x]] /;
FreeQ[{a, b, c, d, e, n, r}, x] && IGtQ[q, 0] && IntegerQ[m] &&  !(EqQ[q, 1
] && EqQ[m, -1])
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{x^4 \left(a + b\log\left(c(d+ex)^n\right)\right)^2}{f+gx^2}\,dx = \int \left(-\frac{f\left(a + b\log\left(c(d+ex)^n\right)\right)^2}{g^2} + \frac{x^2\left(a + b\log\left(c(d+ex)^n\right)\right)^2}{g} + \frac{f^2\left(a + b\right.}{g}\right.$$

$$= -\frac{f\int \left(a + b\log\left(c(d+ex)^n\right)\right)^2 dx}{g^2} + \frac{f^2 \int \frac{\left(a+b\log(c(d+ex)^n)\right)^2}{f+gx^2} dx}{g^2} + \frac{\int x^2\left(a + \right.}{}$$

$$= \frac{x^3\left(a + b\log\left(c(d+ex)^n\right)\right)^2}{3g} - \frac{f\,\mathrm{Subst}\left(\int \left(a + b\log\left(cx^n\right)\right)^2 dx, x, d+ex\right)}{eg^2}$$

$$= \frac{x^3\left(a + b\log\left(c(d+ex)^n\right)\right)^2}{3g} - \frac{f(d+ex)\left(a + b\log\left(c(d+ex)^n\right)\right)^2}{eg^2} - \frac{(-f)^{3/2}}{}$$

$$= \frac{2abfnx}{g^2} - \frac{bn\left(\frac{18d^2(d+ex)}{e^3} - \frac{9d(d+ex)^2}{e^3} + \frac{2(d+ex)^3}{e^3} - \frac{6d^3\log(d+ex)}{e^3}\right)\left(a + b\log\left(c(\right.\right.}{9g}$$

$$= \frac{2abfnx}{g^2} - \frac{2b^2fn^2x}{g^2} + \frac{2b^2fn(d+ex)\log\left(c(d+ex)^n\right)}{eg^2} - \frac{bn\left(\frac{18d^2(d+ex)}{e^3} - 9d\right.}{}$$

$$= \frac{2abfnx}{g^2} - \frac{2b^2fn^2x}{g^2} + \frac{2b^2fn(d+ex)\log\left(c(d+ex)^n\right)}{eg^2} - \frac{bn\left(\frac{18d^2(d+ex)}{e^3} - 9d\right.}{}$$

$$= \frac{2abfnx}{g^2} - \frac{2b^2fn^2x}{g^2} + \frac{2b^2d^2n^2x}{e^2g} - \frac{b^2dn^2(d+ex)^2}{2e^3g} + \frac{2b^2n^2(d+ex)^3}{27e^3g} + \frac{2b}{}$$

$$= \frac{2abfnx}{g^2} - \frac{2b^2fn^2x}{g^2} + \frac{2b^2d^2n^2x}{e^2g} - \frac{b^2dn^2(d+ex)^2}{2e^3g} + \frac{2b^2n^2(d+ex)^3}{27e^3g} - \frac{b^2}{}$$

Mathematica [C] time = 1.00, size = 821, normalized size = 1.17

$$\frac{18g^{3/2}x^3\left(a - bn\log(d+ex) + b\log\left(c(d+ex)^n\right)\right)^2 e^3 - 54f\sqrt{g}\,x\left(a - bn\log(d+ex) + b\log\left(c(d+ex)^n\right)\right)^2 e^3 +}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2),x]
```

```
[Out] (-54*e^3*f*Sqrt[g]*x*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 + 18*e
^3*g^(3/2)*x^3*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 + 54*e^3*f^(
3/2)*ArcTan[(Sqrt[g]*x)/Sqrt[f]]*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^
n])^2 + 6*b*n*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*(-18*e^2*f*Sqrt
[g]*(d + e*x)*(-1 + Log[d + e*x]) + g^(3/2)*(e*x*(-6*d^2 + 3*d*e*x - 2*e^2*
x^2) + 6*(d^3 + e^3*x^3)*Log[d + e*x]) + (9*I)*e^3*f^(3/2)*(Log[d + e*x]*Lo
g[1 - (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] + PolyLog[2, (Sqrt[
g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])]) - (9*I)*e^3*f^(3/2)*(Log[d + e
```

```
*x]*Log[1 - (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] + PolyLog[2, (Sq
rt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])])) + b^2*n^2*(-54*e^2*f*Sqrt[g]*
(2*e*x - 2*(d + e*x)*Log[d + e*x] + (d + e*x)*Log[d + e*x]^2) + g^(3/2)*(e*
x*(66*d^2 - 15*d*e*x + 4*e^2*x^2) - 6*(11*d^3 + 6*d^2*e*x - 3*d*e^2*x^2 + 2
*e^3*x^3)*Log[d + e*x] + 18*(d^3 + e^3*x^3)*Log[d + e*x]^2) + (27*I)*e^3*f^
(3/2)*(Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[
g])] + 2*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sq
rt[g])] - 2*PolyLog[3, (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])]) -
 (27*I)*e^3*f^(3/2)*(Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f
] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f
] + d*Sqrt[g])] - 2*PolyLog[3, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g]
)])))/(54*e^3*g^(5/2))
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{b^2x^4\log\left((ex+d)^nc\right)^2+2\,abx^4\log\left((ex+d)^nc\right)+a^2x^4}{gx^2+f},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f),x, algorithm="fricas")
```

```
[Out] integral((b^2*x^4*log((e*x + d)^n*c)^2 + 2*a*b*x^4*log((e*x + d)^n*c) + a^2
*x^4)/(g*x^2 + f), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\log\left((ex+d)^nc\right)+a\right)^2x^4}{gx^2+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2*x^4/(g*x^2 + f), x)
```

maple [F] time = 29.08, size = 0, normalized size = 0.00

$$\int \frac{\left(b\ln\left(c\,(ex+d)^n\right)+a\right)^2x^4}{g\,x^2+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(b*ln(c*(e*x+d)^n)+a)^2/(g*x^2+f),x)
```

```
[Out] int(x^4*(b*ln(c*(e*x+d)^n)+a)^2/(g*x^2+f),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{3}\,a^2\left(\frac{3\,f^2\arctan\left(\frac{gx}{\sqrt{fg}}\right)}{\sqrt{fg}\,g^2}+\frac{gx^3-3\,fx}{g^2}\right)+\int\frac{b^2x^4\log\left((ex+d)^n\right)^2+2\left(b^2\log(c)+ab\right)x^4\log\left((ex+d)^n\right)+\left(b^2\log(\right.}{gx^2+f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f),x, algorithm="maxima")
```

```
[Out] 1/3*a^2*(3*f^2*arctan(g*x/sqrt(f*g))/(sqrt(f*g)*g^2) + (g*x^3 - 3*f*x)/g^2)
 + integrate((b^2*x^4*log((e*x + d)^n)^2 + 2*(b^2*log(c) + a*b)*x^4*log((e*
x + d)^n) + (b^2*log(c)^2 + 2*a*b*log(c))*x^4)/(g*x^2 + f), x)
```

mupad [F]   time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^4 \left(a + b \ln\left(c \left(d + e x\right)^n\right)\right)^2}{g x^2 + f} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(a + b*log(c*(d + e*x)^n))^2)/(f + g*x^2),x)
[Out] int((x^4*(a + b*log(c*(d + e*x)^n))^2)/(f + g*x^2), x)
```

sympy [F(-1)]   time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(a+b*ln(c*(e*x+d)**n))**2/(g*x**2+f),x)
[Out] Timed out
```

3.316 $\int \frac{x^2(a+b\log(c(d+ex)^n))^2}{f+gx^2}\,dx$

Optimal. Leaf size=447

$$-\frac{b\sqrt{-f}\,n\text{Li}_2\left(-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)(a+b\log(c(d+ex)^n))}{g^{3/2}}+\frac{b\sqrt{-f}\,n\text{Li}_2\left(\frac{\sqrt{g}(d+ex)}{\sqrt{g}d+e\sqrt{-f}}\right)(a+b\log(c(d+ex)^n))}{g^{3/2}}+\frac{\sqrt{-f}\log\left(\right.}{}$$

```
[Out] -2*a*b*n*x/g+2*b^2*n^2*x/g-2*b^2*n*(e*x+d)*ln(c*(e*x+d)^n)/e/g+(e*x+d)*(a+b
*ln(c*(e*x+d)^n))^2/e/g+1/2*(a+b*ln(c*(e*x+d)^n))^2*ln(e*((-f)^(1/2)-x*g^(1
/2))/(e*(-f)^(1/2)+d*g^(1/2)))*(-f)^(1/2)/g^(3/2)-1/2*(a+b*ln(c*(e*x+d)^n))
^2*ln(e*((-f)^(1/2)+x*g^(1/2))/(e*(-f)^(1/2)-d*g^(1/2)))*(-f)^(1/2)/g^(3/2)
-b*n*(a+b*ln(c*(e*x+d)^n))*polylog(2,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/
2)))*(-f)^(1/2)/g^(3/2)+b*n*(a+b*ln(c*(e*x+d)^n))*polylog(2,(e*x+d)*g^(1/2)
/(e*(-f)^(1/2)+d*g^(1/2)))*(-f)^(1/2)/g^(3/2)+b^2*n^2*polylog(3,-(e*x+d)*g^
(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))*(-f)^(1/2)/g^(3/2)-b^2*n^2*polylog(3,(e*x+d
)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))*(-f)^(1/2)/g^(3/2)
```

Rubi [A] time = 0.59, antiderivative size = 447, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 9, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.310, Rules used = {2416, 2389, 2296, 2295, 2409, 2396, 2433, 2374, 6589}

$$-\frac{b\sqrt{-f}\,n\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)(a+b\log(c(d+ex)^n))}{g^{3/2}}+\frac{b\sqrt{-f}\,n\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+ex)}{g^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2),x]
```

```
[Out] (-2*a*b*n*x)/g + (2*b^2*n^2*x)/g - (2*b^2*n*(d + e*x)*Log[c*(d + e*x)^n])/(
e*g) + ((d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(e*g) + (Sqrt[-f]*(a + b*Lo
g[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])
])/(2*g^(3/2)) - (Sqrt[-f]*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] +
Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*g^(3/2)) - (b*Sqrt[-f]*n*(a + b*L
og[c*(d + e*x)^n])*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]
))])/g^(3/2) + (b*Sqrt[-f]*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, (Sqrt[g]
*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/g^(3/2) + (b^2*Sqrt[-f]*n^2*PolyLog[
3, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/g^(3/2) - (b^2*Sqrt[-f
]*n^2*PolyLog[3, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/g^(3/2)
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
```

```
&& EqQ[d*e, 1]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{x^2\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{f+gx^2}dx = \int \left(\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{g} - \frac{f\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{g\left(f+gx^2\right)}\right)dx$$

$$= \frac{\int \left(a+b\log\left(c(d+ex)^n\right)\right)^2 dx}{g} - \frac{f\int \frac{\left(a+b\log(c(d+ex)^n)\right)^2}{f+gx^2}dx}{g}$$

$$= \frac{\text{Subst}\left(\int \left(a+b\log\left(cx^n\right)\right)^2 dx, x, d+ex\right)}{eg} - \frac{f\int \left(\frac{\sqrt{-f}\left(a+b\log(c(d+ex)^n)\right)^2}{2f\left(\sqrt{-f}-\sqrt{g}x\right)} + \frac{\sqrt{-f}}{}\right.}{g}$$

$$= \frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{eg} - \frac{\sqrt{-f}\int \frac{\left(a+b\log(c(d+ex)^n)\right)^2}{\sqrt{-f}-\sqrt{g}x}dx}{2g} - \frac{\sqrt{-f}\int \frac{(a+}{}}{}$$

$$= -\frac{2abnx}{g} + \frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{eg} + \frac{\sqrt{-f}\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2g^{3/2}}$$

$$= -\frac{2abnx}{g} + \frac{2b^2n^2x}{g} - \frac{2b^2n(d+ex)\log\left(c(d+ex)^n\right)}{eg} + \frac{(d+ex)\left(a+b\log\left(c(d\right.\right.}{eg}$$

$$= -\frac{2abnx}{g} + \frac{2b^2n^2x}{g} - \frac{2b^2n(d+ex)\log\left(c(d+ex)^n\right)}{eg} + \frac{(d+ex)\left(a+b\log\left(c(d\right.\right.}{eg}$$

$$= -\frac{2abnx}{g} + \frac{2b^2n^2x}{g} - \frac{2b^2n(d+ex)\log\left(c(d+ex)^n\right)}{eg} + \frac{(d+ex)\left(a+b\log\left(c(d\right.\right.}{eg}$$

Mathematica [C] time = 0.62, size = 623, normalized size = 1.39

$$\frac{ibn\left(-e\sqrt{f}\left(\text{Li}_2\left(\frac{\sqrt{g}(d+ex)}{d\sqrt{g}-ie\sqrt{f}}\right)+\log(d+ex)\log\left(1-\frac{\sqrt{g}(d+ex)}{d\sqrt{g}-ie\sqrt{f}}\right)\right)+e\sqrt{f}\left(\text{Li}_2\left(\frac{\sqrt{g}(d+ex)}{\sqrt{g}d+ie\sqrt{f}}\right)+\log(d+ex)\log\left(1-\frac{\sqrt{g}}{d\sqrt{}}\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2),x]
```

```
[Out] (e*Sqrt[g]*x*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 - e*Sqrt[f]*Ar
cTan[(Sqrt[g]*x)/Sqrt[f]]*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 +
 I*b*n*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*((-2*I)*Sqrt[g]*(d + e
*x)*(-1 + Log[d + e*x]) - e*Sqrt[f]*(Log[d + e*x]*Log[1 - (Sqrt[g]*(d + e*x
))/((-I)*e*Sqrt[f] + d*Sqrt[g])] + PolyLog[2, (Sqrt[g]*(d + e*x))/((-I)*e*S
qrt[f] + d*Sqrt[g])]) + e*Sqrt[f]*(Log[d + e*x]*Log[1 - (Sqrt[g]*(d + e*x))
/(I*e*Sqrt[f] + d*Sqrt[g])] + PolyLog[2, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] +
 d*Sqrt[g])])) + b^2*n^2*(Sqrt[g]*(2*e*x - 2*(d + e*x)*Log[d + e*x] + (d +
e*x)*Log[d + e*x]^2) - (I/2)*e*Sqrt[f]*(Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d
+ e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[2, (Sqrt[g]*
(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sqrt[g]*(d + e*x))
/((-I)*e*Sqrt[f] + d*Sqrt[g])]) + (I/2)*e*Sqrt[f]*(Log[d + e*x]^2*Log[1 - (
```

```
Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[2, (
Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sqrt[g]*(d +
e*x))/(I*e*Sqrt[f] + d*Sqrt[g])])))/(e*g^(3/2))
```

fricas [F] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b^2x^2\log\left((ex+d)^n c\right)^2 + 2\,abx^2\log\left((ex+d)^n c\right) + a^2x^2}{gx^2+f}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f),x, algorithm="fricas")
```

```
[Out] integral((b^2*x^2*log((e*x + d)^n*c)^2 + 2*a*b*x^2*log((e*x + d)^n*c) + a^2
*x^2)/(g*x^2 + f), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\log\left((ex+d)^n c\right) + a\right)^2 x^2}{gx^2+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2*x^2/(g*x^2 + f), x)
```

maple [F] time = 71.65, size = 0, normalized size = 0.00

$$\int \frac{\left(b\ln\left(c\,(ex+d)^n\right) + a\right)^2 x^2}{g\,x^2+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(b*ln(c*(e*x+d)^n)+a)^2/(g*x^2+f),x)
```

```
[Out] int(x^2*(b*ln(c*(e*x+d)^n)+a)^2/(g*x^2+f),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-a^2\left(\frac{f\arctan\left(\frac{gx}{\sqrt{fg}}\right)}{\sqrt{fg}\,g} - \frac{x}{g}\right) + \int \frac{b^2x^2\log\left((ex+d)^n\right)^2 + 2\left(b^2\log(c) + ab\right)x^2\log\left((ex+d)^n\right) + \left(b^2\log(c)^2 + 2\,ab\right.}{gx^2+f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f),x, algorithm="maxima")
```

```
[Out] -a^2*(f*arctan(g*x/sqrt(f*g))/(sqrt(f*g)*g) - x/g) + integrate((b^2*x^2*log
((e*x + d)^n)^2 + 2*(b^2*log(c) + a*b)*x^2*log((e*x + d)^n) + (b^2*log(c)^2
 + 2*a*b*log(c))*x^2)/(g*x^2 + f), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^2\left(a + b\,\ln\left(c\,(d+e\,x)^n\right)\right)^2}{g\,x^2+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(a + b*log(c*(d + e*x)^n))^2)/(f + g*x^2),x)
```

```
[Out] int((x^2*(a + b*log(c*(d + e*x)^n))^2)/(f + g*x^2), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(a+b*ln(c*(e*x+d)**n))**2/(g*x**2+f),x)
```

```
[Out] Timed out
```

3.317 $\int \frac{(a+b\log(c(d+ex)^n))^2}{f+gx^2}\,dx$

Optimal. Leaf size=371

$$-\frac{bn\text{Li}_2\left(-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{\sqrt{-f}\sqrt{g}}+\frac{bn\text{Li}_2\left(\frac{\sqrt{g}(d+ex)}{\sqrt{g}d+e\sqrt{-f}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{\sqrt{-f}\sqrt{g}}+\frac{\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)(}{2\sqrt{}}$$

```
[Out] 1/2*(a+b*ln(c*(e*x+d)^n))^2*ln(e*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(
1/2)))/(-f)^(1/2)/g^(1/2)-1/2*(a+b*ln(c*(e*x+d)^n))^2*ln(e*((-f)^(1/2)+x*g^
(1/2))/(e*(-f)^(1/2)-d*g^(1/2)))/(-f)^(1/2)/g^(1/2)-b*n*(a+b*ln(c*(e*x+d)^n
))*polylog(2,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))/(-f)^(1/2)/g^(1/2)+
b*n*(a+b*ln(c*(e*x+d)^n))*polylog(2,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)
))/(-f)^(1/2)/g^(1/2)+b^2*n^2*polylog(3,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^
(1/2)))/(-f)^(1/2)/g^(1/2)-b^2*n^2*polylog(3,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+
d*g^(1/2)))/(-f)^(1/2)/g^(1/2)
```

Rubi [A] time = 0.38, antiderivative size = 371, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192, Rules used = {2409, 2396, 2433, 2374, 6589}

$$-\frac{bn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{\sqrt{-f}\sqrt{g}}+\frac{bn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{\sqrt{-f}\sqrt{g}}+\frac{b^2}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^2/(f + g*x^2),x]
```

```
[Out] ((a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] +
d*Sqrt[g])])/(2*Sqrt[-f]*Sqrt[g]) - ((a + b*Log[c*(d + e*x)^n])^2*Log[(e*(S
qrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*Sqrt[-f]*Sqrt[g]) - (b*
n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] -
 d*Sqrt[g]))])/(Sqrt[-f]*Sqrt[g]) + (b*n*(a + b*Log[c*(d + e*x)^n])*PolyLog
[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(Sqrt[-f]*Sqrt[g]) + (b^
2*n^2*PolyLog[3, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(Sqrt[-f
]*Sqrt[g]) - (b^2*n^2*PolyLog[3, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g
])])/(Sqrt[-f]*Sqrt[g])
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
```

```
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{f+gx^2}\,dx=\int\left(\frac{\sqrt{-f}\,\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2f\left(\sqrt{-f}-\sqrt{g}\,x\right)}+\frac{\sqrt{-f}\,\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2f\left(\sqrt{-f}+\sqrt{g}\,x\right)}\right)dx$$

$$=-\frac{\int\frac{\left(a+b\log(c(d+ex)^n)\right)^2}{\sqrt{-f}-\sqrt{g}\,x}\,dx}{2\sqrt{-f}}-\frac{\int\frac{\left(a+b\log(c(d+ex)^n)\right)^2}{\sqrt{-f}+\sqrt{g}\,x}\,dx}{2\sqrt{-f}}$$

$$=\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2\sqrt{-f}\,\sqrt{g}}-\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2\log\left(\frac{e\left(\sqrt{-\right.}{e\sqrt{-}}\right.}{2\sqrt{-f}\,\sqrt{g}}$$

$$=\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2\sqrt{-f}\,\sqrt{g}}-\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2\log\left(\frac{e\left(\sqrt{-\right.}{e\sqrt{-}}\right.}{2\sqrt{-f}\,\sqrt{g}}$$

$$=\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2\sqrt{-f}\,\sqrt{g}}-\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2\log\left(\frac{e\left(\sqrt{-\right.}{e\sqrt{-}}\right.}{2\sqrt{-f}\,\sqrt{g}}$$

$$=\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2\sqrt{-f}\,\sqrt{g}}-\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2\log\left(\frac{e\left(\sqrt{-\right.}{e\sqrt{-}}\right.}{2\sqrt{-f}\,\sqrt{g}}$$

Mathematica [C] time = 0.34, size = 485, normalized size = 1.31

$$\frac{ibn\left(\text{Li}_2\left(\frac{\sqrt{g}(d+ex)}{d\sqrt{g}-ie\sqrt{f}}\right)-\text{Li}_2\left(\frac{\sqrt{g}(d+ex)}{\sqrt{g}d+ie\sqrt{f}}\right)+\log(d+ex)\left(\log\left(1-\frac{\sqrt{g}(d+ex)}{d\sqrt{g}-ie\sqrt{f}}\right)-\log\left(1-\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+ie\sqrt{f}}\right)\right)\right)\left(a+b\log(c(d\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^2/(f + g*x^2),x]
```

```
[Out] (ArcTan[(Sqrt[g]*x)/Sqrt[f]]*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^
2 + I*b*n*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*(Log[d + e*x]*(Log[
1 - (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] - Log[1 - (Sqrt[g]*(d
 + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])]) + PolyLog[2, (Sqrt[g]*(d + e*x))/((-I)
*e*Sqrt[f] + d*Sqrt[g])] - PolyLog[2, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*
Sqrt[g])]) + (I/2)*b^2*n^2*(Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d + e*x))/((-I
)*e*Sqrt[f] + d*Sqrt[g])] - Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d + e*x))/(I*e
*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d + e*x))/((-I
)*e*Sqrt[f] + d*Sqrt[g])] - 2*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d + e*x))/(
I*e*Sqrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f
] + d*Sqrt[g])] + 2*PolyLog[3, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g]
)]))/(Sqrt[f]*Sqrt[g])
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b^2\log\left((ex+d)^n c\right)^2 + 2\,ab\log\left((ex+d)^n c\right) + a^2}{gx^2+f}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x^2+f),x, algorithm="fricas")
```

```
[Out] integral((b^2*log((e*x + d)^n*c)^2 + 2*a*b*log((e*x + d)^n*c) + a^2)/(g*x^2
 + f), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\log\left((ex+d)^n c\right) + a\right)^2}{gx^2+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x^2+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2/(g*x^2 + f), x)
```

maple [F] time = 11.07, size = 0, normalized size = 0.00

$$\int \frac{\left(b\ln\left(c\,(ex+d)^n\right) + a\right)^2}{g\,x^2+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)^2/(g*x^2+f),x)
```

```
[Out] int((b*ln(c*(e*x+d)^n)+a)^2/(g*x^2+f),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{a^2\arctan\left(\frac{gx}{\sqrt{fg}}\right)}{\sqrt{fg}} + \int \frac{b^2\log\left((ex+d)^n\right)^2 + b^2\log(c)^2 + 2\,ab\log(c) + 2\left(b^2\log(c) + ab\right)\log\left((ex+d)^n\right)}{gx^2+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x^2+f),x, algorithm="maxima")
```

```
[Out] a^2*arctan(g*x/sqrt(f*g))/sqrt(f*g) + integrate((b^2*log((e*x + d)^n)^2 + b
^2*log(c)^2 + 2*a*b*log(c) + 2*(b^2*log(c) + a*b)*log((e*x + d)^n))/(g*x^2
+ f), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}{g\,x^2+f}^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^2/(f + g*x^2),x)
[Out] int((a + b*log(c*(d + e*x)^n))^2/(f + g*x^2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\log\left(c\left(d+ex\right)^{n}\right)\right)^{2}}{f+gx^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2/(g*x**2+f),x)
[Out] Integral((a + b*log(c*(d + e*x)**n))**2/(f + g*x**2), x)
```

3.318 $\int \frac{(a+b\log(c(d+ex)^n))^2}{x^2(f+gx^2)}\,dx$

Optimal. Leaf size=461

$$-\frac{b\sqrt{g}\,n\mathrm{Li}_2\left(-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{(-f)^{3/2}}+\frac{b\sqrt{g}\,n\mathrm{Li}_2\left(\frac{\sqrt{g}(d+ex)}{\sqrt{g}d+e\sqrt{-f}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{(-f)^{3/2}}+\frac{\sqrt{g}\log\left(\frac{e(\cdots}{d\cdots}\right.}{}$$

```
[Out] 2*b*e*n*ln(-e*x/d)*(a+b*ln(c*(e*x+d)^n))/d/f-(e*x+d)*(a+b*ln(c*(e*x+d)^n))^
2/d/f/x+2*b^2*e*n^2*polylog(2,1+e*x/d)/d/f+1/2*(a+b*ln(c*(e*x+d)^n))^2*ln(e
*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(1/2)))*g^(1/2)/(-f)^(3/2)-1/2*(a
+b*ln(c*(e*x+d)^n))^2*ln(e*((-f)^(1/2)+x*g^(1/2))/(e*(-f)^(1/2)-d*g^(1/2)))
*g^(1/2)/(-f)^(3/2)-b*n*(a+b*ln(c*(e*x+d)^n))*polylog(2,-(e*x+d)*g^(1/2)/(e
*(-f)^(1/2)-d*g^(1/2)))*g^(1/2)/(-f)^(3/2)+b*n*(a+b*ln(c*(e*x+d)^n))*polylo
g(2,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))*g^(1/2)/(-f)^(3/2)+b^2*n^2*po
lylog(3,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))*g^(1/2)/(-f)^(3/2)-b^2*n
^2*polylog(3,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))*g^(1/2)/(-f)^(3/2)
```

Rubi [A] time = 0.63, antiderivative size = 461, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 9, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.310, Rules used = {2416, 2397, 2394, 2315, 2409, 2396, 2433, 2374, 6589}

$$-\frac{b\sqrt{g}\,n\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{(-f)^{3/2}}+\frac{b\sqrt{g}\,n\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\log\left(c(d+ex)^{\cdots}\right.\right.}{(-f)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^2/(x^2*(f + g*x^2)),x]
```

```
[Out] (2*b*e*n*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]))/(d*f) - ((d + e*x)*(a
+ b*Log[c*(d + e*x)^n])^2)/(d*f*x) + (Sqrt[g]*(a + b*Log[c*(d + e*x)^n])^2*
Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*(-f)^(3/2)) -
(Sqrt[g]*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqr
t[-f] - d*Sqrt[g])])/(2*(-f)^(3/2)) - (b*Sqrt[g]*n*(a + b*Log[c*(d + e*x)^n
])*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(-f)^(3/2)
+ (b*Sqrt[g]*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, (Sqrt[g]*(d + e*x))/(e
*Sqrt[-f] + d*Sqrt[g])])/(-f)^(3/2) + (2*b^2*e*n^2*PolyLog[2, 1 + (e*x)/d])
/(d*f) + (b^2*Sqrt[g]*n^2*PolyLog[3, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*
Sqrt[g]))])/(-f)^(3/2) - (b^2*Sqrt[g]*n^2*PolyLog[3, (Sqrt[g]*(d + e*x))/(e
*Sqrt[-f] + d*Sqrt[g])])/(-f)^(3/2)
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
```

```
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2397

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_))^2, x_Symbol] :> Simp[((d + e*x)*(a + b*Log[c*(d + e*x)^n])^p)/((e*f
 - d*g)*(f + g*x)), x] - Dist[(b*e*n*p)/(e*f - d*g), Int[(a + b*Log[c*(d +
e*x)^n])^(p - 1)/(f + g*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] &&
 NeQ[e*f - d*g, 0] && GtQ[p, 0]
```

Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{x^2\left(f+gx^2\right)}\,dx = \int \left(\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{fx^2} - \frac{g\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{f\left(f+gx^2\right)}\right)dx$$

$$= \frac{\int \frac{\left(a+b\log(c(d+ex)^n)\right)^2}{x^2}dx}{f} - \frac{g\int \frac{\left(a+b\log(c(d+ex)^n)\right)^2}{f+gx^2}dx}{f}$$

$$= -\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{dfx} - \frac{g\int \left(\frac{\sqrt{-f}\left(a+b\log(c(d+ex)^n)\right)^2}{2f\left(\sqrt{-f}-\sqrt{g}\,x\right)} + \frac{\sqrt{-f}\left(a+b\log(\right.}{2f\left(\sqrt{-f}\right.}\right.}{f}$$

$$= \frac{2ben\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{df} - \frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{dfx} -$$

$$= \frac{2ben\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{df} - \frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{dfx} +$$

$$= \frac{2ben\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{df} - \frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{dfx} +$$

$$= \frac{2ben\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{df} - \frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{dfx} +$$

$$= \frac{2ben\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{df} - \frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{dfx} +$$

Mathematica [C] time = 0.52, size = 668, normalized size = 1.45

$$2bn\left(id\sqrt{g}\,x\left(\text{Li}_2\left(-\frac{i\sqrt{g}(d+ex)}{e\sqrt{f}-id\sqrt{g}}\right)+\log(d+ex)\log\left(\frac{e\left(\sqrt{f}+i\sqrt{g}\,x\right)}{e\sqrt{f}-id\sqrt{g}}\right)\right)-id\sqrt{g}\,x\left(\text{Li}_2\left(\frac{i\sqrt{g}(d+ex)}{i\sqrt{g}d+e\sqrt{f}}\right)+\log(d+ex)\log\left(\frac{e}{}\right.\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^2/(x^2*(f + g*x^2)),x]
```

```
[Out] (-2*d*Sqrt[f]*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 - 2*d*Sqrt[g]
*x*ArcTan[(Sqrt[g]*x)/Sqrt[f]]*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n]
)^2 + 2*b*n*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*(2*Sqrt[f]*(e*x*L
og[x] - (d + e*x)*Log[d + e*x]) + I*d*Sqrt[g]*x*(Log[d + e*x]*Log[(e*(Sqrt[
f] + I*Sqrt[g]*x))/(e*Sqrt[f] - I*d*Sqrt[g])] + PolyLog[2, ((-I)*Sqrt[g]*(d
 + e*x))/(e*Sqrt[f] - I*d*Sqrt[g])]) - I*d*Sqrt[g]*x*(Log[d + e*x]*Log[(e*(
Sqrt[f] - I*Sqrt[g]*x))/(e*Sqrt[f] + I*d*Sqrt[g])] + PolyLog[2, (I*Sqrt[g]*
(d + e*x))/(e*Sqrt[f] + I*d*Sqrt[g])])) + b^2*n^2*(2*Sqrt[f]*(2*e*x*Log[-((
e*x)/d)]*Log[d + e*x] - (d + e*x)*Log[d + e*x]^2 + 2*e*x*PolyLog[2, 1 + (e*
x)/d]) - I*d*Sqrt[g]*x*(Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d + e*x))/((-I)*e*
Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d + e*x))/((-I)
*e*Sqrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f]
```

```
 + d*Sqrt[g])]) + I*d*Sqrt[g]*x*(Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d + e*x))
/(I*e*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d + e*x))
/(I*e*Sqrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f]
 + d*Sqrt[g])])))/(2*d*f^(3/2)*x)
```

fricas [F] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b^2 \log\left((ex+d)^n c\right)^2 + 2\,ab\log\left((ex+d)^n c\right) + a^2}{gx^4 + fx^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x^2/(g*x^2+f),x, algorithm="fricas")
```

```
[Out] integral((b^2*log((e*x + d)^n*c)^2 + 2*a*b*log((e*x + d)^n*c) + a^2)/(g*x^4
 + f*x^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\log\left((ex+d)^n c\right) + a\right)^2}{\left(gx^2 + f\right)x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x^2/(g*x^2+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2/((g*x^2 + f)*x^2), x)
```

maple [F] time = 62.42, size = 0, normalized size = 0.00

$$\int \frac{\left(b\ln\left(c\,(ex+d)^n\right) + a\right)^2}{\left(g\,x^2 + f\right)x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)^2/x^2/(g*x^2+f),x)
```

```
[Out] int((b*ln(c*(e*x+d)^n)+a)^2/x^2/(g*x^2+f),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-a^2\left(\frac{g\arctan\left(\frac{gx}{\sqrt{fg}}\right)}{\sqrt{fg}\,f} + \frac{1}{fx}\right) + \int \frac{b^2\log\left((ex+d)^n\right)^2 + b^2\log(c)^2 + 2\,ab\log(c) + 2\left(b^2\log(c) + ab\right)\log\left((ex+d)^n\right)}{gx^4 + fx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x^2/(g*x^2+f),x, algorithm="maxima")
```

```
[Out] -a^2*(g*arctan(g*x/sqrt(f*g))/(sqrt(f*g)*f) + 1/(f*x)) + integrate((b^2*log
((e*x + d)^n)^2 + b^2*log(c)^2 + 2*a*b*log(c) + 2*(b^2*log(c) + a*b)*log((e
*x + d)^n))/(g*x^4 + f*x^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a + b\,\ln\left(c\,(d+e\,x)^n\right)\right)^2}{x^2\,\left(g\,x^2 + f\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^2/(x^2*(f + g*x^2)),x)
[Out] int((a + b*log(c*(d + e*x)^n))^2/(x^2*(f + g*x^2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2/x**2/(g*x**2+f),x)
[Out] Timed out
```

3.319 $\int \frac{\left(a+b\log(c(d+ex)^n)\right)^2}{x^4\left(f+gx^2\right)}\,dx$

Optimal. Leaf size=694

$$\frac{2be^3n\log\left(1-\frac{d}{d+ex}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{3d^3f}+\frac{2be^2n(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)}{3d^3fx}-\frac{2begn\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(\right.\right.}{df^2}$$

```
[Out] -1/3*b^2*e^2*n^2/d^2/f/x-b^2*e^3*n^2*ln(x)/d^3/f+1/3*b^2*e^3*n^2*ln(e*x+d)/
d^3/f-1/3*b*e*n*(a+b*ln(c*(e*x+d)^n))/d/f/x^2+2/3*b*e^2*n*(e*x+d)*(a+b*ln(c
*(e*x+d)^n))/d^3/f/x-2*b*e*g*n*ln(-e*x/d)*(a+b*ln(c*(e*x+d)^n))/d/f^2-1/3*(
a+b*ln(c*(e*x+d)^n))^2/f/x^3+g*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^2/d/f^2/x+2/3*
b*e^3*n*(a+b*ln(c*(e*x+d)^n))*ln(1-d/(e*x+d))/d^3/f+1/2*g^(3/2)*(a+b*ln(c*(
e*x+d)^n))^2*ln(e*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(1/2)))/(-f)^(5/
2)-1/2*g^(3/2)*(a+b*ln(c*(e*x+d)^n))^2*ln(e*((-f)^(1/2)+x*g^(1/2))/(e*(-f)^
(1/2)-d*g^(1/2)))/(-f)^(5/2)-2/3*b^2*e^3*n^2*polylog(2,d/(e*x+d))/d^3/f-2*b
^2*e*g*n^2*polylog(2,1+e*x/d)/d/f^2-b*g^(3/2)*n*(a+b*ln(c*(e*x+d)^n))*polyl
og(2,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))/(-f)^(5/2)+b*g^(3/2)*n*(a+b
*ln(c*(e*x+d)^n))*polylog(2,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))/(-f)^
(5/2)+b^2*g^(3/2)*n^2*polylog(3,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))/
(-f)^(5/2)-b^2*g^(3/2)*n^2*polylog(3,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2
)))/(-f)^(5/2)
```

Rubi [A] time = 1.11, antiderivative size = 717, normalized size of antiderivative = 1.03, number of steps used = 28, number of rules used = 20, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.690, Rules used = {2416, 2398, 2411, 2347, 2344, 2301, 2317, 2391, 2314, 31, 2319, 44, 2397, 2394, 2315, 2409, 2396, 2433, 2374, 6589}

$$-\frac{bg^{3/2}n\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{(-f)^{5/2}}+\frac{bg^{3/2}n\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{(-f)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^2/(x^4*(f + g*x^2)),x]
```

```
[Out] -(b^2*e^2*n^2)/(3*d^2*f*x) - (b^2*e^3*n^2*Log[x])/(d^3*f) + (b^2*e^3*n^2*Lo
g[d + e*x])/(3*d^3*f) - (b*e*n*(a + b*Log[c*(d + e*x)^n]))/(3*d*f*x^2) + (2
*b*e^2*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n]))/(3*d^3*f*x) + (2*b*e^3*n*Log
[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]))/(3*d^3*f) - (2*b*e*g*n*Log[-((e*x)
/d)]*(a + b*Log[c*(d + e*x)^n]))/(d*f^2) - (e^3*(a + b*Log[c*(d + e*x)^n])^
2)/(3*d^3*f) - (a + b*Log[c*(d + e*x)^n])^2/(3*f*x^3) + (g*(d + e*x)*(a + b
*Log[c*(d + e*x)^n])^2)/(d*f^2*x) + (g^(3/2)*(a + b*Log[c*(d + e*x)^n])^2*L
og[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*(-f)^(5/2)) - (
g^(3/2)*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt
[-f] - d*Sqrt[g])])/(2*(-f)^(5/2)) - (b*g^(3/2)*n*(a + b*Log[c*(d + e*x)^n]
)*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(-f)^(5/2) +
 (b*g^(3/2)*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*
Sqrt[-f] + d*Sqrt[g])])/(-f)^(5/2) + (2*b^2*e^3*n^2*PolyLog[2, 1 + (e*x)/d]
)/(3*d^3*f) - (2*b^2*e*g*n^2*PolyLog[2, 1 + (e*x)/d])/(d*f^2) + (b^2*g^(3/2
)*n^2*PolyLog[3, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(-f)^(5/
2) - (b^2*g^(3/2)*n^2*PolyLog[3, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g
])])/(-f)^(5/2)
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2314

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_), x
_Symbol] :> Simp[(x*(d + e*x^r)^(q + 1)*(a + b*Log[c*x^n]))/d, x] - Dist[(b
*n)/d, Int[(d + e*x^r)^(q + 1), x], x] /; FreeQ[{a, b, c, d, e, n, q, r}, x
] && EqQ[r*(q + 1) + 1, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2319

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/(e*(q + 1)), x]
- Dist[(b*n*p)/(e*(q + 1)), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2347

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/x
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
```

```
&& EqQ[d*e, 1]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2397

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_))^2, x_Symbol] :> Simp[((d + e*x)*(a + b*Log[c*(d + e*x)^n])^p)/((e*f
 - d*g)*(f + g*x)), x] - Dist[(b*e*n*p)/(e*f - d*g), Int[(a + b*Log[c*(d +
e*x)^n])^(p - 1)/(f + g*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] &&
 NeQ[e*f - d*g, 0] && GtQ[p, 0]
```

Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
```

```
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{x^4\left(f+gx^2\right)}\,dx = \int \left(\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{fx^4} - \frac{g\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{f^2x^2} + \frac{g^2\left(a+b\log\left(c(\right.\right.}{f^2\left(f+g\right.}$$

$$= \frac{\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{x^4}\,dx}{f} - \frac{g\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{x^2}\,dx}{f^2} + \frac{g^2\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{f+gx^2}\,dx}{f^2}$$

$$= -\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{3fx^3} + \frac{g(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{df^2x} + \frac{g^2\int\left(\frac{\sqrt{-f}}{\ }\right.}{\ }$$

$$= -\frac{2begn\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{df^2} - \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{3fx^3} + \frac{g(d}{\ }$$

$$= -\frac{2begn\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{df^2} - \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{3fx^3} + \frac{g(d}{\ }$$

$$= -\frac{ben\left(a+b\log\left(c(d+ex)^n\right)\right)}{3dfx^2} - \frac{2begn\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{df^2} - \frac{(a}{\ }$$

$$= -\frac{ben\left(a+b\log\left(c(d+ex)^n\right)\right)}{3dfx^2} + \frac{2be^2n(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)}{3d^3fx} - \frac{2beg}{\ }$$

$$= -\frac{b^2e^2n^2}{3d^2fx} - \frac{b^2e^3n^2\log(x)}{d^3f} + \frac{b^2e^3n^2\log(d+ex)}{3d^3f} - \frac{ben\left(a+b\log\left(c(d+ex)^n\right)\right)}{3dfx^2}$$

$$= -\frac{b^2e^2n^2}{3d^2fx} - \frac{b^2e^3n^2\log(x)}{d^3f} + \frac{b^2e^3n^2\log(d+ex)}{3d^3f} - \frac{ben\left(a+b\log\left(c(d+ex)^n\right)\right)}{3dfx^2}$$

Mathematica [C] time = 0.85, size = 930, normalized size = 1.34

$$6\sqrt{f}gx^2\left(a-bn\log(d+ex)+b\log\left(c(d+ex)^n\right)\right)^2d^3-2f^{3/2}\left(a-bn\log(d+ex)+b\log\left(c(d+ex)^n\right)\right)^2d^3+6g^{3/2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^2/(x^4*(f + g*x^2)),x]
```

```
[Out] (-2*d^3*f^(3/2)*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 + 6*d^3*Sqr
t[f]*g*x^2*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 + 6*d^3*g^(3/2)*
x^3*ArcTan[(Sqrt[g]*x)/Sqrt[f]]*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n
])^2 + (2*I)*b*n*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*((6*I)*d^2*S
qrt[f]*g*x^2*(e*x*Log[x] - (d + e*x)*Log[d + e*x]) + I*f^(3/2)*(d*e*x*(d -
2*e*x) - 2*e^3*x^3*Log[x] + 2*(d^3 + e^3*x^3)*Log[d + e*x]) - 3*d^3*g^(3/2)
*x^3*(Log[d + e*x]*Log[(e*(Sqrt[f] + I*Sqrt[g]*x))/(e*Sqrt[f] - I*d*Sqrt[g]
)] + PolyLog[2, ((-I)*Sqrt[g]*(d + e*x))/(e*Sqrt[f] - I*d*Sqrt[g])]) + 3*d^
3*g^(3/2)*x^3*(Log[d + e*x]*Log[(e*(Sqrt[f] - I*Sqrt[g]*x))/(e*Sqrt[f] + I*
d*Sqrt[g])] + PolyLog[2, (I*Sqrt[g]*(d + e*x))/(e*Sqrt[f] + I*d*Sqrt[g])]))
 + I*b^2*n^2*((6*I)*d^2*Sqrt[f]*g*x^2*(2*e*x*Log[-((e*x)/d)]*Log[d + e*x] -
 (d + e*x)*Log[d + e*x]^2 + 2*e*x*PolyLog[2, 1 + (e*x)/d]) + (2*I)*f^(3/2)*
(d*e^2*x^2 + 3*e^3*x^3*Log[x] + d^2*e*x*Log[d + e*x] - 2*d*e^2*x^2*Log[d +
e*x] - 3*e^3*x^3*Log[d + e*x] - 2*e^3*x^3*Log[-((e*x)/d)]*Log[d + e*x] + d^
3*Log[d + e*x]^2 + e^3*x^3*Log[d + e*x]^2 - 2*e^3*x^3*PolyLog[2, 1 + (e*x)/
d]) + 3*d^3*g^(3/2)*x^3*(Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d + e*x))/((-I)*e
*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d + e*x))/((-I
)*e*Sqrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f
] + d*Sqrt[g])]) - 3*d^3*g^(3/2)*x^3*(Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d +
e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d +
e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sqrt[g]*(d + e*x))/(I*e*Sq
rt[f] + d*Sqrt[g])])))/(6*d^3*f^(5/2)*x^3)
```

fricas [F] time = 0.48, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b^2\log\left((ex+d)^nc\right)^2+2\,ab\log\left((ex+d)^nc\right)+a^2}{gx^6+fx^4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x^4/(g*x^2+f),x, algorithm="fricas")
```

```
[Out] integral((b^2*log((e*x + d)^n*c)^2 + 2*a*b*log((e*x + d)^n*c) + a^2)/(g*x^6
 + f*x^4), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(b\log\left((ex+d)^nc\right)+a\right)^2}{\left(gx^2+f\right)x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x^4/(g*x^2+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2/((g*x^2 + f)*x^4), x)
```

maple [F] time = 34.98, size = 0, normalized size = 0.00

$$\int\frac{\left(b\ln\left(c\,(ex+d)^n\right)+a\right)^2}{\left(g\,x^2+f\right)x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)^2/x^4/(g*x^2+f),x)
```

```
[Out] int((b*ln(c*(e*x+d)^n)+a)^2/x^4/(g*x^2+f),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{3}a^2\left(\frac{3g^2\arctan\left(\frac{gx}{\sqrt{fg}}\right)}{\sqrt{fg}f^2}+\frac{3gx^2-f}{f^2x^3}\right)+\int\frac{b^2\log\left((ex+d)^n\right)^2+b^2\log(c)^2+2ab\log(c)+2\left(b^2\log(c)+ab\right)\log\left((ex+d)^n\right)}{gx^6+fx^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x^4/(g*x^2+f),x, algorithm="maxima")
```

```
[Out] 1/3*a^2*(3*g^2*arctan(g*x/sqrt(f*g))/(sqrt(f*g)*f^2) + (3*g*x^2 - f)/(f^2*x
^3)) + integrate((b^2*log((e*x + d)^n)^2 + b^2*log(c)^2 + 2*a*b*log(c) + 2*
(b^2*log(c) + a*b)*log((e*x + d)^n))/(g*x^6 + f*x^4), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)^2}{x^4\,\left(g\,x^2+f\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^2/(x^4*(f + g*x^2)),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))^2/(x^4*(f + g*x^2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2/x**4/(g*x**2+f),x)
```

```
[Out] Timed out
```

3.320 $\int \frac{x^5\left(a+b\log(c(d+ex)^n)\right)^2}{\left(f+gx^2\right)^2}\,dx$

Optimal. Leaf size=936

$$\frac{n^2(d+ex)^2b^2}{4e^2g^2}-\frac{2dn^2xb^2}{eg^2}+\frac{2dn(d+ex)\log\left(c(d+ex)^n\right)b^2}{e^2g^2}-\frac{e(-f)^{3/2}\left(\sqrt{g}\,d+e\sqrt{-f}\right)n^2\mathrm{Li}_2\left(-\frac{\sqrt{g}\,(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)b^2}{2g^3\left(gd^2+e^2f\right)}-\frac{e(-f)}{}$$

```
[Out] 2*a*b*d*n*x/e/g^2-2*b^2*d*n^2*x/e/g^2+1/4*b^2*n^2*(e*x+d)^2/e^2/g^2+2*b^2*d
*n*(e*x+d)*ln(c*(e*x+d)^n)/e^2/g^2-1/2*b*n*(e*x+d)^2*(a+b*ln(c*(e*x+d)^n))/
e^2/g^2+1/2*e^2*f^2*(a+b*ln(c*(e*x+d)^n))^2/g^3/(d^2*g+e^2*f)-d*(e*x+d)*(a+
b*ln(c*(e*x+d)^n))^2/e^2/g^2+1/2*(e*x+d)^2*(a+b*ln(c*(e*x+d)^n))^2/e^2/g^2-
1/2*f^2*(a+b*ln(c*(e*x+d)^n))^2/g^3/(g*x^2+f)-f*(a+b*ln(c*(e*x+d)^n))^2*ln(
e*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(1/2)))/g^3-f*(a+b*ln(c*(e*x+d)^
n))^2*ln(e*((-f)^(1/2)+x*g^(1/2))/(e*(-f)^(1/2)-d*g^(1/2)))/g^3-2*b*f*n*(a+
b*ln(c*(e*x+d)^n))*polylog(2,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))/g^3
-2*b*f*n*(a+b*ln(c*(e*x+d)^n))*polylog(2,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^
(1/2)))/g^3+2*b^2*f*n^2*polylog(3,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2))
)/g^3+2*b^2*f*n^2*polylog(3,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))/g^3-1
/2*b^2*e*(-f)^(3/2)*n^2*polylog(2,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))
*(e*(-f)^(1/2)-d*g^(1/2))/g^3/(d^2*g+e^2*f)-1/2*b*e*(-f)^(3/2)*n*(a+b*ln(c*
(e*x+d)^n))*ln(e*((-f)^(1/2)+x*g^(1/2))/(e*(-f)^(1/2)-d*g^(1/2)))*(e*(-f)^(
1/2)+d*g^(1/2))/g^3/(d^2*g+e^2*f)-1/2*b^2*e*(-f)^(3/2)*n^2*polylog(2,-(e*x+
d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))*(e*(-f)^(1/2)+d*g^(1/2))/g^3/(d^2*g+e^
2*f)-1/2*b*e*f*n*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^
(1/2)+d*g^(1/2)))*(e*f+d*(-f)^(1/2)*g^(1/2))/g^3/(d^2*g+e^2*f)
```

Rubi [A] time = 1.53, antiderivative size = 936, normalized size of antiderivative = 1.00, number of steps used = 34, number of rules used = 18, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.621, Rules used = {2416, 2401, 2389, 2296, 2295, 2390, 2305, 2304, 2413, 2418, 2301, 2394, 2393, 2391, 2396, 2433, 2374, 6589}

$$\frac{n^2(d+ex)^2b^2}{4e^2g^2}-\frac{2dn^2xb^2}{eg^2}+\frac{2dn(d+ex)\log\left(c(d+ex)^n\right)b^2}{e^2g^2}-\frac{e(-f)^{3/2}\left(\sqrt{g}\,d+e\sqrt{-f}\right)n^2\mathrm{PolyLog}\left(2,-\frac{\sqrt{g}\,(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)b^2}{2g^3\left(gd^2+e^2f\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(x^5*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2)^2,x]
```

```
[Out] (2*a*b*d*n*x)/(e*g^2) - (2*b^2*d*n^2*x)/(e*g^2) + (b^2*n^2*(d + e*x)^2)/(4*
e^2*g^2) + (2*b^2*d*n*(d + e*x)*Log[c*(d + e*x)^n])/(e^2*g^2) - (b*n*(d + e
*x)^2*(a + b*Log[c*(d + e*x)^n]))/(2*e^2*g^2) + (e^2*f^2*(a + b*Log[c*(d +
e*x)^n])^2)/(2*g^3*(e^2*f + d^2*g)) - (d*(d + e*x)*(a + b*Log[c*(d + e*x)^n
])^2)/(e^2*g^2) + ((d + e*x)^2*(a + b*Log[c*(d + e*x)^n])^2)/(2*e^2*g^2) -
(f^2*(a + b*Log[c*(d + e*x)^n])^2)/(2*g^3*(f + g*x^2)) - (b*e*f*(e*f + d*Sq
rt[-f]*Sqrt[g])*n*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))
/(e*Sqrt[-f] + d*Sqrt[g])])/(2*g^3*(e^2*f + d^2*g)) - (f*(a + b*Log[c*(d +
e*x)^n])^2*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/g^3 -
(b*e*(-f)^(3/2)*(e*Sqrt[-f] + d*Sqrt[g])*n*(a + b*Log[c*(d + e*x)^n])*Log[(
e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*g^3*(e^2*f + d^2*g)
) - (f*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[
-f] - d*Sqrt[g])])/g^3 - (b^2*e*(-f)^(3/2)*(e*Sqrt[-f] + d*Sqrt[g])*n^2*Pol
yLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*g^3*(e^2*f + d
^2*g)) - (2*b*f*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((Sqrt[g]*(d + e*x
))/(e*Sqrt[-f] - d*Sqrt[g]))])/g^3 - (b^2*e*(-f)^(3/2)*(e*Sqrt[-f] - d*Sqrt
[g])*n^2*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*g^3*(
```

```
e^2*f + d^2*g)) - (2*b*f*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, (Sqrt[g]*(
d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/g^3 + (2*b^2*f*n^2*PolyLog[3, -((Sqrt[
g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/g^3 + (2*b^2*f*n^2*PolyLog[3, (Sq
rt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/g^3
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2413

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(x_)^(m_.)*(
(f_.) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Simp[((f + g*x^r)^(q + 1)*(a
+ b*Log[c*(d + e*x)^n])^p)/(g*r*(q + 1)), x] - Dist[(b*e*n*p)/(g*r*(q + 1))
, Int[((f + g*x^r)^(q + 1)*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x
], x] /; FreeQ[{a, b, c, d, e, f, g, m, n, q, r}, x] && EqQ[m, r - 1] && Ne
Q[q, -1] && IGtQ[p, 0]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{x^5 \left(a+b\log\left(c(d+ex)^n\right)\right)^2}{\left(f+gx^2\right)^2}dx = \int \left(\frac{x\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{g^2} + \frac{f^2x\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{g^2\left(f+gx^2\right)^2} - \frac{2fx\left(a+\right.}{g}\right.$$

$$= \frac{\int x\left(a+b\log\left(c(d+ex)^n\right)\right)^2 dx}{g^2} - \frac{(2f)\int \frac{x\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{f+gx^2}dx}{g^2} + \frac{f^2\int \frac{x(a+}{}}{}$$

$$= -\frac{f^2\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2g^3\left(f+gx^2\right)} + \frac{\int \left(-\frac{d\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{e} + \frac{(d+ex)\left(a+b\log(c(d+e\right.}{e}\right.}{g^2}$$

$$= -\frac{f^2\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2g^3\left(f+gx^2\right)} + \frac{f\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{\sqrt{-f}-\sqrt{g}x}dx}{g^{5/2}} - \frac{f\int \frac{\left(a+b\log(c(d+e\right.}{\sqrt{-f}+\sqrt{g}}}{g^{5/2}}$$

$$= -\frac{f^2\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2g^3\left(f+gx^2\right)} - \frac{f\left(a+b\log\left(c(d+ex)^n\right)\right)^2\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right.}{e\sqrt{-f}+d\sqrt{g}}\right.}{g^3}$$

$$= -\frac{d(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{e^2g^2} + \frac{(d+ex)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2e^2g^2} -$$

$$= \frac{2abdnx}{eg^2} + \frac{b^2n^2(d+ex)^2}{4e^2g^2} - \frac{bn(d+ex)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2e^2g^2} + \frac{e^2f^2\left(a\right.}{2}$$

$$= \frac{2abdnx}{eg^2} - \frac{2b^2dn^2x}{eg^2} + \frac{b^2n^2(d+ex)^2}{4e^2g^2} + \frac{2b^2dn(d+ex)\log\left(c(d+ex)^n\right)}{e^2g^2} - \frac{b}{}$$

$$= \frac{2abdnx}{eg^2} - \frac{2b^2dn^2x}{eg^2} + \frac{b^2n^2(d+ex)^2}{4e^2g^2} + \frac{2b^2dn(d+ex)\log\left(c(d+ex)^n\right)}{e^2g^2} - \frac{b}{}$$

$$= \frac{2abdnx}{eg^2} - \frac{2b^2dn^2x}{eg^2} + \frac{b^2n^2(d+ex)^2}{4e^2g^2} + \frac{2b^2dn(d+ex)\log\left(c(d+ex)^n\right)}{e^2g^2} - \frac{b}{}$$

Mathematica [C] time = 3.31, size = 1254, normalized size = 1.34

$$b^2\left(\frac{i\left(-\sqrt{g}(d+ex)\log^2(d+ex)+2e\left(\sqrt{g}x+i\sqrt{f}\right)\log\left(\frac{e\left(\sqrt{f}-i\sqrt{g}x\right)}{i\sqrt{g}d+e\sqrt{f}}\right)\log(d+ex)+2e\left(\sqrt{g}x+i\sqrt{f}\right)\text{Li}_2\left(\frac{i\sqrt{g}(d+ex)}{i\sqrt{g}d+e\sqrt{f}}\right)\right)f^{3/2}}{\left(i\sqrt{g}d+e\sqrt{f}\right)\left(\sqrt{f}-i\sqrt{g}x\right)}-\frac{\left(\log(d+ex)\left(2e\left(i\sqrt{g}x+\sqrt{f}\right)\log\left(\right.\right.\right.}{}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^5*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2)^2,x]
```

```
[Out] (2*g*x^2*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 - (2*f^2*(a - b*n*
Log[d + e*x] + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2) - 4*f*(a - b*n*Log[d +
e*x] + b*Log[c*(d + e*x)^n])^2*Log[f + g*x^2] + 2*b*n*(a - b*n*Log[d + e*x]
 + b*Log[c*(d + e*x)^n])*((g*(e*x*(2*d - e*x) - 2*(d^2 - e^2*x^2)*Log[d + e
*x]))/e^2 + (f^(3/2)*(I*Sqrt[g]*(d + e*x)*Log[d + e*x] - e*(Sqrt[f] + I*Sqr
t[g]*x)*Log[I*Sqrt[f] - Sqrt[g]*x]))/((e*Sqrt[f] - I*d*Sqrt[g])*(Sqrt[f] +
I*Sqrt[g]*x)) + (I*f^(3/2)*(-(Sqrt[g]*(d + e*x)*Log[d + e*x]) + e*(I*Sqrt[f
] + Sqrt[g]*x)*Log[I*Sqrt[f] + Sqrt[g]*x]))/((e*Sqrt[f] + I*d*Sqrt[g])*(Sqr
t[f] - I*Sqrt[g]*x)) - 4*f*(Log[d + e*x]*Log[(e*(Sqrt[f] + I*Sqrt[g]*x))/(e
*Sqrt[f] - I*d*Sqrt[g])] + PolyLog[2, ((-I)*Sqrt[g]*(d + e*x))/(e*Sqrt[f] -
 I*d*Sqrt[g])]) - 4*f*(Log[d + e*x]*Log[(e*(Sqrt[f] - I*Sqrt[g]*x))/(e*Sqrt
[f] + I*d*Sqrt[g])] + PolyLog[2, (I*Sqrt[g]*(d + e*x))/(e*Sqrt[f] + I*d*Sqr
t[g])])) + b^2*n^2*((g*(e*x*(-6*d + e*x) + (6*d^2 + 4*d*e*x - 2*e^2*x^2)*Lo
g[d + e*x] - 2*(d^2 - e^2*x^2)*Log[d + e*x]^2))/e^2 + (I*f^(3/2)*(-(Sqrt[g]
*(d + e*x)*Log[d + e*x]^2) + 2*e*(I*Sqrt[f] + Sqrt[g]*x)*Log[d + e*x]*Log[(
e*(Sqrt[f] - I*Sqrt[g]*x))/(e*Sqrt[f] + I*d*Sqrt[g])] + 2*e*(I*Sqrt[f] + Sq
rt[g]*x)*PolyLog[2, (I*Sqrt[g]*(d + e*x))/(e*Sqrt[f] + I*d*Sqrt[g])]))/((e*
Sqrt[f] + I*d*Sqrt[g])*(Sqrt[f] - I*Sqrt[g]*x)) - (f^(3/2)*(Log[d + e*x]*((
-I)*Sqrt[g]*(d + e*x)*Log[d + e*x] + 2*e*(Sqrt[f] + I*Sqrt[g]*x)*Log[(e*(Sq
rt[f] + I*Sqrt[g]*x))/(e*Sqrt[f] - I*d*Sqrt[g])]) + 2*e*(Sqrt[f] + I*Sqrt[g
]*x)*PolyLog[2, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])]))/((e*Sqrt[f
] - I*d*Sqrt[g])*(Sqrt[f] + I*Sqrt[g]*x)) - 4*f*(Log[d + e*x]^2*Log[1 - (Sq
rt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[2,
(Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sqrt[g]*(
d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])]) - 4*f*(Log[d + e*x]^2*Log[1 - (Sqr
t[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[2, (Sqr
t[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sqrt[g]*(d + e*x
))/(I*e*Sqrt[f] + d*Sqrt[g])])))/(4*g^3)
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b^2x^5\log\left((ex+d)^n c\right)^2+2\,abx^5\log\left((ex+d)^n c\right)+a^2x^5}{g^2x^4+2\,fgx^2+f^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b^2*x^5*log((e*x + d)^n*c)^2 + 2*a*b*x^5*log((e*x + d)^n*c) + a^2
*x^5)/(g^2*x^4 + 2*f*g*x^2 + f^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(b\log\left((ex+d)^n c\right)+a\right)^2x^5}{\left(gx^2+f\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2*x^5/(g*x^2 + f)^2, x)
```

maple [F] time = 1.61, size = 0, normalized size = 0.00

$$\int \frac{\left(b\ln\left(c\left(ex+d\right)^{n}\right)+a\right)^{2} x^{5}}{\left(g\,x^{2}+f\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*(b*ln(c*(e*x+d)^n)+a)^2/(g*x^2+f)^2,x)
```

```
[Out] int(x^5*(b*ln(c*(e*x+d)^n)+a)^2/(g*x^2+f)^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{2}\,a^{2}\left(\frac{f^{2}}{g^{4}x^{2}+fg^{3}}-\frac{x^{2}}{g^{2}}+\frac{2\,f\log\left(gx^{2}+f\right)}{g^{3}}\right)+\int \frac{b^{2}x^{5}\log\left(\left(ex+d\right)^{n}\right)^{2}+2\left(b^{2}\log(c)+ab\right)x^{5}\log\left(\left(ex+d\right)^{n}\right)+}{g^{2}x^{4}+2\,fgx^{2}+f^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f)^2,x, algorithm="maxima")
```

```
[Out] -1/2*a^2*(f^2/(g^4*x^2 + f*g^3) - x^2/g^2 + 2*f*log(g*x^2 + f)/g^3) + integ
rate((b^2*x^5*log((e*x + d)^n)^2 + 2*(b^2*log(c) + a*b)*x^5*log((e*x + d)^n
) + (b^2*log(c)^2 + 2*a*b*log(c))*x^5)/(g^2*x^4 + 2*f*g*x^2 + f^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^{5}\left(a+b\,\ln\left(c\left(d+e\,x\right)^{n}\right)\right)^{2}}{\left(g\,x^{2}+f\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^5*(a + b*log(c*(d + e*x)^n))^2)/(f + g*x^2)^2,x)
```

```
[Out] int((x^5*(a + b*log(c*(d + e*x)^n))^2)/(f + g*x^2)^2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**5*(a+b*ln(c*(e*x+d)**n))**2/(g*x**2+f)**2,x)
```

```
[Out] Timed out
```

3.321 $\int \frac{x^3(a+b\log(c(d+ex)^n))^2}{(f+gx^2)^2}\,dx$

Optimal. Leaf size=739

$$\frac{ben\left(d\sqrt{-f}\sqrt{g}+ef\right)\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g^2\left(d^2g+e^2f\right)}+\frac{ben\left(ef-d\sqrt{-f}\sqrt{g}\right)\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)\left(a+b\log\right.}{2g^2\left(d^2g+e^2f\right)}$$

```
[Out] -1/2*e^2*f*(a+b*ln(c*(e*x+d)^n))^2/g^2/(d^2*g+e^2*f)+1/2*f*(a+b*ln(c*(e*x+d
)^n))^2/g^2/(g*x^2+f)+1/2*(a+b*ln(c*(e*x+d)^n))^2*ln(e*((-f)^(1/2)-x*g^(1/2
))/(e*(-f)^(1/2)+d*g^(1/2)))/g^2+1/2*(a+b*ln(c*(e*x+d)^n))^2*ln(e*((-f)^(1/
2)+x*g^(1/2))/(e*(-f)^(1/2)-d*g^(1/2)))/g^2+b*n*(a+b*ln(c*(e*x+d)^n))*polyl
og(2,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))/g^2+b*n*(a+b*ln(c*(e*x+d)^n
))*polylog(2,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))/g^2-b^2*n^2*polylog(
3,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))/g^2-b^2*n^2*polylog(3,(e*x+d)*
g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))/g^2-1/2*b^2*e*n^2*polylog(2,-(e*x+d)*g^(1
/2)/(e*(-f)^(1/2)-d*g^(1/2)))*(-f)^(1/2)*(e*(-f)^(1/2)+d*g^(1/2))/g^2/(d^2*
g+e^2*f)+1/2*b*e*n*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)+x*g^(1/2))/(e*(-f
)^(1/2)-d*g^(1/2)))*(e*f-d*(-f)^(1/2)*g^(1/2))/g^2/(d^2*g+e^2*f)+1/2*b*e*n*
(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(1/2)))
*(e*f+d*(-f)^(1/2)*g^(1/2))/g^2/(d^2*g+e^2*f)+1/2*b^2*e*n^2*polylog(2,(e*x+
d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))*(e*f+d*(-f)^(1/2)*g^(1/2))/g^2/(d^2*g+
e^2*f)
```

Rubi [A] time = 1.20, antiderivative size = 739, normalized size of antiderivative = 1.00, number of steps used = 25, number of rules used = 12, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.414, Rules used = {2416, 2413, 2418, 2390, 2301, 2394, 2393, 2391, 2396, 2433, 2374, 6589}

$$\frac{bn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^2}+\frac{bn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^2}-\frac{b^2e\sqrt{-}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2)^2,x]
```

```
[Out] -(e^2*f*(a + b*Log[c*(d + e*x)^n])^2)/(2*g^2*(e^2*f + d^2*g)) + (f*(a + b*L
og[c*(d + e*x)^n])^2)/(2*g^2*(f + g*x^2)) + (b*e*(e*f + d*Sqrt[-f]*Sqrt[g])
*n*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] +
d*Sqrt[g])])/(2*g^2*(e^2*f + d^2*g)) + ((a + b*Log[c*(d + e*x)^n])^2*Log[(e
*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*g^2) + (b*e*(e*f - d
*Sqrt[-f]*Sqrt[g])*n*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*
x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*g^2*(e^2*f + d^2*g)) + ((a + b*Log[c*(d +
 e*x)^n])^2*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*g^
2) - (b^2*e*Sqrt[-f]*(e*Sqrt[-f] + d*Sqrt[g])*n^2*PolyLog[2, -((Sqrt[g]*(d
+ e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*g^2*(e^2*f + d^2*g)) + (b*n*(a + b*L
og[c*(d + e*x)^n])*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]
))])/g^2 + (b^2*e*(e*f + d*Sqrt[-f]*Sqrt[g])*n^2*PolyLog[2, (Sqrt[g]*(d + e
*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*g^2*(e^2*f + d^2*g)) + (b*n*(a + b*Log[c
*(d + e*x)^n])*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/g^
2 - (b^2*n^2*PolyLog[3, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/g
^2 - (b^2*n^2*PolyLog[3, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/g^2
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2413

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(x_)^(m_.)*(
(f_.) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Simp[((f + g*x^r)^(q + 1)*(a
+ b*Log[c*(d + e*x)^n])^p)/(g*r*(q + 1)), x] - Dist[(b*e*n*p)/(g*r*(q + 1))
, Int[((f + g*x^r)^(q + 1)*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x
], x] /; FreeQ[{a, b, c, d, e, f, g, m, n, q, r}, x] && EqQ[m, r - 1] && Ne
Q[q, -1] && IGtQ[p, 0]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{x^3 \left(a+b\log\left(c(d+ex)^n\right)\right)^2}{\left(f+gx^2\right)^2}dx = \int \left(-\frac{fx\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{g\left(f+gx^2\right)^2} + \frac{x\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{g\left(f+gx^2\right)}\right)dx$$

$$= \frac{\int \frac{x\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{f+gx^2}dx}{g} - \frac{f\int \frac{x\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{\left(f+gx^2\right)^2}dx}{g}$$

$$= \frac{f\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2g^2\left(f+gx^2\right)} + \frac{\int \left(-\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2\sqrt{g}\left(\sqrt{-f}-\sqrt{g}x\right)} + \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2\sqrt{g}\left(\sqrt{-f}+\sqrt{g}x\right)}\right)dx}{g}$$

$$= \frac{f\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2g^2\left(f+gx^2\right)} - \frac{\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{\sqrt{-f}-\sqrt{g}x}dx}{2g^{3/2}} + \frac{\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{\sqrt{-f}+\sqrt{g}x}d}{2g^{3/2}}$$

$$= \frac{f\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2g^2\left(f+gx^2\right)} + \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2g^2} +$$

$$= \frac{f\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2g^2\left(f+gx^2\right)} + \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2g^2} +$$

$$= -\frac{e^2f\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2g^2\left(e^2f+d^2g\right)} + \frac{f\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2g^2\left(f+gx^2\right)} + \frac{\left(a+b\log\left(\right.\right.}{}$$

$$= -\frac{e^2f\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2g^2\left(e^2f+d^2g\right)} + \frac{f\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2g^2\left(f+gx^2\right)} + \frac{be\left(ef+d\sqrt{\right.}}{}$$

$$= -\frac{e^2f\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2g^2\left(e^2f+d^2g\right)} + \frac{f\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2g^2\left(f+gx^2\right)} + \frac{be\left(ef+d\sqrt{\right.}}{}$$

$$= -\frac{e^2f\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2g^2\left(e^2f+d^2g\right)} + \frac{f\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2g^2\left(f+gx^2\right)} + \frac{be\left(ef+d\sqrt{\right.}}{}$$

Mathematica [C] time = 2.65, size = 1103, normalized size = 1.49

$$\frac{b^2\left(2\log\left(1-\frac{\sqrt{g}(d+ex)}{d\sqrt{g}-ie\sqrt{f}}\right)\log^2(d+ex) + 2\log\left(1-\frac{\sqrt{g}(d+ex)}{\sqrt{g}d+ie\sqrt{f}}\right)\log^2(d+ex) + 4\text{Li}_2\left(\frac{\sqrt{g}(d+ex)}{d\sqrt{g}-ie\sqrt{f}}\right)\log(d+ex) + 4\text{L}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2)^2,x]
```

```
[Out] ((2*f*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2) + 2*(a -
 b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2*Log[f + g*x^2] + 2*b*n*(a - b*n
*Log[d + e*x] + b*Log[c*(d + e*x)^n])*((Sqrt[f]*((-I)*Sqrt[g]*(d + e*x)*Log
[d + e*x] + e*(Sqrt[f] + I*Sqrt[g]*x)*Log[I*Sqrt[f] - Sqrt[g]*x]))/((e*Sqrt
[f] - I*d*Sqrt[g])*(Sqrt[f] + I*Sqrt[g]*x)) + (Sqrt[f]*(I*Sqrt[g]*(d + e*x)
*Log[d + e*x] + e*(Sqrt[f] - I*Sqrt[g]*x)*Log[I*Sqrt[f] + Sqrt[g]*x]))/((e*
Sqrt[f] + I*d*Sqrt[g])*(Sqrt[f] - I*Sqrt[g]*x)) + 2*(Log[d + e*x]*Log[(e*(S
qrt[f] + I*Sqrt[g]*x))/(e*Sqrt[f] - I*d*Sqrt[g])] + PolyLog[2, ((-I)*Sqrt[g
]*(d + e*x))/(e*Sqrt[f] - I*d*Sqrt[g])]) + 2*(Log[d + e*x]*Log[(e*(Sqrt[f]
- I*Sqrt[g]*x))/(e*Sqrt[f] + I*d*Sqrt[g])] + PolyLog[2, (I*Sqrt[g]*(d + e*x
))/(e*Sqrt[f] + I*d*Sqrt[g])])) + b^2*n^2*(2*Log[d + e*x]^2*Log[1 - (Sqrt[g
]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]^2*Log[1 - (Sqrt
[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] + (Sqrt[f]*(Log[d + e*x]*(I*Sqrt[
g]*(d + e*x)*Log[d + e*x] + 2*e*(Sqrt[f] - I*Sqrt[g]*x)*Log[(e*(Sqrt[f] - I
*Sqrt[g]*x))/(e*Sqrt[f] + I*d*Sqrt[g])]) + 2*e*(Sqrt[f] - I*Sqrt[g]*x)*Poly
Log[2, (I*Sqrt[g]*(d + e*x))/(e*Sqrt[f] + I*d*Sqrt[g])]))/((e*Sqrt[f] + I*d
*Sqrt[g])*(Sqrt[f] - I*Sqrt[g]*x)) + 4*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d
+ e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] + 4*Log[d + e*x]*PolyLog[2, (Sqrt[g]*
(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] + (Sqrt[f]*(Log[d + e*x]*((-I)*Sqrt[g
]*(d + e*x)*Log[d + e*x] + 2*e*(Sqrt[f] + I*Sqrt[g]*x)*Log[(e*(Sqrt[f] + I*
Sqrt[g]*x))/(e*Sqrt[f] - I*d*Sqrt[g])]) + 2*e*(Sqrt[f] + I*Sqrt[g]*x)*PolyL
og[2, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])]))/((e*Sqrt[f] - I*d*Sq
rt[g])*(Sqrt[f] + I*Sqrt[g]*x)) - 4*PolyLog[3, (Sqrt[g]*(d + e*x))/((-I)*e*
Sqrt[f] + d*Sqrt[g])] - 4*PolyLog[3, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*S
qrt[g])]))/(4*g^2)
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b^2x^3\log\left((ex+d)^nc\right)^2+2\,abx^3\log\left((ex+d)^nc\right)+a^2x^3}{g^2x^4+2\,fgx^2+f^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b^2*x^3*log((e*x + d)^n*c)^2 + 2*a*b*x^3*log((e*x + d)^n*c) + a^2
*x^3)/(g^2*x^4 + 2*f*g*x^2 + f^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(b\log\left((ex+d)^nc\right)+a\right)^2x^3}{\left(gx^2+f\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2*x^3/(g*x^2 + f)^2, x)
```

maple [F] time = 1.50, size = 0, normalized size = 0.00

$$\int\frac{\left(b\ln\left(c\,(ex+d)^n\right)+a\right)^2x^3}{\left(g\,x^2+f\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(b*ln(c*(e*x+d)^n)+a)^2/(g*x^2+f)^2,x)
```

```
[Out] int(x^3*(b*ln(c*(e*x+d)^n)+a)^2/(g*x^2+f)^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{2}a^2\left(\frac{f}{g^3x^2+fg^2}+\frac{\log\left(gx^2+f\right)}{g^2}\right)+\int\frac{b^2x^3\log\left((ex+d)^n\right)^2+2\left(b^2\log(c)+ab\right)x^3\log\left((ex+d)^n\right)+\left(b^2\log(c\right.}{g^2x^4+2\,fgx^2+f^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f)^2,x, algorithm="maxima")
```

```
[Out] 1/2*a^2*(f/(g^3*x^2 + f*g^2) + log(g*x^2 + f)/g^2) + integrate((b^2*x^3*log
((e*x + d)^n)^2 + 2*(b^2*log(c) + a*b)*x^3*log((e*x + d)^n) + (b^2*log(c)^2
 + 2*a*b*log(c))*x^3)/(g^2*x^4 + 2*f*g*x^2 + f^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{x^3\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)^2}{\left(g\,x^2+f\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(a + b*log(c*(d + e*x)^n))^2)/(f + g*x^2)^2,x)
```

```
[Out] int((x^3*(a + b*log(c*(d + e*x)^n))^2)/(f + g*x^2)^2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(a+b*ln(c*(e*x+d)**n))**2/(g*x**2+f)**2,x)
```

```
[Out] Timed out
```

3.322 $\int \frac{x(a+b\log(c(d+ex)^n))^2}{(f+gx^2)^2}\,dx$

Optimal. Leaf size=430

$$-\frac{ben\left(d\sqrt{-f}\sqrt{g}+ef\right)\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{2fg\left(d^2g+e^2f\right)}-\frac{ben\left(ef-d\sqrt{-f}\sqrt{g}\right)\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)\left(a+b1\right.}{2fg\left(d^2g+e^2f\right)}$$

```
[Out] 1/2*e^2*(a+b*ln(c*(e*x+d)^n))^2/g/(d^2*g+e^2*f)-1/2*(a+b*ln(c*(e*x+d)^n))^2
/g/(g*x^2+f)-1/2*b^2*e*n^2*polylog(2,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/
2)))*(e*(-f)^(1/2)+d*g^(1/2))/g/(d^2*g+e^2*f)/(-f)^(1/2)-1/2*b*e*n*(a+b*ln(
c*(e*x+d)^n))*ln(e*((-f)^(1/2)+x*g^(1/2))/(e*(-f)^(1/2)-d*g^(1/2)))*(e*f-d*
(-f)^(1/2)*g^(1/2))/f/g/(d^2*g+e^2*f)-1/2*b*e*n*(a+b*ln(c*(e*x+d)^n))*ln(e*
((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(1/2)))*(e*f+d*(-f)^(1/2)*g^(1/2))
/f/g/(d^2*g+e^2*f)-1/2*b^2*e*n^2*polylog(2,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*
g^(1/2)))*(e*f+d*(-f)^(1/2)*g^(1/2))/f/g/(d^2*g+e^2*f)
```

Rubi [A] time = 0.55, antiderivative size = 430, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 7, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.259, Rules used = {2413, 2418, 2390, 2301, 2394, 2393, 2391}

$$-\frac{b^2en^2\left(d\sqrt{g}+e\sqrt{-f}\right)\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2\sqrt{-f}g\left(d^2g+e^2f\right)}-\frac{b^2en^2\left(d\sqrt{-f}\sqrt{g}+ef\right)\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{2fg\left(d^2g+e^2f\right)}-\frac{ben\left(d\sqrt{-f}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2)^2,x]
```

```
[Out] (e^2*(a + b*Log[c*(d + e*x)^n])^2)/(2*g*(e^2*f + d^2*g)) - (a + b*Log[c*(d
+ e*x)^n])^2/(2*g*(f + g*x^2)) - (b*e*(e*f + d*Sqrt[-f]*Sqrt[g])*n*(a + b*L
og[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])]
)/(2*f*g*(e^2*f + d^2*g)) - (b*e*(e*f - d*Sqrt[-f]*Sqrt[g])*n*(a + b*Log[c*
(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*
f*g*(e^2*f + d^2*g)) - (b^2*e*(e*Sqrt[-f] + d*Sqrt[g])*n^2*PolyLog[2, -((Sq
rt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*Sqrt[-f]*g*(e^2*f + d^2*g))
 - (b^2*e*(e*f + d*Sqrt[-f]*Sqrt[g])*n^2*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*
Sqrt[-f] + d*Sqrt[g])])/(2*f*g*(e^2*f + d^2*g))
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2413

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(x_)^(m_.)*(
(f_.) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Simp[((f + g*x^r)^(q + 1)*(a
+ b*Log[c*(d + e*x)^n])^p)/(g*r*(q + 1)), x] - Dist[(b*e*n*p)/(g*r*(q + 1))
, Int[((f + g*x^r)^(q + 1)*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x
], x] /; FreeQ[{a, b, c, d, e, f, g, m, n, q, r}, x] && EqQ[m, r - 1] && Ne
Q[q, -1] && IGtQ[p, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rubi steps

$$\int \frac{x\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{\left(f+gx^2\right)^2}\,dx = -\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2g\left(f+gx^2\right)} + \frac{(ben)\int \frac{a+b\log(c(d+ex)^n)}{(d+ex)\left(f+gx^2\right)}\,dx}{g}$$

$$= -\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2g\left(f+gx^2\right)} + \frac{(ben)\int\left(\frac{e^2\left(a+b\log(c(d+ex)^n)\right)}{\left(e^2f+d^2g\right)(d+ex)} - \frac{g(-d+ex)\left(a+b\log(c(d+ex)\right.}{\left(e^2f+d^2g\right)\left(f+gx^2\right)}\right.}{g}$$

$$= -\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2g\left(f+gx^2\right)} - \frac{(ben)\int \frac{(-d+ex)\left(a+b\log(c(d+ex)^n)\right)}{f+gx^2}\,dx}{e^2f+d^2g} + \frac{\left(be^3n\right)\int \frac{a+b}{}}{g\left(e^2f\right.}$$

$$= -\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2g\left(f+gx^2\right)} - \frac{(ben)\int\left(\frac{\left(-d\sqrt{-f}-\frac{ef}{\sqrt{g}}\right)\left(a+b\log(c(d+ex)^n)\right)}{2f\left(\sqrt{-f}-\sqrt{g}\,x\right)} + \frac{\left(-d\sqrt{-f}+\frac{ef}{\sqrt{g}}\right.}{2f(}\right.}{e^2f+d^2g}$$

$$= \frac{e^2\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2g\left(e^2f+d^2g\right)} - \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2g\left(f+gx^2\right)} - \frac{\left(be\left(\frac{d}{\sqrt{-f}}+\frac{e}{\sqrt{g}}\right)n\right)\int}{2\left(e^2f+\right.}$$

$$= \frac{e^2\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2g\left(e^2f+d^2g\right)} - \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2g\left(f+gx^2\right)} - \frac{be\left(\frac{df}{(-f)^{3/2}}+\frac{e}{\sqrt{g}}\right)n\left(a\right.}{}$$

$$= \frac{e^2\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2g\left(e^2f+d^2g\right)} - \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2g\left(f+gx^2\right)} - \frac{be\left(\frac{df}{(-f)^{3/2}}+\frac{e}{\sqrt{g}}\right)n\left(a\right.}{}$$

$$= \frac{e^2\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2g\left(e^2f+d^2g\right)} - \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2g\left(f+gx^2\right)} - \frac{be\left(\frac{df}{(-f)^{3/2}}+\frac{e}{\sqrt{g}}\right)n\left(a\right.}{}$$

Mathematica [C] time = 0.69, size = 590, normalized size = 1.37

$$\frac{\frac{2bn\left(2\sqrt{f}\,g\left(d^2-e^2x^2\right)\log(d+ex)+e\left(f+gx^2\right)\left(\left(e\sqrt{f}+id\sqrt{g}\right)\log\left(-\sqrt{g}\,x+i\sqrt{f}\right)+\left(e\sqrt{f}-id\sqrt{g}\right)\log\left(\sqrt{g}\,x+i\sqrt{f}\right)\right)\right)\left(-a-b\log(c(d+ex)^n)+bn\log(d+ex)\right)}{\sqrt{f}\left(f+gx^2\right)\left(d^2g+e^2f\right)} - 2}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2)^2,x]
```

```
[Out] ((-2*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2) + (2*b*n*
(-a + b*n*Log[d + e*x] - b*Log[c*(d + e*x)^n])*(2*Sqrt[f]*g*(d^2 - e^2*x^2)
*Log[d + e*x] + e*(f + g*x^2)*((e*Sqrt[f] + I*d*Sqrt[g])*Log[I*Sqrt[f] - Sq
rt[g]*x] + (e*Sqrt[f] - I*d*Sqrt[g])*Log[I*Sqrt[f] + Sqrt[g]*x])))/(Sqrt[f]
*(e^2*f + d^2*g)*(f + g*x^2)) + (I*b^2*n^2*((-(Sqrt[g]*(d + e*x)*Log[d + e*
x]^2) + 2*e*(I*Sqrt[f] + Sqrt[g]*x)*Log[d + e*x]*Log[(e*(Sqrt[f] - I*Sqrt[g
]*x))/(e*Sqrt[f] + I*d*Sqrt[g])] + 2*e*(I*Sqrt[f] + Sqrt[g]*x)*PolyLog[2, (
I*Sqrt[g]*(d + e*x))/(e*Sqrt[f] + I*d*Sqrt[g])])/((e*Sqrt[f] + I*d*Sqrt[g])
*(Sqrt[f] - I*Sqrt[g]*x)) + (Log[d + e*x]*(Sqrt[g]*(d + e*x)*Log[d + e*x] +
 (2*I)*e*(Sqrt[f] + I*Sqrt[g]*x)*Log[(e*(Sqrt[f] + I*Sqrt[g]*x))/(e*Sqrt[f]
 - I*d*Sqrt[g])]) + (2*I)*e*(Sqrt[f] + I*Sqrt[g]*x)*PolyLog[2, (Sqrt[g]*(d
```

```
+ e*x))/(I*e*Sqrt[f] + d*Sqrt[g])])/((e*Sqrt[f] - I*d*Sqrt[g])*(Sqrt[f] + I
*Sqrt[g]*x))))/Sqrt[f])/(4*g)
```

fricas [F] time = 0.46, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{b^2x\log\left((ex+d)^nc\right)^2+2\,abx\log\left((ex+d)^nc\right)+a^2x}{g^2x^4+2\,fgx^2+f^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b^2*x*log((e*x + d)^n*c)^2 + 2*a*b*x*log((e*x + d)^n*c) + a^2*x)/
(g^2*x^4 + 2*f*g*x^2 + f^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(b\log\left((ex+d)^nc\right)+a\right)^2x}{\left(gx^2+f\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2*x/(g*x^2 + f)^2, x)
```

maple [C] time = 0.67, size = 2134, normalized size = 4.96

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(b*ln(c*(e*x+d)^n)+a)^2/(g*x^2+f)^2,x)
```

```
[Out] -b^2*n^2*e/(d^2*g+e^2*f)*d/(f*g)^(1/2)*arctan(1/2*(-2*d*g+2*(e*x+d)*g)/(f*g
)^(1/2)/e)*ln(e*x+d)-1/8*(-I*Pi*b*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x
+d)^n)+I*Pi*b*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*Pi*b*csgn(I*(e*x+d)^n)*csgn
(I*c*(e*x+d)^n)^2-I*Pi*b*csgn(I*c*(e*x+d)^n)^3+2*b*ln(c)+2*a)^2/g/(g*x^2+f)
+1/2*I*n*e/(d^2*g+e^2*f)*d/(f*g)^(1/2)*arctan(1/(f*g)^(1/2)*g*x)*b^2*Pi*csg
n(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/2*b^2/g/(g*x^2+f)*ln((e*x+d)^n)^2-1/
2*I*n*e/(d^2*g+e^2*f)*d/(f*g)^(1/2)*arctan(1/(f*g)^(1/2)*g*x)*b^2*Pi*csgn(I
*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/2*I*n*e/(d^2*g+e^2*f)*d/(f*g)^(
1/2)*arctan(1/(f*g)^(1/2)*g*x)*b^2*Pi*csgn(I*c*(e*x+d)^n)^3-1/2*I/g*n*e^2/(
d^2*g+e^2*f)*ln(e*x+d)*b^2*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^
n)+1/4*I/g*n*e^2/(d^2*g+e^2*f)*ln(g*x^2+f)*b^2*Pi*csgn(I*c)*csgn(I*(e*x+d)^
n)*csgn(I*c*(e*x+d)^n)+1/2*I*n*e/(d^2*g+e^2*f)*d/(f*g)^(1/2)*arctan(1/(f*g)
^(1/2)*g*x)*b^2*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+b^2*n*e/(d^2*g+e^2*f)*d/
(f*g)^(1/2)*arctan(1/2*(-2*d*g+2*(e*x+d)*g)/(f*g)^(1/2)/e)*ln((e*x+d)^n)-1/
2*I/g/(g*x^2+f)*ln((e*x+d)^n)*b^2*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/2*I/
g/(g*x^2+f)*ln((e*x+d)^n)*b^2*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/
2*I/g*n*e^2/(d^2*g+e^2*f)*ln(e*x+d)*b^2*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+
1/4*I/g*n*e^2/(d^2*g+e^2*f)*ln(g*x^2+f)*b^2*Pi*csgn(I*c*(e*x+d)^n)^3-1/2/g*
n*e^2/(d^2*g+e^2*f)*ln(g*x^2+f)*b^2*ln(c)+1/g*n*e^2/(d^2*g+e^2*f)*ln(e*x+d)
*b^2*ln(c)+1/2*I/g/(g*x^2+f)*ln((e*x+d)^n)*b^2*Pi*csgn(I*c*(e*x+d)^n)^3-1/2
*b^2/g*n^2*e^2*ln(e*x+d)^2/(d^2*g+e^2*f)-1/2*b^2/g*n^2*e^2/(d^2*g+e^2*f)*di
log((d*g+(-f*g)^(1/2)*e-(e*x+d)*g)/(d*g+(-f*g)^(1/2)*e))-1/2*b^2/g*n^2*e^2/
(d^2*g+e^2*f)*dilog((-d*g+(-f*g)^(1/2)*e+(e*x+d)*g)/(-d*g+(-f*g)^(1/2)*e))-
1/4*I/g*n*e^2/(d^2*g+e^2*f)*ln(g*x^2+f)*b^2*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n
)^2-1/2*I/g*n*e^2/(d^2*g+e^2*f)*ln(e*x+d)*b^2*Pi*csgn(I*c*(e*x+d)^n)^3+1/2*
I/g*n*e^2/(d^2*g+e^2*f)*ln(e*x+d)*b^2*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)
```

```
^n)^2+1/2*I/g/(g*x^2+f)*ln((e*x+d)^n)*b^2*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*cs
gn(I*c*(e*x+d)^n)+1/2*b^2*n^2*e/(d^2*g+e^2*f)*ln(e*x+d)/(-f*g)^(1/2)*ln((d*
g+(-f*g)^(1/2)*e-(e*x+d)*g)/(d*g+(-f*g)^(1/2)*e))*d-1/2*b^2*n^2*e/(d^2*g+e^
2*f)*ln(e*x+d)/(-f*g)^(1/2)*ln((-d*g+(-f*g)^(1/2)*e+(e*x+d)*g)/(-d*g+(-f*g)
^(1/2)*e))*d+b*n*e/(d^2*g+e^2*f)*d/(f*g)^(1/2)*arctan(1/(f*g)^(1/2)*g*x)*a+
n*e/(d^2*g+e^2*f)*d/(f*g)^(1/2)*arctan(1/(f*g)^(1/2)*g*x)*b^2*ln(c)-1/4*I/g
*n*e^2/(d^2*g+e^2*f)*ln(g*x^2+f)*b^2*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^
n)^2-1/2*b^2/g*n*e^2/(d^2*g+e^2*f)*ln(d^2*g+e^2*f-2*(e*x+d)*d*g+(e*x+d)^2*g
)*ln((e*x+d)^n)+b^2/g*n*e^2/(d^2*g+e^2*f)*ln(e*x+d)*ln((e*x+d)^n)-b/g/(g*x^
2+f)*ln((e*x+d)^n)*a-1/g/(g*x^2+f)*ln((e*x+d)^n)*b^2*ln(c)-1/2*b/g*n*e^2/(d
^2*g+e^2*f)*ln(g*x^2+f)*a+b/g*n*e^2/(d^2*g+e^2*f)*ln(e*x+d)*a+1/2*b^2/g*n^2
*e^2/(d^2*g+e^2*f)*ln(d^2*g+e^2*f-2*(e*x+d)*d*g+(e*x+d)^2*g)*ln(e*x+d)-1/2*
b^2/g*n^2*e^2/(d^2*g+e^2*f)*ln(e*x+d)*ln((d*g+(-f*g)^(1/2)*e-(e*x+d)*g)/(d*
g+(-f*g)^(1/2)*e))-1/2*b^2/g*n^2*e^2/(d^2*g+e^2*f)*ln(e*x+d)*ln((-d*g+(-f*g
)^(1/2)*e+(e*x+d)*g)/(-d*g+(-f*g)^(1/2)*e))+1/2*b^2*n^2*e/(d^2*g+e^2*f)/(-f
*g)^(1/2)*dilog((d*g+(-f*g)^(1/2)*e-(e*x+d)*g)/(d*g+(-f*g)^(1/2)*e))*d-1/2*
b^2*n^2*e/(d^2*g+e^2*f)/(-f*g)^(1/2)*dilog((-d*g+(-f*g)^(1/2)*e+(e*x+d)*g)/
(-d*g+(-f*g)^(1/2)*e))*d
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{2}aben\left(\frac{e\log\left(gx^2+f\right)}{e^2fg+d^2g^2}-\frac{2e\log\left(ex+d\right)}{e^2fg+d^2g^2}-\frac{2d\arctan\left(\frac{gx}{\sqrt{fg}}\right)}{\left(e^2f+d^2g\right)\sqrt{fg}}\right)-\frac{1}{2}b^2\left(\frac{\log\left(\left(ex+d\right)^n\right)^2}{g^2x^2+fg}-2\int\frac{egx^2\log(c)^2+dg}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f)^2,x, algorithm="maxima")
```

```
[Out] -1/2*a*b*e*n*(e*log(g*x^2 + f)/(e^2*f*g + d^2*g^2) - 2*e*log(e*x + d)/(e^2*
f*g + d^2*g^2) - 2*d*arctan(g*x/sqrt(f*g))/((e^2*f + d^2*g)*sqrt(f*g))) - 1
/2*b^2*(log((e*x + d)^n)^2/(g^2*x^2 + f*g) - 2*integrate((e*g*x^2*log(c)^2
+ d*g*x*log(c)^2 + (2*d*g*x*log(c) + e*f*n + (e*g*n + 2*e*g*log(c))*x^2)*lo
g((e*x + d)^n))/(e*g^3*x^5 + d*g^3*x^4 + 2*e*f*g^2*x^3 + 2*d*f*g^2*x^2 + e*
f^2*g*x + d*f^2*g), x)) - a*b*log((e*x + d)^n*c)/(g^2*x^2 + f*g) - 1/2*a^2/
(g^2*x^2 + f*g)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x\,{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^2}{{\left(g\,x^2+f\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(a + b*log(c*(d + e*x)^n))^2)/(f + g*x^2)^2,x)
```

```
[Out] int((x*(a + b*log(c*(d + e*x)^n))^2)/(f + g*x^2)^2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*ln(c*(e*x+d)**n))**2/(g*x**2+f)**2,x)
```

```
[Out] Timed out
```

3.323 $\int \frac{\left(a+b\log(c(d+ex)^n)\right)^2}{x\left(f+gx^2\right)^2}\,dx$

Optimal. Leaf size=814

$$-\frac{b^2e\left(\sqrt{g}\,d+e\sqrt{-f}\right)\mathrm{Li}_2\left(-\frac{\sqrt{g}\,(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)n^2}{2(-f)^{3/2}\left(gd^2+e^2f\right)}+\frac{b^2e\left(\sqrt{-f}\,\sqrt{g}\,d+ef\right)\mathrm{Li}_2\left(\frac{\sqrt{g}\,(d+ex)}{\sqrt{g}\,d+e\sqrt{-f}}\right)n^2}{2f^2\left(gd^2+e^2f\right)}+\frac{b^2\mathrm{Li}_3\left(-\frac{\sqrt{g}\,(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)n^2}{f^2}+$$

```
[Out] -1/2*e^2*(a+b*ln(c*(e*x+d)^n))^2/f/(d^2*g+e^2*f)+1/2*(a+b*ln(c*(e*x+d)^n))^
2/f/(g*x^2+f)+ln(-e*x/d)*(a+b*ln(c*(e*x+d)^n))^2/f^2-1/2*(a+b*ln(c*(e*x+d)^
n))^2*ln(e*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(1/2)))/f^2-1/2*(a+b*ln
(c*(e*x+d)^n))^2*ln(e*((-f)^(1/2)+x*g^(1/2))/(e*(-f)^(1/2)-d*g^(1/2)))/f^2+
2*b*n*(a+b*ln(c*(e*x+d)^n))*polylog(2,1+e*x/d)/f^2-b*n*(a+b*ln(c*(e*x+d)^n)
)*polylog(2,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))/f^2-b*n*(a+b*ln(c*(e
*x+d)^n))*polylog(2,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))/f^2-2*b^2*n^2
*polylog(3,1+e*x/d)/f^2+b^2*n^2*polylog(3,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*
g^(1/2)))/f^2+b^2*n^2*polylog(3,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))/f
^2-1/2*b^2*e*n^2*polylog(2,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))*(e*(-
f)^(1/2)+d*g^(1/2))/(-f)^(3/2)/(d^2*g+e^2*f)+1/2*b*e*n*(a+b*ln(c*(e*x+d)^n)
)*ln(e*((-f)^(1/2)+x*g^(1/2))/(e*(-f)^(1/2)-d*g^(1/2)))*(e*f-d*(-f)^(1/2)*g
^(1/2))/f^2/(d^2*g+e^2*f)+1/2*b*e*n*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)-
x*g^(1/2))/(e*(-f)^(1/2)+d*g^(1/2)))*(e*f+d*(-f)^(1/2)*g^(1/2))/f^2/(d^2*g+
e^2*f)+1/2*b^2*e*n^2*polylog(2,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))*(e
*f+d*(-f)^(1/2)*g^(1/2))/f^2/(d^2*g+e^2*f)
```

Rubi [A] time = 1.30, antiderivative size = 814, normalized size of antiderivative = 1.00, number of steps used = 29, number of rules used = 12, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.414, Rules used = {2416, 2396, 2433, 2374, 6589, 2413, 2418, 2390, 2301, 2394, 2393, 2391}

$$-\frac{b^2e\left(\sqrt{g}\,d+e\sqrt{-f}\right)\mathrm{PolyLog}\left(2,-\frac{\sqrt{g}\,(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)n^2}{2(-f)^{3/2}\left(gd^2+e^2f\right)}+\frac{b^2e\left(\sqrt{-f}\,\sqrt{g}\,d+ef\right)\mathrm{PolyLog}\left(2,\frac{\sqrt{g}\,(d+ex)}{\sqrt{g}\,d+e\sqrt{-f}}\right)n^2}{2f^2\left(gd^2+e^2f\right)}+\frac{b^2\mathrm{PolyL}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^2/(x*(f + g*x^2)^2),x]
```

```
[Out] -(e^2*(a + b*Log[c*(d + e*x)^n])^2)/(2*f*(e^2*f + d^2*g)) + (a + b*Log[c*(d
 + e*x)^n])^2/(2*f*(f + g*x^2)) + (Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n
])^2)/f^2 + (b*e*(e*f + d*Sqrt[-f]*Sqrt[g])*n*(a + b*Log[c*(d + e*x)^n])*Lo
g[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*f^2*(e^2*f + d^2
*g)) - ((a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt
[-f] + d*Sqrt[g])])/(2*f^2) + (b*e*(e*f - d*Sqrt[-f]*Sqrt[g])*n*(a + b*Log[
c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(
2*f^2*(e^2*f + d^2*g)) - ((a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] + S
qrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*f^2) - (b^2*e*(e*Sqrt[-f] + d*Sqrt
[g])*n^2*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*(-
f)^(3/2)*(e^2*f + d^2*g)) - (b*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((S
qrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/f^2 + (b^2*e*(e*f + d*Sqrt[-f
]*Sqrt[g])*n^2*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2
*f^2*(e^2*f + d^2*g)) - (b*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, (Sqrt[g]
*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/f^2 + (2*b*n*(a + b*Log[c*(d + e*x)^
n])*PolyLog[2, 1 + (e*x)/d])/f^2 + (b^2*n^2*PolyLog[3, -((Sqrt[g]*(d + e*x)
)/(e*Sqrt[-f] - d*Sqrt[g]))])/f^2 + (b^2*n^2*PolyLog[3, (Sqrt[g]*(d + e*x))
/(e*Sqrt[-f] + d*Sqrt[g])])/f^2 - (2*b^2*n^2*PolyLog[3, 1 + (e*x)/d])/f^2
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2413

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(x_)^(m_.)*(
(f_.) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Simp[((f + g*x^r)^(q + 1)*(a
+ b*Log[c*(d + e*x)^n])^p)/(g*r*(q + 1)), x] - Dist[(b*e*n*p)/(g*r*(q + 1))
, Int[((f + g*x^r)^(q + 1)*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x
], x] /; FreeQ[{a, b, c, d, e, f, g, m, n, q, r}, x] && EqQ[m, r - 1] && Ne
Q[q, -1] && IGtQ[p, 0]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
```

```
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{x\left(f+gx^2\right)^2}dx = \int \left(\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{f^2x} - \frac{gx\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{f\left(f+gx^2\right)^2} - \frac{gx\left(a+b\log(c(d\right.}{f^2\left(f+gx\right.}\right.$$

$$= \frac{\int \frac{\left(a+b\log(c(d+ex)^n)\right)^2}{x}dx}{f^2} - \frac{g\int \frac{x\left(a+b\log(c(d+ex)^n)\right)^2}{f+gx^2}dx}{f^2} - \frac{g\int \frac{x\left(a+b\log(c(d+ex)^n)\right)^2}{\left(f+gx^2\right)^2}dx}{f}$$

$$= \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2f\left(f+gx^2\right)} + \frac{\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{f^2} - \frac{g\int\left(-\frac{\left(a+b\log(c\right.}{2\sqrt{g}\left(\sqrt{-}\right.}\right.}{}$$

$$= \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2f\left(f+gx^2\right)} + \frac{\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{f^2} + \frac{\sqrt{g}\int\frac{\left(a+b\log(c\right.}{\sqrt{-f}}}{2f^2}$$

$$= \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2f\left(f+gx^2\right)} + \frac{\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{f^2} - \frac{\left(a+b\log(c(d\right.}{}$$

$$= \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2f\left(f+gx^2\right)} + \frac{\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{f^2} - \frac{\left(a+b\log(c(d\right.}{}$$

$$= -\frac{e^2\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2f\left(e^2f+d^2g\right)} + \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2f\left(f+gx^2\right)} + \frac{\log\left(-\frac{ex}{d}\right)\left(a+b\log\right.}{f^2}$$

$$= -\frac{e^2\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2f\left(e^2f+d^2g\right)} + \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2f\left(f+gx^2\right)} + \frac{\log\left(-\frac{ex}{d}\right)\left(a+b\log\right.}{f^2}$$

$$= -\frac{e^2\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2f\left(e^2f+d^2g\right)} + \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2f\left(f+gx^2\right)} + \frac{\log\left(-\frac{ex}{d}\right)\left(a+b\log\right.}{f^2}$$

$$= -\frac{e^2\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2f\left(e^2f+d^2g\right)} + \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2f\left(f+gx^2\right)} + \frac{\log\left(-\frac{ex}{d}\right)\left(a+b\log\right.}{f^2}$$

Mathematica [C] time = 2.36, size = 1209, normalized size = 1.49

$$\frac{b^2\left(4\log\left(-\frac{ex}{d}\right)\log^2(d+ex) - 2\log\left(1-\frac{\sqrt{g}(d+ex)}{d\sqrt{g}-ie\sqrt{f}}\right)\log^2(d+ex) - 2\log\left(1-\frac{\sqrt{g}(d+ex)}{\sqrt{g}d+ie\sqrt{f}}\right)\log^2(d+ex) - 4\mathrm{Li}_2\left(\frac{\sqrt{g}(}{d\sqrt{g}}\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^2/(x*(f + g*x^2)^2),x]
```

```
[Out] ((2*f*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2) + 4*Log[
x]*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 - 2*(a - b*n*Log[d + e*x
] + b*Log[c*(d + e*x)^n])^2*Log[f + g*x^2] + 2*b*n*(a - b*n*Log[d + e*x] +
b*Log[c*(d + e*x)^n])*((Sqrt[f]*((-I)*Sqrt[g]*(d + e*x)*Log[d + e*x] + e*(S
qrt[f] + I*Sqrt[g]*x)*Log[I*Sqrt[f] - Sqrt[g]*x]))/((e*Sqrt[f] - I*d*Sqrt[g
])*(Sqrt[f] + I*Sqrt[g]*x)) + (Sqrt[f]*(I*Sqrt[g]*(d + e*x)*Log[d + e*x] +
e*(Sqrt[f] - I*Sqrt[g]*x)*Log[I*Sqrt[f] + Sqrt[g]*x]))/((e*Sqrt[f] + I*d*Sq
rt[g])*(Sqrt[f] - I*Sqrt[g]*x)) - 2*(Log[d + e*x]*Log[(e*(Sqrt[f] + I*Sqrt[
g]*x))/(e*Sqrt[f] - I*d*Sqrt[g])] + PolyLog[2, ((-I)*Sqrt[g]*(d + e*x))/(e*
Sqrt[f] - I*d*Sqrt[g])]) - 2*(Log[d + e*x]*Log[(e*(Sqrt[f] - I*Sqrt[g]*x))/
(e*Sqrt[f] + I*d*Sqrt[g])] + PolyLog[2, (I*Sqrt[g]*(d + e*x))/(e*Sqrt[f] +
I*d*Sqrt[g])]) + 4*(Log[-((e*x)/d)]*Log[d + e*x] + PolyLog[2, 1 + (e*x)/d])
) + b^2*n^2*(4*Log[-((e*x)/d)]*Log[d + e*x]^2 - 2*Log[d + e*x]^2*Log[1 - (S
qrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] - 2*Log[d + e*x]^2*Log[1 -
(Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] + (Sqrt[f]*(Log[d + e*x]*(I*
Sqrt[g]*(d + e*x)*Log[d + e*x] + 2*e*(Sqrt[f] - I*Sqrt[g]*x)*Log[(e*(Sqrt[f
] - I*Sqrt[g]*x))/(e*Sqrt[f] + I*d*Sqrt[g])]) + 2*e*(Sqrt[f] - I*Sqrt[g]*x)
*PolyLog[2, (I*Sqrt[g]*(d + e*x))/(e*Sqrt[f] + I*d*Sqrt[g])]))/((e*Sqrt[f]
+ I*d*Sqrt[g])*(Sqrt[f] - I*Sqrt[g]*x)) - 4*Log[d + e*x]*PolyLog[2, (Sqrt[g
]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] - 4*Log[d + e*x]*PolyLog[2, (Sqr
t[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] + (Sqrt[f]*(Log[d + e*x]*((-I)*S
qrt[g]*(d + e*x)*Log[d + e*x] + 2*e*(Sqrt[f] + I*Sqrt[g]*x)*Log[(e*(Sqrt[f]
 + I*Sqrt[g]*x))/(e*Sqrt[f] - I*d*Sqrt[g])]) + 2*e*(Sqrt[f] + I*Sqrt[g]*x)*
PolyLog[2, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])]))/((e*Sqrt[f] - I
*d*Sqrt[g])*(Sqrt[f] + I*Sqrt[g]*x)) + 8*Log[d + e*x]*PolyLog[2, 1 + (e*x)/
d] + 4*PolyLog[3, (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] + 4*Pol
yLog[3, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] - 8*PolyLog[3, 1 + (
e*x)/d]))/(4*f^2)
```

fricas [F] time = 0.42, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b^2 \log\left((ex+d)^n c\right)^2 + 2\,ab\log\left((ex+d)^n c\right) + a^2}{g^2x^5 + 2\,fgx^3 + f^2x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x/(g*x^2+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b^2*log((e*x + d)^n*c)^2 + 2*a*b*log((e*x + d)^n*c) + a^2)/(g^2*x
^5 + 2*f*g*x^3 + f^2*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\log\left((ex+d)^n c\right) + a\right)^2}{\left(gx^2+f\right)^2 x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x/(g*x^2+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2/((g*x^2 + f)^2*x), x)
```

maple [F] time = 1.17, size = 0, normalized size = 0.00

$$\int \frac{\left(b\ln\left(c\,(ex+d)^n\right) + a\right)^2}{\left(g\,x^2+f\right)^2 x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)^2/x/(g*x^2+f)^2,x)
```

```
[Out] int((b*ln(c*(e*x+d)^n)+a)^2/x/(g*x^2+f)^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{2}a^2\left(\frac{1}{fgx^2+f^2}-\frac{\log\left(gx^2+f\right)}{f^2}+\frac{2\log(x)}{f^2}\right)+\int\frac{b^2\log\left((ex+d)^n\right)^2+b^2\log(c)^2+2\,ab\log(c)+2\left(b^2\log(c)+a\right.}{g^2x^5+2\,fgx^3+f^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x/(g*x^2+f)^2,x, algorithm="maxima")
```

```
[Out] 1/2*a^2*(1/(f*g*x^2 + f^2) - log(g*x^2 + f)/f^2 + 2*log(x)/f^2) + integrate
((b^2*log((e*x + d)^n)^2 + b^2*log(c)^2 + 2*a*b*log(c) + 2*(b^2*log(c) + a*
b)*log((e*x + d)^n))/(g^2*x^5 + 2*f*g*x^3 + f^2*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^2}{x\,{\left(g\,x^2+f\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^2/(x*(f + g*x^2)^2),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))^2/(x*(f + g*x^2)^2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2/x/(g*x**2+f)**2,x)
```

```
[Out] Timed out
```

3.324 $\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{x^3\left(f+gx^2\right)^2}\,dx$

Optimal. Leaf size=970

$$\frac{g\left(a+b\log\left(c(d+ex)^n\right)\right)^2 e^2}{2f^2\left(gd^2+e^2f\right)}+\frac{b^2n^2\log(x)e^2}{d^2f^2}-\frac{bn\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(1-\frac{d}{d+ex}\right)e^2}{d^2f^2}+\frac{b^2n^2\text{Li}_2\left(\frac{d}{d+ex}\right)e^2}{d^2f^2}-$$

```
[Out] b^2*e^2*n^2*ln(x)/d^2/f^2-b*e*n*(e*x+d)*(a+b*ln(c*(e*x+d)^n))/d^2/f^2/x+1/2
*e^2*g*(a+b*ln(c*(e*x+d)^n))^2/f^2/(d^2*g+e^2*f)-1/2*(a+b*ln(c*(e*x+d)^n))^
2/f^2/x^2-1/2*g*(a+b*ln(c*(e*x+d)^n))^2/f^2/(g*x^2+f)-2*g*ln(-e*x/d)*(a+b*l
n(c*(e*x+d)^n))^2/f^3-b*e^2*n*(a+b*ln(c*(e*x+d)^n))*ln(1-d/(e*x+d))/d^2/f^2
+g*(a+b*ln(c*(e*x+d)^n))^2*ln(e*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(1
/2)))/f^3+g*(a+b*ln(c*(e*x+d)^n))^2*ln(e*((-f)^(1/2)+x*g^(1/2))/(e*(-f)^(1/
2)-d*g^(1/2)))/f^3+b^2*e^2*n^2*polylog(2,d/(e*x+d))/d^2/f^2-4*b*g*n*(a+b*ln
(c*(e*x+d)^n))*polylog(2,1+e*x/d)/f^3+2*b*g*n*(a+b*ln(c*(e*x+d)^n))*polylog
(2,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))/f^3+2*b*g*n*(a+b*ln(c*(e*x+d)
^n))*polylog(2,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))/f^3+4*b^2*g*n^2*po
lylog(3,1+e*x/d)/f^3-2*b^2*g*n^2*polylog(3,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d
*g^(1/2)))/f^3-2*b^2*g*n^2*polylog(3,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2
)))/f^3-1/2*b^2*e*g*n^2*polylog(2,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2))
)*(e*(-f)^(1/2)+d*g^(1/2))/(-f)^(5/2)/(d^2*g+e^2*f)-1/2*b*e*g*n*(a+b*ln(c*(
e*x+d)^n))*ln(e*((-f)^(1/2)+x*g^(1/2))/(e*(-f)^(1/2)-d*g^(1/2)))*(e*f-d*(-f
)^(1/2)*g^(1/2))/f^3/(d^2*g+e^2*f)-1/2*b*e*g*n*(a+b*ln(c*(e*x+d)^n))*ln(e*(
(-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(1/2)))*(e*f+d*(-f)^(1/2)*g^(1/2))/
f^3/(d^2*g+e^2*f)-1/2*b^2*e*g*n^2*polylog(2,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d
*g^(1/2)))*(e*f+d*(-f)^(1/2)*g^(1/2))/f^3/(d^2*g+e^2*f)
```

Rubi [A] time = 1.65, antiderivative size = 994, normalized size of antiderivative = 1.02, number of steps used = 38, number of rules used = 19, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.655, Rules used = {2416, 2398, 2411, 2347, 2344, 2301, 2317, 2391, 2314, 31, 2396, 2433, 2374, 6589, 2413, 2418, 2390, 2394, 2393}

$$\frac{g\left(a+b\log\left(c(d+ex)^n\right)\right)^2 e^2}{2f^2\left(gd^2+e^2f\right)}+\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2 e^2}{2d^2f^2}+\frac{b^2n^2\log(x)e^2}{d^2f^2}-\frac{bn\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right.}{d^2f^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^2/(x^3*(f + g*x^2)^2),x]
```

```
[Out] (b^2*e^2*n^2*Log[x])/(d^2*f^2) - (b*e*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n]
))/(d^2*f^2*x) - (b*e^2*n*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]))/(d^2*
f^2) + (e^2*(a + b*Log[c*(d + e*x)^n])^2)/(2*d^2*f^2) + (e^2*g*(a + b*Log[c
*(d + e*x)^n])^2)/(2*f^2*(e^2*f + d^2*g)) - (a + b*Log[c*(d + e*x)^n])^2/(2
*f^2*x^2) - (g*(a + b*Log[c*(d + e*x)^n])^2)/(2*f^2*(f + g*x^2)) - (2*g*Log
[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n])^2)/f^3 - (b*e*(e*f + d*Sqrt[-f]*Sqr
t[g])*g*n*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt
[-f] + d*Sqrt[g])])/(2*f^3*(e^2*f + d^2*g)) + (g*(a + b*Log[c*(d + e*x)^n])
^2*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/f^3 - (b*e*(e*
f - d*Sqrt[-f]*Sqrt[g])*g*n*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + S
qrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*f^3*(e^2*f + d^2*g)) + (g*(a + b*L
og[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g]
)])/f^3 - (b^2*e*(e*Sqrt[-f] + d*Sqrt[g])*g*n^2*PolyLog[2, -((Sqrt[g]*(d +
e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*(-f)^(5/2)*(e^2*f + d^2*g)) + (2*b*g*n
*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] -
d*Sqrt[g]))])/f^3 - (b^2*e*(e*f + d*Sqrt[-f]*Sqrt[g])*g*n^2*PolyLog[2, (Sqr
```

```
t[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*f^3*(e^2*f + d^2*g)) + (2*b*g
*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] +
d*Sqrt[g])])/f^3 - (b^2*e^2*n^2*PolyLog[2, 1 + (e*x)/d])/(d^2*f^2) - (4*b*g
*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, 1 + (e*x)/d])/f^3 - (2*b^2*g*n^2*P
olyLog[3, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/f^3 - (2*b^2*g*
n^2*PolyLog[3, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/f^3 + (4*b^2*
g*n^2*PolyLog[3, 1 + (e*x)/d])/f^3
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2314

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_), x
_Symbol] :> Simp[(x*(d + e*x^r)^(q + 1)*(a + b*Log[c*x^n]))/d, x] - Dist[(b
*n)/d, Int[(d + e*x^r)^(q + 1), x], x] /; FreeQ[{a, b, c, d, e, n, q, r}, x
] && EqQ[r*(q + 1) + 1, 0]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2347

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/x
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
```

```
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2413

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(x_)^(m_.)*(
(f_.) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Simp[((f + g*x^r)^(q + 1)*(a
+ b*Log[c*(d + e*x)^n])^p)/(g*r*(q + 1)), x] - Dist[(b*e*n*p)/(g*r*(q + 1))
, Int[((f + g*x^r)^(q + 1)*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x
], x] /; FreeQ[{a, b, c, d, e, f, g, m, n, q, r}, x] && EqQ[m, r - 1] && Ne
Q[q, -1] && IGtQ[p, 0]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
```

```
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{x^3\left(f+gx^2\right)^2}\,dx = \int \left(\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{f^2x^3} - \frac{2g\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{f^3x} + \frac{g^2x\left(a+b\log\right.}{f^2\left(f+\right.}\right.$$

$$= \frac{\int \frac{\left(a+b\log(c(d+ex)^n)\right)^2}{x^3}dx}{f^2} - \frac{(2g)\int \frac{\left(a+b\log(c(d+ex)^n)\right)^2}{x}dx}{f^3} + \frac{\left(2g^2\right)\int \frac{x\left(a+b\log(c(d+ex)\right.}{f+gx^2}}{f^3}$$

$$= -\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2f^2x^2} - \frac{g\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2f^2\left(f+gx^2\right)} - \frac{2g\log\left(-\frac{ex}{d}\right)\left(a+b\right.}{f}$$

$$= -\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2f^2x^2} - \frac{g\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2f^2\left(f+gx^2\right)} - \frac{2g\log\left(-\frac{ex}{d}\right)\left(a+b\right.}{f}$$

$$= -\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2f^2x^2} - \frac{g\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2f^2\left(f+gx^2\right)} - \frac{2g\log\left(-\frac{ex}{d}\right)\left(a+b\right.}{f}$$

$$= -\frac{ben(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)}{d^2f^2x} - \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2f^2x^2} - \frac{g\left(a+b\,\mathrm{l}\right.}{2f^2}$$

$$= \frac{b^2e^2n^2\log(x)}{d^2f^2} - \frac{ben(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)}{d^2f^2x} - \frac{be^2n\log\left(-\frac{ex}{d}\right)\left(a+b\right.}{d^2f^2}$$

$$= \frac{b^2e^2n^2\log(x)}{d^2f^2} - \frac{ben(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)}{d^2f^2x} - \frac{be^2n\log\left(-\frac{ex}{d}\right)\left(a+b\right.}{d^2f^2}$$

$$= \frac{b^2e^2n^2\log(x)}{d^2f^2} - \frac{ben(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)}{d^2f^2x} - \frac{be^2n\log\left(-\frac{ex}{d}\right)\left(a+b\right.}{d^2f^2}$$

$$= \frac{b^2e^2n^2\log(x)}{d^2f^2} - \frac{ben(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)}{d^2f^2x} - \frac{be^2n\log\left(-\frac{ex}{d}\right)\left(a+b\right.}{d^2f^2}$$

Mathematica [C] time = 3.31, size = 1391, normalized size = 1.43

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^2/(x^3*(f + g*x^2)^2),x]
```

```
[Out] ((-2*f*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2)/x^2 - (2*f*g*(a - b
*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2) - 8*g*Log[x]*(a - b*
n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 + 4*g*(a - b*n*Log[d + e*x] + b*Lo
g[c*(d + e*x)^n])^2*Log[f + g*x^2] + 2*b*n*(a - b*n*Log[d + e*x] + b*Log[c*
(d + e*x)^n])*((-2*f*(d*e*x + e^2*x^2*Log[x] + (d^2 - e^2*x^2)*Log[d + e*x]
))/(d^2*x^2) + (I*Sqrt[f]*g*(Sqrt[g]*(d + e*x)*Log[d + e*x] + I*e*(Sqrt[f]
+ I*Sqrt[g]*x)*Log[I*Sqrt[f] - Sqrt[g]*x]))/((e*Sqrt[f] - I*d*Sqrt[g])*(Sqr
t[f] + I*Sqrt[g]*x)) + (I*Sqrt[f]*g*(-(Sqrt[g]*(d + e*x)*Log[d + e*x]) + e*
(I*Sqrt[f] + Sqrt[g]*x)*Log[I*Sqrt[f] + Sqrt[g]*x]))/((e*Sqrt[f] + I*d*Sqrt
[g])*(Sqrt[f] - I*Sqrt[g]*x)) + 4*g*(Log[d + e*x]*Log[(e*(Sqrt[f] + I*Sqrt[
g]*x))/(e*Sqrt[f] - I*d*Sqrt[g])] + PolyLog[2, ((-I)*Sqrt[g]*(d + e*x))/(e*
Sqrt[f] - I*d*Sqrt[g])]) + 4*g*(Log[d + e*x]*Log[(e*(Sqrt[f] - I*Sqrt[g]*x)
)/(e*Sqrt[f] + I*d*Sqrt[g])] + PolyLog[2, (I*Sqrt[g]*(d + e*x))/(e*Sqrt[f]
+ I*d*Sqrt[g])]) - 8*g*(Log[-((e*x)/d)]*Log[d + e*x] + PolyLog[2, 1 + (e*x)
/d])) + b^2*n^2*((I*Sqrt[f]*g*(-(Sqrt[g]*(d + e*x)*Log[d + e*x]^2) + 2*e*(I
*Sqrt[f] + Sqrt[g]*x)*Log[d + e*x]*Log[(e*(Sqrt[f] - I*Sqrt[g]*x))/(e*Sqrt[
f] + I*d*Sqrt[g])] + 2*e*(I*Sqrt[f] + Sqrt[g]*x)*PolyLog[2, (I*Sqrt[g]*(d +
 e*x))/(e*Sqrt[f] + I*d*Sqrt[g])]))/((e*Sqrt[f] + I*d*Sqrt[g])*(Sqrt[f] - I
*Sqrt[g]*x)) - (Sqrt[f]*g*(Log[d + e*x]*((-I)*Sqrt[g]*(d + e*x)*Log[d + e*x
] + 2*e*(Sqrt[f] + I*Sqrt[g]*x)*Log[(e*(Sqrt[f] + I*Sqrt[g]*x))/(e*Sqrt[f]
- I*d*Sqrt[g])]) + 2*e*(Sqrt[f] + I*Sqrt[g]*x)*PolyLog[2, (Sqrt[g]*(d + e*x
))/(I*e*Sqrt[f] + d*Sqrt[g])]))/((e*Sqrt[f] - I*d*Sqrt[g])*(Sqrt[f] + I*Sqr
t[g]*x)) - (2*f*(-2*e^2*Log[x] + (Log[d + e*x]*(2*e^2*x^2*Log[-((e*x)/d)] +
 (d + e*x)*(2*e*x + (d - e*x)*Log[d + e*x])))/x^2 + 2*e^2*PolyLog[2, 1 + (e
*x)/d]))/d^2 + 4*g*(Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt
[f] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d + e*x))/((-I)*e*S
qrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d
*Sqrt[g])]) + 4*g*(Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f]
+ d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f]
+ d*Sqrt[g])] - 2*PolyLog[3, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])]
) - 8*g*(Log[-((e*x)/d)]*Log[d + e*x]^2 + 2*Log[d + e*x]*PolyLog[2, 1 + (e*
x)/d] - 2*PolyLog[3, 1 + (e*x)/d])))/(4*f^3)
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b^2\log\left(\left(ex+d\right)^n c\right)^2 + 2\,ab\log\left(\left(ex+d\right)^n c\right) + a^2}{g^2x^7 + 2\,fgx^5 + f^2x^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x^3/(g*x^2+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b^2*log((e*x + d)^n*c)^2 + 2*a*b*log((e*x + d)^n*c) + a^2)/(g^2*x
^7 + 2*f*g*x^5 + f^2*x^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\log\left(\left(ex+d\right)^n c\right) + a\right)^2}{\left(gx^2+f\right)^2 x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x^3/(g*x^2+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2/((g*x^2 + f)^2*x^3), x)
```

maple [F] time = 1.36, size = 0, normalized size = 0.00

$$\int \frac{\left(b\ln\left(c\left(ex+d\right)^n\right) + a\right)^2}{\left(g\,x^2+f\right)^2 x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)^2/x^3/(g*x^2+f)^2,x)
```

```
[Out] int((b*ln(c*(e*x+d)^n)+a)^2/x^3/(g*x^2+f)^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{2}a^2\left(\frac{2gx^2+f}{f^2gx^4+f^3x^2}-\frac{2g\log\left(gx^2+f\right)}{f^3}+\frac{4g\log(x)}{f^3}\right)+\int\frac{b^2\log\left((ex+d)^n\right)^2+b^2\log(c)^2+2ab\log(c)+2(}{g^2x^7+2fgx^5+f^2x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x^3/(g*x^2+f)^2,x, algorithm="maxima")
```

```
[Out] -1/2*a^2*((2*g*x^2 + f)/(f^2*g*x^4 + f^3*x^2) - 2*g*log(g*x^2 + f)/f^3 + 4*
g*log(x)/f^3) + integrate((b^2*log((e*x + d)^n)^2 + b^2*log(c)^2 + 2*a*b*lo
g(c) + 2*(b^2*log(c) + a*b)*log((e*x + d)^n))/(g^2*x^7 + 2*f*g*x^5 + f^2*x^
3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)^2}{x^3\,{\left(g\,x^2+f\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^2/(x^3*(f + g*x^2)^2),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))^2/(x^3*(f + g*x^2)^2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2/x**3/(g*x**2+f)**2,x)
```

```
[Out] Timed out
```

3.325 $\int \frac{x^4\left(a+b\log(c(d+ex)^n)\right)^2}{\left(f+gx^2\right)^2}\,dx$

Optimal. Leaf size=897

$$\frac{2n^2xb^2}{g^2}-\frac{2n(d+ex)\log\left(c(d+ex)^n\right)b^2}{eg^2}+\frac{efn^2\mathrm{Li}_2\left(-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)b^2}{2\left(e\sqrt{-f}-d\sqrt{g}\right)g^{5/2}}-\frac{efn^2\mathrm{Li}_2\left(\frac{\sqrt{g}(d+ex)}{\sqrt{g}d+e\sqrt{-f}}\right)b^2}{2\left(\sqrt{g}d+e\sqrt{-f}\right)g^{5/2}}+\frac{3\sqrt{-f}\,n^2\mathrm{Li}_3\left(-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}\cdots}\right.}{2g^{5/2}}$$

```
[Out] -2*a*b*n*x/g^2+2*b^2*n^2*x/g^2-2*b^2*n*(e*x+d)*ln(c*(e*x+d)^n)/e/g^2+(e*x+d
)*(a+b*ln(c*(e*x+d)^n))^2/e/g^2+3/4*(a+b*ln(c*(e*x+d)^n))^2*ln(e*((-f)^(1/2
)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(1/2)))*(-f)^(1/2)/g^(5/2)-3/4*(a+b*ln(c*(e*
x+d)^n))^2*ln(e*((-f)^(1/2)+x*g^(1/2))/(e*(-f)^(1/2)-d*g^(1/2)))*(-f)^(1/2)
/g^(5/2)-3/2*b*n*(a+b*ln(c*(e*x+d)^n))*polylog(2,-(e*x+d)*g^(1/2)/(e*(-f)^(
1/2)-d*g^(1/2)))*(-f)^(1/2)/g^(5/2)+3/2*b*n*(a+b*ln(c*(e*x+d)^n))*polylog(2
,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))*(-f)^(1/2)/g^(5/2)+3/2*b^2*n^2*p
olylog(3,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))*(-f)^(1/2)/g^(5/2)-3/2*
b^2*n^2*polylog(3,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))*(-f)^(1/2)/g^(5
/2)+1/2*b*e*f*n*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)+x*g^(1/2))/(e*(-f)^(
1/2)-d*g^(1/2)))/g^(5/2)/(e*(-f)^(1/2)-d*g^(1/2))+1/2*b^2*e*f*n^2*polylog(2
,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))/g^(5/2)/(e*(-f)^(1/2)-d*g^(1/2)
)-1/2*b*e*f*n*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/
2)+d*g^(1/2)))/g^(5/2)/(e*(-f)^(1/2)+d*g^(1/2))-1/2*b^2*e*f*n^2*polylog(2,(
e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))/g^(5/2)/(e*(-f)^(1/2)+d*g^(1/2))-1
/4*f*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^2/g^2/(e*(-f)^(1/2)+d*g^(1/2))/((-f)^(1/
2)-x*g^(1/2))-1/4*f*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^2/g^2/(e*(-f)^(1/2)-d*g^(
1/2))/((-f)^(1/2)+x*g^(1/2))
```

Rubi [A] time = 1.78, antiderivative size = 897, normalized size of antiderivative = 1.00, number of steps used = 36, number of rules used = 13, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.448, Rules used = {2416, 2389, 2296, 2295, 2409, 2397, 2394, 2393, 2391, 2396, 2433, 2374, 6589}

$$\frac{2n^2xb^2}{g^2}-\frac{2n(d+ex)\log\left(c(d+ex)^n\right)b^2}{eg^2}+\frac{efn^2\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)b^2}{2\left(e\sqrt{-f}-d\sqrt{g}\right)g^{5/2}}-\frac{efn^2\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{\sqrt{g}d+e\sqrt{-f}}\right)b^2}{2\left(\sqrt{g}d+e\sqrt{-f}\right)g^{5/2}}+\frac{3\sqrt{-}\cdots}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2)^2,x]
```

```
[Out] (-2*a*b*n*x)/g^2 + (2*b^2*n^2*x)/g^2 - (2*b^2*n*(d + e*x)*Log[c*(d + e*x)^n
])/(e*g^2) + ((d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(e*g^2) - (f*(d + e*x
)*(a + b*Log[c*(d + e*x)^n])^2)/(4*(e*Sqrt[-f] + d*Sqrt[g])*g^2*(Sqrt[-f] -
 Sqrt[g]*x)) - (f*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(4*(e*Sqrt[-f] -
d*Sqrt[g])*g^2*(Sqrt[-f] + Sqrt[g]*x)) - (b*e*f*n*(a + b*Log[c*(d + e*x)^n]
)*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*(e*Sqrt[-f]
+ d*Sqrt[g])*g^(5/2)) + (3*Sqrt[-f]*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sq
rt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(4*g^(5/2)) + (b*e*f*n*(a +
 b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[
g])])/(2*(e*Sqrt[-f] - d*Sqrt[g])*g^(5/2)) - (3*Sqrt[-f]*(a + b*Log[c*(d +
e*x)^n])^2*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(4*g^(
5/2)) + (b^2*e*f*n^2*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[
g]))])/(2*(e*Sqrt[-f] - d*Sqrt[g])*g^(5/2)) - (3*b*Sqrt[-f]*n*(a + b*Log[c*
(d + e*x)^n])*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/
(2*g^(5/2)) - (b^2*e*f*n^2*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*S
qrt[g])])/(2*(e*Sqrt[-f] + d*Sqrt[g])*g^(5/2)) + (3*b*Sqrt[-f]*n*(a + b*Log
[c*(d + e*x)^n])*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/
```

```
(2*g^(5/2)) + (3*b^2*Sqrt[-f]*n^2*PolyLog[3, -((Sqrt[g]*(d + e*x))/(e*Sqrt[
-f] - d*Sqrt[g]))])/(2*g^(5/2)) - (3*b^2*Sqrt[-f]*n^2*PolyLog[3, (Sqrt[g]*(
d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*g^(5/2))
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2397

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_))^2, x_Symbol] :> Simp[((d + e*x)*(a + b*Log[c*(d + e*x)^n])^p)/((e*f
```

```
 - d*g)*(f + g*x)), x] - Dist[(b*e*n*p)/(e*f - d*g), Int[(a + b*Log[c*(d +
e*x)^n])^(p - 1)/(f + g*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] &&
 NeQ[e*f - d*g, 0] && GtQ[p, 0]
```

Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{x^4 \left(a + b\log\left(c(d+ex)^n\right)\right)^2}{\left(f+gx^2\right)^2} dx = \int \left(\frac{\left(a + b\log\left(c(d+ex)^n\right)\right)^2}{g^2} + \frac{f^2\left(a + b\log\left(c(d+ex)^n\right)\right)^2}{g^2\left(f+gx^2\right)^2} - \frac{2f\left(a + b\log\right.}{g^2\left(f\right.} \right.$$

$$= \frac{\int \left(a + b\log\left(c(d+ex)^n\right)\right)^2 dx}{g^2} - \frac{(2f)\int \frac{\left(a+b\log(c(d+ex)^n)\right)^2}{f+gx^2} dx}{g^2} + \frac{f^2 \int \frac{\left(a+b\log\right.}{\left(f\right.}}{}$$

$$= \frac{\text{Subst}\left(\int \left(a + b\log\left(cx^n\right)\right)^2 dx, x, d+ex\right)}{eg^2} - \frac{(2f)\int \left(\frac{\sqrt{-f}\left(a+b\log(c(d+ex)^n)\right)^2}{2f\left(\sqrt{-f}-\sqrt{g}x\right)}\right.}{g^2}$$

$$= \frac{(d+ex)\left(a + b\log\left(c(d+ex)^n\right)\right)^2}{eg^2} - \frac{\sqrt{-f}\int \frac{\left(a+b\log(c(d+ex)^n)\right)^2}{\sqrt{-f}-\sqrt{g}x} dx}{g^2} - \frac{\sqrt{-f}\int}{}$$

$$= -\frac{2abnx}{g^2} + \frac{(d+ex)\left(a + b\log\left(c(d+ex)^n\right)\right)^2}{eg^2} - \frac{f(d+ex)\left(a + b\log\left(c(d+\right.\right.}{4\left(e\sqrt{-f}+d\sqrt{g}\right)g^2\left(\sqrt{-f}\right.}$$

$$= -\frac{2abnx}{g^2} + \frac{2b^2n^2x}{g^2} - \frac{2b^2n(d+ex)\log\left(c(d+ex)^n\right)}{eg^2} + \frac{(d+ex)\left(a + b\log\left(c\right.\right.}{eg^2}$$

$$= -\frac{2abnx}{g^2} + \frac{2b^2n^2x}{g^2} - \frac{2b^2n(d+ex)\log\left(c(d+ex)^n\right)}{eg^2} + \frac{(d+ex)\left(a + b\log\left(c\right.\right.}{eg^2}$$

$$= -\frac{2abnx}{g^2} + \frac{2b^2n^2x}{g^2} - \frac{2b^2n(d+ex)\log\left(c(d+ex)^n\right)}{eg^2} + \frac{(d+ex)\left(a + b\log\left(c\right.\right.}{eg^2}$$

$$= -\frac{2abnx}{g^2} + \frac{2b^2n^2x}{g^2} - \frac{2b^2n(d+ex)\log\left(c(d+ex)^n\right)}{eg^2} + \frac{(d+ex)\left(a + b\log\left(c\right.\right.}{eg^2}$$

$$= -\frac{2abnx}{g^2} + \frac{2b^2n^2x}{g^2} - \frac{2b^2n(d+ex)\log\left(c(d+ex)^n\right)}{eg^2} + \frac{(d+ex)\left(a + b\log\left(c\right.\right.}{eg^2}$$

Mathematica [C] time = 3.50, size = 1237, normalized size = 1.38

$$b^2\left(\frac{4\sqrt{g}\left((d+ex)\log^2(d+ex)-2(d+ex)\log(d+ex)+2ex\right)}{e} - \frac{f\left(-\sqrt{g}(d+ex)\log^2(d+ex)+2e\left(\sqrt{g}x+i\sqrt{f}\right)\log\left(\frac{e\left(\sqrt{f}-i\sqrt{g}x\right)}{i\sqrt{g}d+e\sqrt{f}}\right)\log(d+ex)+2e\left(\sqrt{g}x+i\sqrt{f}\right)\right.}{\left(i\sqrt{g}d+e\sqrt{f}\right)\left(\sqrt{f}-i\sqrt{g}x\right)}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2)^2,x]
```

```
[Out] (4*Sqrt[g]*x*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 + (2*f*Sqrt[g]
*x*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2) - 6*Sqrt[f]
*ArcTan[(Sqrt[g]*x)/Sqrt[f]]*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^
2 + 2*b*n*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*((4*Sqrt[g]*(d + e*
x)*(-1 + Log[d + e*x]))/e + (f*(Sqrt[g]*(d + e*x)*Log[d + e*x] + I*e*(Sqrt[
f] + I*Sqrt[g]*x)*Log[I*Sqrt[f] - Sqrt[g]*x]))/((e*Sqrt[f] - I*d*Sqrt[g])*(
Sqrt[f] + I*Sqrt[g]*x)) + (f*(Sqrt[g]*(d + e*x)*Log[d + e*x] + e*((-I)*Sqrt
[f] - Sqrt[g]*x)*Log[I*Sqrt[f] + Sqrt[g]*x]))/((e*Sqrt[f] + I*d*Sqrt[g])*(S
qrt[f] - I*Sqrt[g]*x)) + (3*I)*Sqrt[f]*(Log[d + e*x]*Log[(e*(Sqrt[f] + I*Sq
rt[g]*x))/(e*Sqrt[f] - I*d*Sqrt[g])] + PolyLog[2, ((-I)*Sqrt[g]*(d + e*x))/
(e*Sqrt[f] - I*d*Sqrt[g])]) - (3*I)*Sqrt[f]*(Log[d + e*x]*Log[(e*(Sqrt[f] -
 I*Sqrt[g]*x))/(e*Sqrt[f] + I*d*Sqrt[g])] + PolyLog[2, (I*Sqrt[g]*(d + e*x)
)/(e*Sqrt[f] + I*d*Sqrt[g])])) + b^2*n^2*((4*Sqrt[g]*(2*e*x - 2*(d + e*x)*L
og[d + e*x] + (d + e*x)*Log[d + e*x]^2))/e - (f*(-(Sqrt[g]*(d + e*x)*Log[d
+ e*x]^2) + 2*e*(I*Sqrt[f] + Sqrt[g]*x)*Log[d + e*x]*Log[(e*(Sqrt[f] - I*Sq
rt[g]*x))/(e*Sqrt[f] + I*d*Sqrt[g])] + 2*e*(I*Sqrt[f] + Sqrt[g]*x)*PolyLog[
2, (I*Sqrt[g]*(d + e*x))/(e*Sqrt[f] + I*d*Sqrt[g])]))/((e*Sqrt[f] + I*d*Sqr
t[g])*(Sqrt[f] - I*Sqrt[g]*x)) + (f*(Log[d + e*x]*(Sqrt[g]*(d + e*x)*Log[d
+ e*x] + (2*I)*e*(Sqrt[f] + I*Sqrt[g]*x)*Log[(e*(Sqrt[f] + I*Sqrt[g]*x))/(e
*Sqrt[f] - I*d*Sqrt[g])]) + (2*I)*e*(Sqrt[f] + I*Sqrt[g]*x)*PolyLog[2, (Sqr
t[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])]))/((e*Sqrt[f] - I*d*Sqrt[g])*(Sq
rt[f] + I*Sqrt[g]*x)) - (3*I)*Sqrt[f]*(Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d +
 e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(
d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sqrt[g]*(d + e*x))/
((-I)*e*Sqrt[f] + d*Sqrt[g])]) + (3*I)*Sqrt[f]*(Log[d + e*x]^2*Log[1 - (Sqr
t[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[2, (Sqr
t[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sqrt[g]*(d + e*x
))/(I*e*Sqrt[f] + d*Sqrt[g])])))/(4*g^(5/2))
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b^2x^4\log\left(\left(ex+d\right)^nc\right)^2+2\,abx^4\log\left(\left(ex+d\right)^nc\right)+a^2x^4}{g^2x^4+2\,fgx^2+f^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b^2*x^4*log((e*x + d)^n*c)^2 + 2*a*b*x^4*log((e*x + d)^n*c) + a^2
*x^4)/(g^2*x^4 + 2*f*g*x^2 + f^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\log\left(\left(ex+d\right)^nc\right)+a\right)^2x^4}{\left(gx^2+f\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2*x^4/(g*x^2 + f)^2, x)
```

maple [F] time = 12.12, size = 0, normalized size = 0.00

$$\int \frac{\left(b\ln\left(c\left(ex+d\right)^n\right)+a\right)^2x^4}{\left(g\,x^2+f\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(b*ln(c*(e*x+d)^n)+a)^2/(g*x^2+f)^2,x)
```

```
[Out] int(x^4*(b*ln(c*(e*x+d)^n)+a)^2/(g*x^2+f)^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{2}a^2\left(\frac{fx}{g^3x^2+fg^2}-\frac{3f\arctan\left(\frac{gx}{\sqrt{fg}}\right)}{\sqrt{fg}\,g^2}+\frac{2x}{g^2}\right)+\int\frac{b^2x^4\log\left((ex+d)^n\right)^2+2\left(b^2\log(c)+ab\right)x^4\log\left((ex+d)^n\right)+}{g^2x^4+2fgx^2+f^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f)^2,x, algorithm="maxima")
```

```
[Out] 1/2*a^2*(f*x/(g^3*x^2 + f*g^2) - 3*f*arctan(g*x/sqrt(f*g))/(sqrt(f*g)*g^2)
+ 2*x/g^2) + integrate((b^2*x^4*log((e*x + d)^n)^2 + 2*(b^2*log(c) + a*b)*x
^4*log((e*x + d)^n) + (b^2*log(c)^2 + 2*a*b*log(c))*x^4)/(g^2*x^4 + 2*f*g*x
^2 + f^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{x^4\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)^2}{{\left(g\,x^2+f\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(a + b*log(c*(d + e*x)^n))^2)/(f + g*x^2)^2,x)
```

```
[Out] int((x^4*(a + b*log(c*(d + e*x)^n))^2)/(f + g*x^2)^2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(a+b*ln(c*(e*x+d)**n))**2/(g*x**2+f)**2,x)
```

```
[Out] Timed out
```

3.326 $\int \frac{x^2\left(a+b\log(c(d+ex)^n)\right)^2}{\left(f+gx^2\right)^2}\,dx$

Optimal. Leaf size=815

$$-\frac{b^2e\text{Li}_2\left(-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)n^2}{2\left(e\sqrt{-f}-d\sqrt{g}\right)g^{3/2}}+\frac{b^2e\text{Li}_2\left(\frac{\sqrt{g}(d+ex)}{\sqrt{g}d+e\sqrt{-f}}\right)n^2}{2\left(\sqrt{g}d+e\sqrt{-f}\right)g^{3/2}}+\frac{b^2\text{Li}_3\left(-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)n^2}{2\sqrt{-f}\,g^{3/2}}-\frac{b^2\text{Li}_3\left(\frac{\sqrt{g}(d+ex)}{\sqrt{g}d+e\sqrt{-f}}\right)n^2}{2\sqrt{-f}\,g^{3/2}}+\frac{be\left(a+b\log(c\right.}{2(}$$

```
[Out] 1/4*(a+b*ln(c*(e*x+d)^n))^2*ln(e*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(
1/2)))/g^(3/2)/(-f)^(1/2)-1/4*(a+b*ln(c*(e*x+d)^n))^2*ln(e*((-f)^(1/2)+x*g^
(1/2))/(e*(-f)^(1/2)-d*g^(1/2)))/g^(3/2)/(-f)^(1/2)-1/2*b*n*(a+b*ln(c*(e*x+
d)^n))*polylog(2,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))/g^(3/2)/(-f)^(1
/2)+1/2*b*n*(a+b*ln(c*(e*x+d)^n))*polylog(2,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d
*g^(1/2)))/g^(3/2)/(-f)^(1/2)+1/2*b^2*n^2*polylog(3,-(e*x+d)*g^(1/2)/(e*(-f
)^(1/2)-d*g^(1/2)))/g^(3/2)/(-f)^(1/2)-1/2*b^2*n^2*polylog(3,(e*x+d)*g^(1/2
)/(e*(-f)^(1/2)+d*g^(1/2)))/g^(3/2)/(-f)^(1/2)-1/2*b*e*n*(a+b*ln(c*(e*x+d)^
n))*ln(e*((-f)^(1/2)+x*g^(1/2))/(e*(-f)^(1/2)-d*g^(1/2)))/g^(3/2)/(e*(-f)^(
1/2)-d*g^(1/2))-1/2*b^2*e*n^2*polylog(2,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^
(1/2)))/g^(3/2)/(e*(-f)^(1/2)-d*g^(1/2))+1/2*b*e*n*(a+b*ln(c*(e*x+d)^n))*ln
(e*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(1/2)))/g^(3/2)/(e*(-f)^(1/2)+d
*g^(1/2))+1/2*b^2*e*n^2*polylog(2,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))
/g^(3/2)/(e*(-f)^(1/2)+d*g^(1/2))+1/4*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^2/g/(e*
(-f)^(1/2)+d*g^(1/2))/((-f)^(1/2)-x*g^(1/2))+1/4*(e*x+d)*(a+b*ln(c*(e*x+d)^
n))^2/g/(e*(-f)^(1/2)-d*g^(1/2))/((-f)^(1/2)+x*g^(1/2))
```

Rubi [A] time = 1.54, antiderivative size = 815, normalized size of antiderivative = 1.00, number of steps used = 32, number of rules used = 10, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.345, Rules used = {2416, 2409, 2397, 2394, 2393, 2391, 2396, 2433, 2374, 6589}

$$-\frac{b^2e\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)n^2}{2\left(e\sqrt{-f}-d\sqrt{g}\right)g^{3/2}}+\frac{b^2e\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{\sqrt{g}d+e\sqrt{-f}}\right)n^2}{2\left(\sqrt{g}d+e\sqrt{-f}\right)g^{3/2}}+\frac{b^2\text{PolyLog}\left(3,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)n^2}{2\sqrt{-f}\,g^{3/2}}-\frac{b^2\text{PolyLog}(}{2\sqrt{-}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2)^2,x]
```

```
[Out] ((d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(4*(e*Sqrt[-f] + d*Sqrt[g])*g*(Sqr
t[-f] - Sqrt[g]*x)) + ((d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(4*(e*Sqrt[-
f] - d*Sqrt[g])*g*(Sqrt[-f] + Sqrt[g]*x)) + (b*e*n*(a + b*Log[c*(d + e*x)^n
])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*(e*Sqrt[-f]
 + d*Sqrt[g])*g^(3/2)) + ((a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] - S
qrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(4*Sqrt[-f]*g^(3/2)) - (b*e*n*(a + b*
Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])
])/(2*(e*Sqrt[-f] - d*Sqrt[g])*g^(3/2)) - ((a + b*Log[c*(d + e*x)^n])^2*Log
[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(4*Sqrt[-f]*g^(3/2))
 - (b^2*e*n^2*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/
(2*(e*Sqrt[-f] - d*Sqrt[g])*g^(3/2)) - (b*n*(a + b*Log[c*(d + e*x)^n])*Poly
Log[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*Sqrt[-f]*g^(3/2
)) + (b^2*e*n^2*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(
2*(e*Sqrt[-f] + d*Sqrt[g])*g^(3/2)) + (b*n*(a + b*Log[c*(d + e*x)^n])*PolyL
og[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*Sqrt[-f]*g^(3/2)) +
 (b^2*n^2*PolyLog[3, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*S
qrt[-f]*g^(3/2)) - (b^2*n^2*PolyLog[3, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*
Sqrt[g])])/(2*Sqrt[-f]*g^(3/2))
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2397

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_))^2, x_Symbol] :> Simp[((d + e*x)*(a + b*Log[c*(d + e*x)^n])^p)/((e*f
 - d*g)*(f + g*x)), x] - Dist[(b*e*n*p)/(e*f - d*g), Int[(a + b*Log[c*(d +
e*x)^n])^(p - 1)/(f + g*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] &&
 NeQ[e*f - d*g, 0] && GtQ[p, 0]
```

Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{x^2 \left(a+b\log\left(c(d+ex)^n\right)\right)^2}{\left(f+gx^2\right)^2}\,dx = \int \left(-\frac{f\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{g\left(f+gx^2\right)^2} + \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{g\left(f+gx^2\right)}\right)dx$$

$$= \frac{\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{f+gx^2}\,dx}{g} - \frac{f\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{\left(f+gx^2\right)^2}\,dx}{g}$$

$$= \frac{\int \left(\frac{\sqrt{-f}\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2f\left(\sqrt{-f}-\sqrt{g}\,x\right)} + \frac{\sqrt{-f}\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2f\left(\sqrt{-f}+\sqrt{g}\,x\right)}\right)dx}{g} - \frac{f\int\left(-\frac{g\left(a+b\log(c(d+e\right.}{4f\left(\sqrt{-f}\sqrt{g}-g\right.}\right.}{}$$

$$= \frac{1}{4}\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{\left(\sqrt{-f}\sqrt{g}-gx\right)^2}\,dx + \frac{1}{4}\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{\left(\sqrt{-f}\sqrt{g}+gx\right)^2}\,dx + \frac{1}{2}\ldots$$

$$= \frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{4\left(e\sqrt{-f}+d\sqrt{g}\right)g\left(\sqrt{-f}-\sqrt{g}\,x\right)} + \frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{4\left(e\sqrt{-f}-d\sqrt{g}\right)g\left(\sqrt{-f}+\sqrt{g}\,x\right)} + \ldots$$

$$= \frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{4\left(e\sqrt{-f}+d\sqrt{g}\right)g\left(\sqrt{-f}-\sqrt{g}\,x\right)} + \frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{4\left(e\sqrt{-f}-d\sqrt{g}\right)g\left(\sqrt{-f}+\sqrt{g}\,x\right)} + \ldots$$

$$= \frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{4\left(e\sqrt{-f}+d\sqrt{g}\right)g\left(\sqrt{-f}-\sqrt{g}\,x\right)} + \frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{4\left(e\sqrt{-f}-d\sqrt{g}\right)g\left(\sqrt{-f}+\sqrt{g}\,x\right)} + \ldots$$

$$= \frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{4\left(e\sqrt{-f}+d\sqrt{g}\right)g\left(\sqrt{-f}-\sqrt{g}\,x\right)} + \frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{4\left(e\sqrt{-f}-d\sqrt{g}\right)g\left(\sqrt{-f}+\sqrt{g}\,x\right)} + \ldots$$

$$= \frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{4\left(e\sqrt{-f}+d\sqrt{g}\right)g\left(\sqrt{-f}-\sqrt{g}\,x\right)} + \frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{4\left(e\sqrt{-f}-d\sqrt{g}\right)g\left(\sqrt{-f}+\sqrt{g}\,x\right)} + \ldots$$

$$= \frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{4\left(e\sqrt{-f}+d\sqrt{g}\right)g\left(\sqrt{-f}-\sqrt{g}\,x\right)} + \frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{4\left(e\sqrt{-f}-d\sqrt{g}\right)g\left(\sqrt{-f}+\sqrt{g}\,x\right)} + \ldots$$

Mathematica [C] time = 2.82, size = 1132, normalized size = 1.39

$$b^2\left(\frac{-\sqrt{g}(d+ex)\log^2(d+ex)+2e\left(\sqrt{g}\,x+i\sqrt{f}\right)\log\left(\frac{e\left(\sqrt{f}-i\sqrt{g}\,x\right)}{i\sqrt{g}\,d+e\sqrt{f}}\right)\log(d+ex)+2e\left(\sqrt{g}\,x+i\sqrt{f}\right)\mathrm{Li}_2\left(\frac{i\sqrt{g}(d+ex)}{i\sqrt{g}\,d+e\sqrt{f}}\right)}{\left(i\sqrt{g}\,d+e\sqrt{f}\right)\left(\sqrt{f}-i\sqrt{g}\,x\right)} - \frac{\log(d+ex)\left(\sqrt{g}(d+ex)\log(d+ex)+2i\ldots\right.}{}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2)^2,x]
```

```
[Out] ((-2*Sqrt[g]*x*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2)
 + (2*ArcTan[(Sqrt[g]*x)/Sqrt[f]]*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)
^n])^2)/Sqrt[f] + 2*b*n*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*((-(S
qrt[g]*(d + e*x)*Log[d + e*x]) + e*((-I)*Sqrt[f] + Sqrt[g]*x)*Log[I*Sqrt[f]
 - Sqrt[g]*x])/((e*Sqrt[f] - I*d*Sqrt[g])*(Sqrt[f] + I*Sqrt[g]*x)) + (-(Sqr
t[g]*(d + e*x)*Log[d + e*x]) + e*(I*Sqrt[f] + Sqrt[g]*x)*Log[I*Sqrt[f] + Sq
rt[g]*x])/((e*Sqrt[f] + I*d*Sqrt[g])*(Sqrt[f] - I*Sqrt[g]*x)) - (I*(Log[d +
 e*x]*Log[(e*(Sqrt[f] + I*Sqrt[g]*x))/(e*Sqrt[f] - I*d*Sqrt[g])] + PolyLog[
2, ((-I)*Sqrt[g]*(d + e*x))/(e*Sqrt[f] - I*d*Sqrt[g])]))/Sqrt[f] + (I*(Log[
d + e*x]*Log[(e*(Sqrt[f] - I*Sqrt[g]*x))/(e*Sqrt[f] + I*d*Sqrt[g])] + PolyL
og[2, (I*Sqrt[g]*(d + e*x))/(e*Sqrt[f] + I*d*Sqrt[g])]))/Sqrt[f]) + b^2*n^2
*((-(Sqrt[g]*(d + e*x)*Log[d + e*x]^2) + 2*e*(I*Sqrt[f] + Sqrt[g]*x)*Log[d
+ e*x]*Log[(e*(Sqrt[f] - I*Sqrt[g]*x))/(e*Sqrt[f] + I*d*Sqrt[g])] + 2*e*(I*
Sqrt[f] + Sqrt[g]*x)*PolyLog[2, (I*Sqrt[g]*(d + e*x))/(e*Sqrt[f] + I*d*Sqrt
[g])])/((e*Sqrt[f] + I*d*Sqrt[g])*(Sqrt[f] - I*Sqrt[g]*x)) - (Log[d + e*x]*
(Sqrt[g]*(d + e*x)*Log[d + e*x] + (2*I)*e*(Sqrt[f] + I*Sqrt[g]*x)*Log[(e*(S
qrt[f] + I*Sqrt[g]*x))/(e*Sqrt[f] - I*d*Sqrt[g])]) + (2*I)*e*(Sqrt[f] + I*S
qrt[g]*x)*PolyLog[2, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])])/((e*Sq
rt[f] - I*d*Sqrt[g])*(Sqrt[f] + I*Sqrt[g]*x)) + (I*(Log[d + e*x]^2*Log[1 -
(Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[
2, (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sqrt[g
]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])]))/Sqrt[f] - (I*(Log[d + e*x]^2*L
og[1 - (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*Poly
Log[2, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sqrt[
g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])]))/Sqrt[f]))/(4*g^(3/2))
```

fricas [F] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b^2x^2\log\left((ex+d)^nc\right)^2+2\,abx^2\log\left((ex+d)^nc\right)+a^2x^2}{g^2x^4+2\,fgx^2+f^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b^2*x^2*log((e*x + d)^n*c)^2 + 2*a*b*x^2*log((e*x + d)^n*c) + a^2
*x^2)/(g^2*x^4 + 2*f*g*x^2 + f^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(b\log\left((ex+d)^nc\right)+a\right)^2x^2}{\left(gx^2+f\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2*x^2/(g*x^2 + f)^2, x)
```

maple [F] time = 63.86, size = 0, normalized size = 0.00

$$\int\frac{\left(b\ln\left(c\,(ex+d)^n\right)+a\right)^2x^2}{\left(g\,x^2+f\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(b*ln(c*(e*x+d)^n)+a)^2/(g*x^2+f)^2,x)
```

```
[Out] int(x^2*(b*ln(c*(e*x+d)^n)+a)^2/(g*x^2+f)^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{2}\,a^2\left(\frac{x}{g^2x^2+fg}-\frac{\arctan\left(\frac{gx}{\sqrt{fg}}\right)}{\sqrt{fg}\,g}\right)+\int\frac{b^2x^2\log\left((ex+d)^n\right)^2+2\left(b^2\log(c)+ab\right)x^2\log\left((ex+d)^n\right)+\left(b^2\log(c\right.}{g^2x^4+2\,fgx^2+f^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f)^2,x, algorithm="maxima")
```

```
[Out] -1/2*a^2*(x/(g^2*x^2 + f*g) - arctan(g*x/sqrt(f*g))/(sqrt(f*g)*g)) + integr
ate((b^2*x^2*log((e*x + d)^n)^2 + 2*(b^2*log(c) + a*b)*x^2*log((e*x + d)^n)
 + (b^2*log(c)^2 + 2*a*b*log(c))*x^2)/(g^2*x^4 + 2*f*g*x^2 + f^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^2\,{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^2}{{\left(g\,x^2+f\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(a + b*log(c*(d + e*x)^n))^2)/(f + g*x^2)^2,x)
```

```
[Out] int((x^2*(a + b*log(c*(d + e*x)^n))^2)/(f + g*x^2)^2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(a+b*ln(c*(e*x+d)**n))**2/(g*x**2+f)**2,x)
```

```
[Out] Timed out
```

3.327 $\int \frac{(a+b\log(c(d+ex)^n))^2}{(f+gx^2)^2}\,dx$

Optimal. Leaf size=821

$$-\frac{b^2e\mathrm{Li}_2\left(-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)n^2}{2\left(e(-f)^{3/2}+df\sqrt{g}\right)\sqrt{g}}-\frac{b^2e\mathrm{Li}_2\left(\frac{\sqrt{g}(d+ex)}{\sqrt{g}d+e\sqrt{-f}}\right)n^2}{2f\left(\sqrt{g}d+e\sqrt{-f}\right)\sqrt{g}}-\frac{b^2\mathrm{Li}_3\left(-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)n^2}{2(-f)^{3/2}\sqrt{g}}+\frac{b^2\mathrm{Li}_3\left(\frac{\sqrt{g}(d+ex)}{\sqrt{g}d+e\sqrt{-f}}\right)n^2}{2(-f)^{3/2}\sqrt{g}}-\frac{be\left(a+b\log\right.}{2}$$

```
[Out] -1/4*(a+b*ln(c*(e*x+d)^n))^2*ln(e*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^
(1/2)))/(-f)^(3/2)/g^(1/2)+1/4*(a+b*ln(c*(e*x+d)^n))^2*ln(e*((-f)^(1/2)+x*g
^(1/2))/(e*(-f)^(1/2)-d*g^(1/2)))/(-f)^(3/2)/g^(1/2)+1/2*b*n*(a+b*ln(c*(e*x
+d)^n))*polylog(2,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))/(-f)^(3/2)/g^(
1/2)-1/2*b*n*(a+b*ln(c*(e*x+d)^n))*polylog(2,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+
d*g^(1/2)))/(-f)^(3/2)/g^(1/2)-1/2*b^2*n^2*polylog(3,-(e*x+d)*g^(1/2)/(e*(-
f)^(1/2)-d*g^(1/2)))/(-f)^(3/2)/g^(1/2)+1/2*b^2*n^2*polylog(3,(e*x+d)*g^(1/
2)/(e*(-f)^(1/2)+d*g^(1/2)))/(-f)^(3/2)/g^(1/2)-1/2*b*e*n*(a+b*ln(c*(e*x+d)
^n))*ln(e*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(1/2)))/f/g^(1/2)/(e*(-f
)^(1/2)+d*g^(1/2))-1/2*b^2*e*n^2*polylog(2,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*
g^(1/2)))/f/g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2))-1/2*b*e*n*(a+b*ln(c*(e*x+d)^n)
)*ln(e*((-f)^(1/2)+x*g^(1/2))/(e*(-f)^(1/2)-d*g^(1/2)))/g^(1/2)/(e*(-f)^(3/
2)+d*f*g^(1/2))-1/2*b^2*e*n^2*polylog(2,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^
(1/2)))/g^(1/2)/(e*(-f)^(3/2)+d*f*g^(1/2))-1/4*(e*x+d)*(a+b*ln(c*(e*x+d)^n)
)^2/f/(e*(-f)^(1/2)+d*g^(1/2))/((-f)^(1/2)-x*g^(1/2))-1/4*(e*x+d)*(a+b*ln(c
*(e*x+d)^n))^2/f/(e*(-f)^(1/2)-d*g^(1/2))/((-f)^(1/2)+x*g^(1/2))
```

Rubi [A] time = 0.85, antiderivative size = 821, normalized size of antiderivative = 1.00, number of steps used = 20, number of rules used = 9, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.346, Rules used = {2409, 2397, 2394, 2393, 2391, 2396, 2433, 2374, 6589}

$$-\frac{b^2e\,\mathrm{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)n^2}{2\left(e(-f)^{3/2}+df\sqrt{g}\right)\sqrt{g}}-\frac{b^2e\,\mathrm{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{\sqrt{g}d+e\sqrt{-f}}\right)n^2}{2f\left(\sqrt{g}d+e\sqrt{-f}\right)\sqrt{g}}-\frac{b^2\mathrm{PolyLog}\left(3,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)n^2}{2(-f)^{3/2}\sqrt{g}}+\frac{b^2\mathrm{PolyLog}\left(\right.}{2(-f}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^2/(f + g*x^2)^2,x]
```

```
[Out] -((d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(4*f*(e*Sqrt[-f] + d*Sqrt[g])*(Sq
rt[-f] - Sqrt[g]*x)) - ((d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(4*f*(e*Sqr
t[-f] - d*Sqrt[g])*(Sqrt[-f] + Sqrt[g]*x)) - (b*e*n*(a + b*Log[c*(d + e*x)^
n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*f*(e*Sqrt[
-f] + d*Sqrt[g])*Sqrt[g]) - ((a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f]
- Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(4*(-f)^(3/2)*Sqrt[g]) - (b*e*n*(a
 + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqr
t[g])])/(2*(e*(-f)^(3/2) + d*f*Sqrt[g])*Sqrt[g]) + ((a + b*Log[c*(d + e*x)^
n])^2*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(4*(-f)^(3/
2)*Sqrt[g]) - (b^2*e*n^2*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*S
qrt[g]))])/(2*(e*(-f)^(3/2) + d*f*Sqrt[g])*Sqrt[g]) + (b*n*(a + b*Log[c*(d
+ e*x)^n])*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*
(-f)^(3/2)*Sqrt[g]) - (b^2*e*n^2*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f]
 + d*Sqrt[g])])/(2*f*(e*Sqrt[-f] + d*Sqrt[g])*Sqrt[g]) - (b*n*(a + b*Log[c*
(d + e*x)^n])*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*
(-f)^(3/2)*Sqrt[g]) - (b^2*n^2*PolyLog[3, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f]
 - d*Sqrt[g]))])/(2*(-f)^(3/2)*Sqrt[g]) + (b^2*n^2*PolyLog[3, (Sqrt[g]*(d +
 e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*(-f)^(3/2)*Sqrt[g])
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2397

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_))^2, x_Symbol] :> Simp[((d + e*x)*(a + b*Log[c*(d + e*x)^n])^p)/((e*f
 - d*g)*(f + g*x)), x] - Dist[(b*e*n*p)/(e*f - d*g), Int[(a + b*Log[c*(d +
e*x)^n])^(p - 1)/(f + g*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] &&
 NeQ[e*f - d*g, 0] && GtQ[p, 0]
```

Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
```

```
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{\left(f+gx^2\right)^2}\,dx = \int\left(-\frac{g\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{4f\left(\sqrt{-f}\sqrt{g}-gx\right)^2}-\frac{g\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{4f\left(\sqrt{-f}\sqrt{g}+gx\right)^2}-\frac{g\left(a+b\log\left(c(d\right.\right.}{2f\left(-fg-\right.}$$

$$=-\frac{g\int\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{\left(\sqrt{-f}\sqrt{g}-gx\right)^2}dx}{4f}-\frac{g\int\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{\left(\sqrt{-f}\sqrt{g}+gx\right)^2}dx}{4f}-\frac{g\int\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{-fg-g^2x^2}dx}{2f}$$

$$=-\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{4f\left(e\sqrt{-f}+d\sqrt{g}\right)\left(\sqrt{-f}-\sqrt{g}x\right)}-\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{4f\left(e\sqrt{-f}-d\sqrt{g}\right)\left(\sqrt{-f}+\sqrt{g}x\right)}-\frac{g\int}{}$$

$$=-\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{4f\left(e\sqrt{-f}+d\sqrt{g}\right)\left(\sqrt{-f}-\sqrt{g}x\right)}-\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{4f\left(e\sqrt{-f}-d\sqrt{g}\right)\left(\sqrt{-f}+\sqrt{g}x\right)}-\frac{ben}{}$$

$$=-\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{4f\left(e\sqrt{-f}+d\sqrt{g}\right)\left(\sqrt{-f}-\sqrt{g}x\right)}-\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{4f\left(e\sqrt{-f}-d\sqrt{g}\right)\left(\sqrt{-f}+\sqrt{g}x\right)}-\frac{ben}{}$$

$$=-\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{4f\left(e\sqrt{-f}+d\sqrt{g}\right)\left(\sqrt{-f}-\sqrt{g}x\right)}-\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{4f\left(e\sqrt{-f}-d\sqrt{g}\right)\left(\sqrt{-f}+\sqrt{g}x\right)}-\frac{ben}{}$$

$$=-\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{4f\left(e\sqrt{-f}+d\sqrt{g}\right)\left(\sqrt{-f}-\sqrt{g}x\right)}-\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{4f\left(e\sqrt{-f}-d\sqrt{g}\right)\left(\sqrt{-f}+\sqrt{g}x\right)}-\frac{ben}{}$$

$$=-\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{4f\left(e\sqrt{-f}+d\sqrt{g}\right)\left(\sqrt{-f}-\sqrt{g}x\right)}-\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{4f\left(e\sqrt{-f}-d\sqrt{g}\right)\left(\sqrt{-f}+\sqrt{g}x\right)}-\frac{ben}{}$$

Mathematica [C] time = 3.08, size = 1143, normalized size = 1.39

$$b^2\left(-\frac{\sqrt{f}\left(-\sqrt{g}(d+ex)\log^2(d+ex)+2e\left(\sqrt{g}x+i\sqrt{f}\right)\log\left(\frac{e\left(\sqrt{f}-i\sqrt{g}x\right)}{i\sqrt{g}d+e\sqrt{f}}\right)\log(d+ex)+2e\left(\sqrt{g}x+i\sqrt{f}\right)\text{Li}_2\left(\frac{i\sqrt{g}(d+ex)}{i\sqrt{g}d+e\sqrt{f}}\right)\right)}{\left(i\sqrt{g}d+e\sqrt{f}\right)\left(\sqrt{f}-i\sqrt{g}x\right)}+\frac{\sqrt{f}\left(\log(d+ex)\left(\sqrt{g}(d+ex)\log(d+ex)+2ie\left(i\sqrt{g}x+\sqrt{f}\right)\log\left(\right.\right.\right.}{\left(e\sqrt{f}-id\sqrt{g}\right)\left(i\right.}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^2/(f + g*x^2)^2,x]

[Out] ((2*Sqrt[f]*x*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2)
+ (2*ArcTan[(Sqrt[g]*x)/Sqrt[f]]*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^
```

```
n])^2)/Sqrt[g] + (2*b*n*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*((Sqr
t[f]*(Sqrt[g]*(d + e*x)*Log[d + e*x] + I*e*(Sqrt[f] + I*Sqrt[g]*x)*Log[I*Sq
rt[f] - Sqrt[g]*x]))/((e*Sqrt[f] - I*d*Sqrt[g])*(Sqrt[f] + I*Sqrt[g]*x)) +
(Sqrt[f]*(Sqrt[g]*(d + e*x)*Log[d + e*x] + e*((-I)*Sqrt[f] - Sqrt[g]*x)*Log
[I*Sqrt[f] + Sqrt[g]*x]))/((e*Sqrt[f] + I*d*Sqrt[g])*(Sqrt[f] - I*Sqrt[g]*x
)) - I*(Log[d + e*x]*Log[(e*(Sqrt[f] + I*Sqrt[g]*x))/(e*Sqrt[f] - I*d*Sqrt[
g])] + PolyLog[2, ((-I)*Sqrt[g]*(d + e*x))/(e*Sqrt[f] - I*d*Sqrt[g])]) + I*
(Log[d + e*x]*Log[(e*(Sqrt[f] - I*Sqrt[g]*x))/(e*Sqrt[f] + I*d*Sqrt[g])] +
PolyLog[2, (I*Sqrt[g]*(d + e*x))/(e*Sqrt[f] + I*d*Sqrt[g])])))/Sqrt[g] + (b
^2*n^2*(-((Sqrt[f]*(-(Sqrt[g]*(d + e*x)*Log[d + e*x]^2) + 2*e*(I*Sqrt[f] +
Sqrt[g]*x)*Log[d + e*x]*Log[(e*(Sqrt[f] - I*Sqrt[g]*x))/(e*Sqrt[f] + I*d*Sq
rt[g])] + 2*e*(I*Sqrt[f] + Sqrt[g]*x)*PolyLog[2, (I*Sqrt[g]*(d + e*x))/(e*S
qrt[f] + I*d*Sqrt[g])]))/((e*Sqrt[f] + I*d*Sqrt[g])*(Sqrt[f] - I*Sqrt[g]*x)
)) + (Sqrt[f]*(Log[d + e*x]*(Sqrt[g]*(d + e*x)*Log[d + e*x] + (2*I)*e*(Sqrt
[f] + I*Sqrt[g]*x)*Log[(e*(Sqrt[f] + I*Sqrt[g]*x))/(e*Sqrt[f] - I*d*Sqrt[g]
)]) + (2*I)*e*(Sqrt[f] + I*Sqrt[g]*x)*PolyLog[2, (Sqrt[g]*(d + e*x))/(I*e*S
qrt[f] + d*Sqrt[g])]))/((e*Sqrt[f] - I*d*Sqrt[g])*(Sqrt[f] + I*Sqrt[g]*x))
+ I*(Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g]
)] + 2*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt
[g])] - 2*PolyLog[3, (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])]) - I
*(Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] + 2
*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] - 2
*PolyLog[3, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])])))/Sqrt[g])/(4*f
^(3/2))
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b^2\log\left((ex+d)^n c\right)^2 + 2\,ab\log\left((ex+d)^n c\right) + a^2}{g^2x^4 + 2\,fgx^2 + f^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x^2+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b^2*log((e*x + d)^n*c)^2 + 2*a*b*log((e*x + d)^n*c) + a^2)/(g^2*x
^4 + 2*f*g*x^2 + f^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\log\left((ex+d)^n c\right) + a\right)^2}{\left(gx^2 + f\right)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x^2+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2/(g*x^2 + f)^2, x)
```

maple [F] time = 46.01, size = 0, normalized size = 0.00

$$\int \frac{\left(b\ln\left(c\,(ex+d)^n\right) + a\right)^2}{\left(g\,x^2 + f\right)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)^2/(g*x^2+f)^2,x)
```

```
[Out] int((b*ln(c*(e*x+d)^n)+a)^2/(g*x^2+f)^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{2}\,a^2\left(\frac{x}{fgx^2+f^2}+\frac{\arctan\left(\frac{gx}{\sqrt{fg}}\right)}{\sqrt{fg}\,f}\right)+\int\frac{b^2\log\left((ex+d)^n\right)^2+b^2\log(c)^2+2\,ab\log(c)+2\left(b^2\log(c)+ab\right)\log\left((ex\right.}{g^2x^4+2\,fgx^2+f^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x^2+f)^2,x, algorithm="maxima")
```

```
[Out] 1/2*a^2*(x/(f*g*x^2 + f^2) + arctan(g*x/sqrt(f*g))/(sqrt(f*g)*f)) + integra
te((b^2*log((e*x + d)^n)^2 + b^2*log(c)^2 + 2*a*b*log(c) + 2*(b^2*log(c) +
a*b)*log((e*x + d)^n))/(g^2*x^4 + 2*f*g*x^2 + f^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{\left(a+b\,\ln\left(c\,(d+e\,x)^n\right)\right)^2}{\left(g\,x^2+f\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^2/(f + g*x^2)^2,x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))^2/(f + g*x^2)^2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2/(g*x**2+f)**2,x)
```

```
[Out] Timed out
```

3.328 $\int \frac{\left(a+b\log(c(d+ex)^n)\right)^2}{x^2\left(f+gx^2\right)^2}\,dx$

Optimal. Leaf size=919

$$\frac{b^2e\sqrt{g}\,\text{Li}_2\left(-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)n^2}{2f\left(e(-f)^{3/2}+df\sqrt{g}\right)}+\frac{b^2e\sqrt{g}\,\text{Li}_2\left(\frac{\sqrt{g}(d+ex)}{\sqrt{g}d+e\sqrt{-f}}\right)n^2}{2f^2\left(\sqrt{g}d+e\sqrt{-f}\right)}+\frac{2b^2e\,\text{Li}_2\left(\frac{ex}{d}+1\right)n^2}{df^2}-\frac{3b^2\sqrt{g}\,\text{Li}_3\left(-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)n^2}{2(-f)^{5/2}}+\frac{3b^2\cdots}{\cdots}$$

```
[Out] 2*b*e*n*ln(-e*x/d)*(a+b*ln(c*(e*x+d)^n))/d/f^2-(e*x+d)*(a+b*ln(c*(e*x+d)^n)
)^2/d/f^2/x+2*b^2*e*n^2*polylog(2,1+e*x/d)/d/f^2-3/4*(a+b*ln(c*(e*x+d)^n))^
2*ln(e*((-f)^(1/2)-x*g^(1/2))/(e*(-f)^(1/2)+d*g^(1/2)))*g^(1/2)/(-f)^(5/2)+
3/4*(a+b*ln(c*(e*x+d)^n))^2*ln(e*((-f)^(1/2)+x*g^(1/2))/(e*(-f)^(1/2)-d*g^(
1/2)))*g^(1/2)/(-f)^(5/2)+3/2*b*n*(a+b*ln(c*(e*x+d)^n))*polylog(2,-(e*x+d)*
g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))*g^(1/2)/(-f)^(5/2)-3/2*b*n*(a+b*ln(c*(e*x
+d)^n))*polylog(2,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))*g^(1/2)/(-f)^(5
/2)-3/2*b^2*n^2*polylog(3,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))*g^(1/2
)/(-f)^(5/2)+3/2*b^2*n^2*polylog(3,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2))
)*g^(1/2)/(-f)^(5/2)+1/2*b*e*n*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)-x*g^(
1/2))/(e*(-f)^(1/2)+d*g^(1/2)))*g^(1/2)/f^2/(e*(-f)^(1/2)+d*g^(1/2))+1/2*b^
2*e*n^2*polylog(2,(e*x+d)*g^(1/2)/(e*(-f)^(1/2)+d*g^(1/2)))*g^(1/2)/f^2/(e*
(-f)^(1/2)+d*g^(1/2))+1/2*b*e*n*(a+b*ln(c*(e*x+d)^n))*ln(e*((-f)^(1/2)+x*g^
(1/2))/(e*(-f)^(1/2)-d*g^(1/2)))*g^(1/2)/f/(e*(-f)^(3/2)+d*f*g^(1/2))+1/2*b
^2*e*n^2*polylog(2,-(e*x+d)*g^(1/2)/(e*(-f)^(1/2)-d*g^(1/2)))*g^(1/2)/f/(e*
(-f)^(3/2)+d*f*g^(1/2))+1/4*g*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^2/f^2/(e*(-f)^(
1/2)+d*g^(1/2))/((-f)^(1/2)-x*g^(1/2))+1/4*g*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^
2/f^2/(e*(-f)^(1/2)-d*g^(1/2))/((-f)^(1/2)+x*g^(1/2))
```

Rubi [A] time = 1.61, antiderivative size = 919, normalized size of antiderivative = 1.00, number of steps used = 35, number of rules used = 11, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.379, Rules used = {2416, 2397, 2394, 2315, 2409, 2393, 2391, 2396, 2433, 2374, 6589}

$$\frac{b^2e\sqrt{g}\,\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)n^2}{2f\left(e(-f)^{3/2}+df\sqrt{g}\right)}+\frac{b^2e\sqrt{g}\,\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{\sqrt{g}d+e\sqrt{-f}}\right)n^2}{2f^2\left(\sqrt{g}d+e\sqrt{-f}\right)}+\frac{2b^2e\,\text{PolyLog}\left(2,\frac{ex}{d}+1\right)n^2}{df^2}-\frac{3b^2\sqrt{g}\,\cdots}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^2/(x^2*(f + g*x^2)^2),x]
```

```
[Out] (2*b*e*n*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]))/(d*f^2) - ((d + e*x)*(
a + b*Log[c*(d + e*x)^n])^2)/(d*f^2*x) + (g*(d + e*x)*(a + b*Log[c*(d + e*x
)^n])^2)/(4*f^2*(e*Sqrt[-f] + d*Sqrt[g])*(Sqrt[-f] - Sqrt[g]*x)) + (g*(d +
e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(4*f^2*(e*Sqrt[-f] - d*Sqrt[g])*(Sqrt[-f
] + Sqrt[g]*x)) + (b*e*Sqrt[g]*n*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f
] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*f^2*(e*Sqrt[-f] + d*Sqrt[g]))
 - (3*Sqrt[g]*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(
e*Sqrt[-f] + d*Sqrt[g])])/(4*(-f)^(5/2)) + (b*e*Sqrt[g]*n*(a + b*Log[c*(d +
 e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*f*(e
*(-f)^(3/2) + d*f*Sqrt[g])) + (3*Sqrt[g]*(a + b*Log[c*(d + e*x)^n])^2*Log[(
e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(4*(-f)^(5/2)) + (b^2*
e*Sqrt[g]*n^2*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/
(2*f*(e*(-f)^(3/2) + d*f*Sqrt[g])) + (3*b*Sqrt[g]*n*(a + b*Log[c*(d + e*x)^
n])*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*(-f)^(5
/2)) + (b^2*e*Sqrt[g]*n^2*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sq
rt[g])])/(2*f^2*(e*Sqrt[-f] + d*Sqrt[g])) - (3*b*Sqrt[g]*n*(a + b*Log[c*(d
+ e*x)^n])*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*(-f
```

```
)^(5/2)) + (2*b^2*e*n^2*PolyLog[2, 1 + (e*x)/d])/(d*f^2) - (3*b^2*Sqrt[g]*n
^2*PolyLog[3, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*(-f)^(5/
2)) + (3*b^2*Sqrt[g]*n^2*PolyLog[3, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqr
t[g])])/(2*(-f)^(5/2))
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2397

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_))^2, x_Symbol] :> Simp[((d + e*x)*(a + b*Log[c*(d + e*x)^n])^p)/((e*f
 - d*g)*(f + g*x)), x] - Dist[(b*e*n*p)/(e*f - d*g), Int[(a + b*Log[c*(d +
e*x)^n])^(p - 1)/(f + g*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] &&
 NeQ[e*f - d*g, 0] && GtQ[p, 0]
```

Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{x^2\left(f+gx^2\right)^2}\,dx = \int\left(\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{f^2x^2} - \frac{g\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{f\left(f+gx^2\right)^2} - \frac{g\left(a+b\log\left(c(d+\right.\right.}{f^2\left(f+gx^2\right)}\right.$$

$$= \frac{\int \frac{\left(a+b\log(c(d+ex)^n)\right)^2}{x^2}dx}{f^2} - \frac{g\int \frac{\left(a+b\log(c(d+ex)^n)\right)^2}{f+gx^2}dx}{f^2} - \frac{g\int \frac{\left(a+b\log(c(d+ex)^n)\right)^2}{\left(f+gx^2\right)^2}dx}{f}$$

$$= -\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{df^2x} - \frac{g\int\left(\frac{\sqrt{-f}\left(a+b\log(c(d+ex)^n)\right)^2}{2f\left(\sqrt{-f}-\sqrt{g}x\right)} + \frac{\sqrt{-f}\left(a+b\log(c(d\right.}{2f\left(\sqrt{-f}+\sqrt{g}\right.}\right.}{f^2}$$

$$= \frac{2ben\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{df^2} - \frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{df^2x} + \frac{g}{}$$

$$= \frac{2ben\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{df^2} - \frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{df^2x} + \frac{g}{4f}$$

$$= \frac{2ben\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{df^2} - \frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{df^2x} + \frac{g}{4f}$$

$$= \frac{2ben\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{df^2} - \frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{df^2x} + \frac{g}{4f}$$

$$= \frac{2ben\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{df^2} - \frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{df^2x} + \frac{g}{4f}$$

$$= \frac{2ben\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{df^2} - \frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{df^2x} + \frac{g}{4f}$$

$$= \frac{2ben\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{df^2} - \frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{df^2x} + \frac{g}{4f}$$

Mathematica [C] time = 3.69, size = 1304, normalized size = 1.42

$$b^2\left(\frac{\sqrt{f}\sqrt{g}\left(-\sqrt{g}(d+ex)\log^2(d+ex)+2e\left(\sqrt{g}x+i\sqrt{f}\right)\log\left(\frac{e\left(\sqrt{f}-i\sqrt{g}x\right)}{i\sqrt{g}d+e\sqrt{f}}\right)\log(d+ex)+2e\left(\sqrt{g}x+i\sqrt{f}\right)\text{Li}_2\left(\frac{i\sqrt{g}(d+ex)}{i\sqrt{g}d+e\sqrt{f}}\right)\right)}{\left(i\sqrt{g}d+e\sqrt{f}\right)\left(\sqrt{f}-i\sqrt{g}x\right)} - \frac{\sqrt{f}\sqrt{g}\left(\log(d+ex)\left(\sqrt{g}(d+ex)\right.\right.}{}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^2/(x^2*(f + g*x^2)^2),x]
```

```
[Out] ((-4*Sqrt[f]*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2)/x - (2*Sqrt[f
]*g*x*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2) - 6*Sqrt
[g]*ArcTan[(Sqrt[g]*x)/Sqrt[f]]*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n
])^2 + 2*b*n*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*((4*Sqrt[f]*(e*x
*Log[x] - (d + e*x)*Log[d + e*x]))/(d*x) - (Sqrt[f]*Sqrt[g]*(Sqrt[g]*(d + e
*x)*Log[d + e*x] + I*e*(Sqrt[f] + I*Sqrt[g]*x)*Log[I*Sqrt[f] - Sqrt[g]*x]))
/((e*Sqrt[f] - I*d*Sqrt[g])*(Sqrt[f] + I*Sqrt[g]*x)) + (Sqrt[f]*Sqrt[g]*(-(
Sqrt[g]*(d + e*x)*Log[d + e*x]) + e*(I*Sqrt[f] + Sqrt[g]*x)*Log[I*Sqrt[f] +
 Sqrt[g]*x]))/((e*Sqrt[f] + I*d*Sqrt[g])*(Sqrt[f] - I*Sqrt[g]*x)) + (3*I)*S
qrt[g]*(Log[d + e*x]*Log[(e*(Sqrt[f] + I*Sqrt[g]*x))/(e*Sqrt[f] - I*d*Sqrt[
g])] + PolyLog[2, ((-I)*Sqrt[g]*(d + e*x))/(e*Sqrt[f] - I*d*Sqrt[g])]) - (3
*I)*Sqrt[g]*(Log[d + e*x]*Log[(e*(Sqrt[f] - I*Sqrt[g]*x))/(e*Sqrt[f] + I*d*
Sqrt[g])] + PolyLog[2, (I*Sqrt[g]*(d + e*x))/(e*Sqrt[f] + I*d*Sqrt[g])])) +
 b^2*n^2*((Sqrt[f]*Sqrt[g]*(-(Sqrt[g]*(d + e*x)*Log[d + e*x]^2) + 2*e*(I*Sq
rt[f] + Sqrt[g]*x)*Log[d + e*x]*Log[(e*(Sqrt[f] - I*Sqrt[g]*x))/(e*Sqrt[f]
+ I*d*Sqrt[g])] + 2*e*(I*Sqrt[f] + Sqrt[g]*x)*PolyLog[2, (I*Sqrt[g]*(d + e*
x))/(e*Sqrt[f] + I*d*Sqrt[g])]))/((e*Sqrt[f] + I*d*Sqrt[g])*(Sqrt[f] - I*Sq
rt[g]*x)) - (Sqrt[f]*Sqrt[g]*(Log[d + e*x]*(Sqrt[g]*(d + e*x)*Log[d + e*x]
+ (2*I)*e*(Sqrt[f] + I*Sqrt[g]*x)*Log[(e*(Sqrt[f] + I*Sqrt[g]*x))/(e*Sqrt[f
] - I*d*Sqrt[g])]) + (2*I)*e*(Sqrt[f] + I*Sqrt[g]*x)*PolyLog[2, (Sqrt[g]*(d
 + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])]))/((e*Sqrt[f] - I*d*Sqrt[g])*(Sqrt[f] +
 I*Sqrt[g]*x)) + (4*Sqrt[f]*(2*e*x*Log[-((e*x)/d)]*Log[d + e*x] - (d + e*x)
*Log[d + e*x]^2 + 2*e*x*PolyLog[2, 1 + (e*x)/d]))/(d*x) - (3*I)*Sqrt[g]*(Lo
g[d + e*x]^2*Log[1 - (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] + 2*
Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] -
 2*PolyLog[3, (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])]) + (3*I)*Sq
rt[g]*(Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])
] + 2*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])
] - 2*PolyLog[3, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])])))/(4*f^(5/
2))
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b^2 \log\left(\left(ex+d\right)^n c\right)^2 + 2\,ab \log\left(\left(ex+d\right)^n c\right) + a^2}{g^2x^6 + 2\,fgx^4 + f^2x^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x^2/(g*x^2+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b^2*log((e*x + d)^n*c)^2 + 2*a*b*log((e*x + d)^n*c) + a^2)/(g^2*x
^6 + 2*f*g*x^4 + f^2*x^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b \log\left(\left(ex+d\right)^n c\right) + a\right)^2}{\left(gx^2 + f\right)^2 x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x^2/(g*x^2+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2/((g*x^2 + f)^2*x^2), x)
```

maple [F] time = 17.50, size = 0, normalized size = 0.00

$$\int \frac{\left(b \ln\left(c\left(ex+d\right)^n\right) + a\right)^2}{\left(g\,x^2 + f\right)^2 x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)^2/x^2/(g*x^2+f)^2,x)
```

```
[Out] int((b*ln(c*(e*x+d)^n)+a)^2/x^2/(g*x^2+f)^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{2}\,a^2\left(\frac{3\,gx^2+2\,f}{f^2gx^3+f^3x}+\frac{3\,g\arctan\left(\frac{gx}{\sqrt{fg}}\right)}{\sqrt{fg}\,f^2}\right)+\int\frac{b^2\log\left((ex+d)^n\right)^2+b^2\log(c)^2+2\,ab\log(c)+2\left(b^2\log(c)+ab\right)\text{lo}}{g^2x^6+2\,fgx^4+f^2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x^2/(g*x^2+f)^2,x, algorithm="maxima")
```

```
[Out] -1/2*a^2*((3*g*x^2 + 2*f)/(f^2*g*x^3 + f^3*x) + 3*g*arctan(g*x/sqrt(f*g))/(
sqrt(f*g)*f^2)) + integrate((b^2*log((e*x + d)^n)^2 + b^2*log(c)^2 + 2*a*b*
log(c) + 2*(b^2*log(c) + a*b)*log((e*x + d)^n))/(g^2*x^6 + 2*f*g*x^4 + f^2*
x^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{\left(a+b\,\ln\left(c\,(d+e\,x)^n\right)\right)^2}{x^2\,\left(g\,x^2+f\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^2/(x^2*(f + g*x^2)^2),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))^2/(x^2*(f + g*x^2)^2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2/x**2/(g*x**2+f)**2,x)
```

```
[Out] Timed out
```

3.329 $\int \frac{\log^3(c(a+bx)^n)}{d+ex^2} dx$

Optimal. Leaf size=477

$$\frac{3n^2\log(c(a+bx)^n)\operatorname{Li}_3\left(-\frac{\sqrt{e}(a+bx)}{b\sqrt{-d}-a\sqrt{e}}\right)}{\sqrt{-d}\sqrt{e}}-\frac{3n^2\log(c(a+bx)^n)\operatorname{Li}_3\left(\frac{\sqrt{e}(a+bx)}{\sqrt{e}a+b\sqrt{-d}}\right)}{\sqrt{-d}\sqrt{e}}-\frac{3n\log^2(c(a+bx)^n)\operatorname{Li}_2\left(-\frac{\sqrt{e}(a+}{b\sqrt{-d}-}\right.}{2\sqrt{-d}\sqrt{e}}$$

```
[Out] 1/2*ln(c*(b*x+a)^n)^3*ln(b*((-d)^(1/2)-x*e^(1/2))/(b*(-d)^(1/2)+a*e^(1/2)))
/(-d)^(1/2)/e^(1/2)-1/2*ln(c*(b*x+a)^n)^3*ln(b*((-d)^(1/2)+x*e^(1/2))/(b*(-
d)^(1/2)-a*e^(1/2)))/(-d)^(1/2)/e^(1/2)-3/2*n*ln(c*(b*x+a)^n)^2*polylog(2,-
(b*x+a)*e^(1/2)/(b*(-d)^(1/2)-a*e^(1/2)))/(-d)^(1/2)/e^(1/2)+3/2*n*ln(c*(b*
x+a)^n)^2*polylog(2,(b*x+a)*e^(1/2)/(b*(-d)^(1/2)+a*e^(1/2)))/(-d)^(1/2)/e^
(1/2)+3*n^2*ln(c*(b*x+a)^n)*polylog(3,-(b*x+a)*e^(1/2)/(b*(-d)^(1/2)-a*e^(1
/2)))/(-d)^(1/2)/e^(1/2)-3*n^2*ln(c*(b*x+a)^n)*polylog(3,(b*x+a)*e^(1/2)/(b
*(-d)^(1/2)+a*e^(1/2)))/(-d)^(1/2)/e^(1/2)-3*n^3*polylog(4,-(b*x+a)*e^(1/2)
/(b*(-d)^(1/2)-a*e^(1/2)))/(-d)^(1/2)/e^(1/2)+3*n^3*polylog(4,(b*x+a)*e^(1/
2)/(b*(-d)^(1/2)+a*e^(1/2)))/(-d)^(1/2)/e^(1/2)
```

Rubi [A] time = 0.54, antiderivative size = 477, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.273$, Rules used = {2409, 2396, 2433, 2374, 2383, 6589}

$$\frac{3n^2\log(c(a+bx)^n)\operatorname{PolyLog}\left(3,-\frac{\sqrt{e}(a+bx)}{b\sqrt{-d}-a\sqrt{e}}\right)}{\sqrt{-d}\sqrt{e}}-\frac{3n^2\log(c(a+bx)^n)\operatorname{PolyLog}\left(3,\frac{\sqrt{e}(a+bx)}{a\sqrt{e}+b\sqrt{-d}}\right)}{\sqrt{-d}\sqrt{e}}-\frac{3n\log^2(c(a+bx}{}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c*(a + b*x)^n]^3/(d + e*x^2),x]
```

```
[Out] (Log[c*(a + b*x)^n]^3*Log[(b*(Sqrt[-d] - Sqrt[e]*x))/(b*Sqrt[-d] + a*Sqrt[e
])])/(2*Sqrt[-d]*Sqrt[e]) - (Log[c*(a + b*x)^n]^3*Log[(b*(Sqrt[-d] + Sqrt[e
]*x))/(b*Sqrt[-d] - a*Sqrt[e])])/(2*Sqrt[-d]*Sqrt[e]) - (3*n*Log[c*(a + b*x
)^n]^2*PolyLog[2, -((Sqrt[e]*(a + b*x))/(b*Sqrt[-d] - a*Sqrt[e]))])/(2*Sqrt
[-d]*Sqrt[e]) + (3*n*Log[c*(a + b*x)^n]^2*PolyLog[2, (Sqrt[e]*(a + b*x))/(b
*Sqrt[-d] + a*Sqrt[e])])/(2*Sqrt[-d]*Sqrt[e]) + (3*n^2*Log[c*(a + b*x)^n]*P
olyLog[3, -((Sqrt[e]*(a + b*x))/(b*Sqrt[-d] - a*Sqrt[e]))])/(Sqrt[-d]*Sqrt[
e]) - (3*n^2*Log[c*(a + b*x)^n]*PolyLog[3, (Sqrt[e]*(a + b*x))/(b*Sqrt[-d]
+ a*Sqrt[e])])/(Sqrt[-d]*Sqrt[e]) - (3*n^3*PolyLog[4, -((Sqrt[e]*(a + b*x))
/(b*Sqrt[-d] - a*Sqrt[e]))])/(Sqrt[-d]*Sqrt[e]) + (3*n^3*PolyLog[4, (Sqrt[e
]*(a + b*x))/(b*Sqrt[-d] + a*Sqrt[e])])/(Sqrt[-d]*Sqrt[e])
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2383

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^p)/q
, x] - Dist[(b*n*p)/q, Int[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^(p - 1
))/x, x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\log^3(c(a+bx)^n)}{d+ex^2}\,dx = \int \left(\frac{\sqrt{-d}\log^3(c(a+bx)^n)}{2d\left(\sqrt{-d}-\sqrt{e}x\right)} + \frac{\sqrt{-d}\log^3(c(a+bx)^n)}{2d\left(\sqrt{-d}+\sqrt{e}x\right)}\right)dx$$

$$= -\frac{\int \frac{\log^3(c(a+bx)^n)}{\sqrt{-d}-\sqrt{e}x}dx}{2\sqrt{-d}} - \frac{\int \frac{\log^3(c(a+bx)^n)}{\sqrt{-d}+\sqrt{e}x}dx}{2\sqrt{-d}}$$

$$= \frac{\log^3(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}-\sqrt{e}x\right)}{b\sqrt{-d}+a\sqrt{e}}\right)}{2\sqrt{-d}\sqrt{e}} - \frac{\log^3(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}+\sqrt{e}x\right)}{b\sqrt{-d}-a\sqrt{e}}\right)}{2\sqrt{-d}\sqrt{e}} - \frac{(3bn)\int}{}$$

$(3n)$ Sub

$$= \frac{\log^3(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}-\sqrt{e}x\right)}{b\sqrt{-d}+a\sqrt{e}}\right)}{2\sqrt{-d}\sqrt{e}} - \frac{\log^3(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}+\sqrt{e}x\right)}{b\sqrt{-d}-a\sqrt{e}}\right)}{2\sqrt{-d}\sqrt{e}} -$$

$$= \frac{\log^3(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}-\sqrt{e}x\right)}{b\sqrt{-d}+a\sqrt{e}}\right)}{2\sqrt{-d}\sqrt{e}} - \frac{\log^3(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}+\sqrt{e}x\right)}{b\sqrt{-d}-a\sqrt{e}}\right)}{2\sqrt{-d}\sqrt{e}} - \frac{3n\log^2(}{}$$

$$= \frac{\log^3(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}-\sqrt{e}x\right)}{b\sqrt{-d}+a\sqrt{e}}\right)}{2\sqrt{-d}\sqrt{e}} - \frac{\log^3(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}+\sqrt{e}x\right)}{b\sqrt{-d}-a\sqrt{e}}\right)}{2\sqrt{-d}\sqrt{e}} - \frac{3n\log^2(}{}$$

$$= \frac{\log^3(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}-\sqrt{e}x\right)}{b\sqrt{-d}+a\sqrt{e}}\right)}{2\sqrt{-d}\sqrt{e}} - \frac{\log^3(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}+\sqrt{e}x\right)}{b\sqrt{-d}-a\sqrt{e}}\right)}{2\sqrt{-d}\sqrt{e}} - \frac{3n\log^2(}{}$$

Mathematica [C] time = 0.33, size = 754, normalized size = 1.58

$$\frac{-6in^2\log(c(a+bx)^n)\operatorname{Li}_3\left(\frac{\sqrt{e}(a+bx)}{a\sqrt{e}-ib\sqrt{d}}\right) + 6in^2\log(c(a+bx)^n)\operatorname{Li}_3\left(\frac{\sqrt{e}(a+bx)}{\sqrt{e}a+ib\sqrt{d}}\right) - 3in^2\log^2(a+bx)\log(c(a+bx}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(a + b*x)^n]^3/(d + e*x^2),x]
```

```
[Out] (-2*n^3*ArcTan[(Sqrt[e]*x)/Sqrt[d]]*Log[a + b*x]^3 + 6*n^2*ArcTan[(Sqrt[e]*
x)/Sqrt[d]]*Log[a + b*x]^2*Log[c*(a + b*x)^n] - 6*n*ArcTan[(Sqrt[e]*x)/Sqrt
[d]]*Log[a + b*x]*Log[c*(a + b*x)^n]^2 + 2*ArcTan[(Sqrt[e]*x)/Sqrt[d]]*Log[
c*(a + b*x)^n]^3 + I*n^3*Log[a + b*x]^3*Log[1 - (Sqrt[e]*(a + b*x))/((-I)*b
*Sqrt[d] + a*Sqrt[e])] - (3*I)*n^2*Log[a + b*x]^2*Log[c*(a + b*x)^n]*Log[1
- (Sqrt[e]*(a + b*x))/((-I)*b*Sqrt[d] + a*Sqrt[e])] + (3*I)*n*Log[a + b*x]*
Log[c*(a + b*x)^n]^2*Log[1 - (Sqrt[e]*(a + b*x))/((-I)*b*Sqrt[d] + a*Sqrt[e
])] - I*n^3*Log[a + b*x]^3*Log[1 - (Sqrt[e]*(a + b*x))/(I*b*Sqrt[d] + a*Sqr
t[e])] + (3*I)*n^2*Log[a + b*x]^2*Log[c*(a + b*x)^n]*Log[1 - (Sqrt[e]*(a +
b*x))/(I*b*Sqrt[d] + a*Sqrt[e])] - (3*I)*n*Log[a + b*x]*Log[c*(a + b*x)^n]^
2*Log[1 - (Sqrt[e]*(a + b*x))/(I*b*Sqrt[d] + a*Sqrt[e])] + (3*I)*n*Log[c*(a
 + b*x)^n]^2*PolyLog[2, (Sqrt[e]*(a + b*x))/((-I)*b*Sqrt[d] + a*Sqrt[e])] -
 (3*I)*n*Log[c*(a + b*x)^n]^2*PolyLog[2, (Sqrt[e]*(a + b*x))/(I*b*Sqrt[d] +
 a*Sqrt[e])] - (6*I)*n^2*Log[c*(a + b*x)^n]*PolyLog[3, (Sqrt[e]*(a + b*x))/
((-I)*b*Sqrt[d] + a*Sqrt[e])] + (6*I)*n^2*Log[c*(a + b*x)^n]*PolyLog[3, (Sq
```

```
rt[e]*(a + b*x))/(I*b*Sqrt[d] + a*Sqrt[e])] + (6*I)*n^3*PolyLog[4, (Sqrt[e]
*(a + b*x))/((-I)*b*Sqrt[d] + a*Sqrt[e])] - (6*I)*n^3*PolyLog[4, (Sqrt[e]*(
a + b*x))/(I*b*Sqrt[d] + a*Sqrt[e])])/(2*Sqrt[d]*Sqrt[e])
```

fricas [F] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\log\left(\left(bx+a\right)^{n}c\right)^{3}}{ex^{2}+d},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)^3/(e*x^2+d),x, algorithm="fricas")
```

```
[Out] integral(log((b*x + a)^n*c)^3/(e*x^2 + d), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log\left(\left(bx+a\right)^{n}c\right)^{3}}{ex^{2}+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)^3/(e*x^2+d),x, algorithm="giac")
```

```
[Out] integrate(log((b*x + a)^n*c)^3/(e*x^2 + d), x)
```

maple [F] time = 13.43, size = 0, normalized size = 0.00

$$\int \frac{\ln\left(c\left(bx+a\right)^{n}\right)^{3}}{e\,x^{2}+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(c*(b*x+a)^n)^3/(e*x^2+d),x)
```

```
[Out] int(ln(c*(b*x+a)^n)^3/(e*x^2+d),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log\left(\left(bx+a\right)^{n}c\right)^{3}}{ex^{2}+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)^3/(e*x^2+d),x, algorithm="maxima")
```

```
[Out] integrate(log((b*x + a)^n*c)^3/(e*x^2 + d), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln\left(c\left(a+b\,x\right)^{n}\right)^{3}}{e\,x^{2}+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(c*(a + b*x)^n)^3/(d + e*x^2),x)
```

```
[Out] int(log(c*(a + b*x)^n)^3/(d + e*x^2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log\left(c\left(a+bx\right)^{n}\right)^{3}}{d+ex^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(c*(b*x+a)**n)**3/(e*x**2+d),x)
```

```
[Out] Integral(log(c*(a + b*x)**n)**3/(d + e*x**2), x)
```

3.330 $\int \frac{\log^2(c(a+bx)^n)}{d+ex^2}\,dx$

Optimal. Leaf size=347

$$-\frac{n\log\left(c(a+bx)^n\right)\text{Li}_2\left(-\frac{\sqrt{e}(a+bx)}{b\sqrt{-d}-a\sqrt{e}}\right)}{\sqrt{-d}\sqrt{e}}+\frac{n\log\left(c(a+bx)^n\right)\text{Li}_2\left(\frac{\sqrt{e}(a+bx)}{\sqrt{e}a+b\sqrt{-d}}\right)}{\sqrt{-d}\sqrt{e}}+\frac{\log^2\left(c(a+bx)^n\right)\log\left(\frac{b\left(\sqrt{-d}-\sqrt{e}x\right)}{a\sqrt{e}+b\sqrt{-d}}\right)}{2\sqrt{-d}\sqrt{e}}-\cdots$$

```
[Out] 1/2*ln(c*(b*x+a)^n)^2*ln(b*((-d)^(1/2)-x*e^(1/2))/(b*(-d)^(1/2)+a*e^(1/2)))
/(-d)^(1/2)/e^(1/2)-1/2*ln(c*(b*x+a)^n)^2*ln(b*((-d)^(1/2)+x*e^(1/2))/(b*(-
d)^(1/2)-a*e^(1/2)))/(-d)^(1/2)/e^(1/2)-n*ln(c*(b*x+a)^n)*polylog(2,-(b*x+a
)*e^(1/2)/(b*(-d)^(1/2)-a*e^(1/2)))/(-d)^(1/2)/e^(1/2)+n*ln(c*(b*x+a)^n)*po
lylog(2,(b*x+a)*e^(1/2)/(b*(-d)^(1/2)+a*e^(1/2)))/(-d)^(1/2)/e^(1/2)+n^2*po
lylog(3,-(b*x+a)*e^(1/2)/(b*(-d)^(1/2)-a*e^(1/2)))/(-d)^(1/2)/e^(1/2)-n^2*p
olylog(3,(b*x+a)*e^(1/2)/(b*(-d)^(1/2)+a*e^(1/2)))/(-d)^(1/2)/e^(1/2)
```

Rubi [A] time = 0.32, antiderivative size = 347, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = {2409, 2396, 2433, 2374, 6589}

$$-\frac{n\log\left(c(a+bx)^n\right)\text{PolyLog}\left(2,-\frac{\sqrt{e}(a+bx)}{b\sqrt{-d}-a\sqrt{e}}\right)}{\sqrt{-d}\sqrt{e}}+\frac{n\log\left(c(a+bx)^n\right)\text{PolyLog}\left(2,\frac{\sqrt{e}(a+bx)}{a\sqrt{e}+b\sqrt{-d}}\right)}{\sqrt{-d}\sqrt{e}}+\frac{n^2\text{PolyLog}\left(3,-\frac{\sqrt{e}(a\cdots}{b\sqrt{-d}\cdots}\right)}{\sqrt{-d}\sqrt{e}}\cdots$$

Antiderivative was successfully verified.

```
[In] Int[Log[c*(a + b*x)^n]^2/(d + e*x^2),x]
```

```
[Out] (Log[c*(a + b*x)^n]^2*Log[(b*(Sqrt[-d] - Sqrt[e]*x))/(b*Sqrt[-d] + a*Sqrt[e
])])/(2*Sqrt[-d]*Sqrt[e]) - (Log[c*(a + b*x)^n]^2*Log[(b*(Sqrt[-d] + Sqrt[e
]*x))/(b*Sqrt[-d] - a*Sqrt[e])])/(2*Sqrt[-d]*Sqrt[e]) - (n*Log[c*(a + b*x)^
n]*PolyLog[2, -((Sqrt[e]*(a + b*x))/(b*Sqrt[-d] - a*Sqrt[e]))])/(Sqrt[-d]*S
qrt[e]) + (n*Log[c*(a + b*x)^n]*PolyLog[2, (Sqrt[e]*(a + b*x))/(b*Sqrt[-d]
+ a*Sqrt[e])])/(Sqrt[-d]*Sqrt[e]) + (n^2*PolyLog[3, -((Sqrt[e]*(a + b*x))/(
b*Sqrt[-d] - a*Sqrt[e]))])/(Sqrt[-d]*Sqrt[e]) - (n^2*PolyLog[3, (Sqrt[e]*(a
 + b*x))/(b*Sqrt[-d] + a*Sqrt[e])])/(Sqrt[-d]*Sqrt[e])
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\log^2(c(a+bx)^n)}{d+ex^2}\,dx = \int \left(\frac{\sqrt{-d}\,\log^2(c(a+bx)^n)}{2d\left(\sqrt{-d}-\sqrt{e}\,x\right)}+\frac{\sqrt{-d}\,\log^2(c(a+bx)^n)}{2d\left(\sqrt{-d}+\sqrt{e}\,x\right)}\right)dx$$

$$= -\frac{\int \frac{\log^2(c(a+bx)^n)}{\sqrt{-d}-\sqrt{e}\,x}\,dx}{2\sqrt{-d}} - \frac{\int \frac{\log^2(c(a+bx)^n)}{\sqrt{-d}+\sqrt{e}\,x}\,dx}{2\sqrt{-d}}$$

$$= \frac{\log^2(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}-\sqrt{e}\,x\right)}{b\sqrt{-d}+a\sqrt{e}}\right)}{2\sqrt{-d}\,\sqrt{e}} - \frac{\log^2(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}+\sqrt{e}\,x\right)}{b\sqrt{-d}-a\sqrt{e}}\right)}{2\sqrt{-d}\,\sqrt{e}} - \frac{(bn)\int -\cdots}{\cdots}$$

n Subst

$$= \frac{\log^2(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}-\sqrt{e}\,x\right)}{b\sqrt{-d}+a\sqrt{e}}\right)}{2\sqrt{-d}\,\sqrt{e}} - \frac{\log^2(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}+\sqrt{e}\,x\right)}{b\sqrt{-d}-a\sqrt{e}}\right)}{2\sqrt{-d}\,\sqrt{e}} - \cdots$$

$$= \frac{\log^2(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}-\sqrt{e}\,x\right)}{b\sqrt{-d}+a\sqrt{e}}\right)}{2\sqrt{-d}\,\sqrt{e}} - \frac{\log^2(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}+\sqrt{e}\,x\right)}{b\sqrt{-d}-a\sqrt{e}}\right)}{2\sqrt{-d}\,\sqrt{e}} - \frac{n\log(c(\cdots}{\cdots}$$

$$= \frac{\log^2(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}-\sqrt{e}\,x\right)}{b\sqrt{-d}+a\sqrt{e}}\right)}{2\sqrt{-d}\,\sqrt{e}} - \frac{\log^2(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}+\sqrt{e}\,x\right)}{b\sqrt{-d}-a\sqrt{e}}\right)}{2\sqrt{-d}\,\sqrt{e}} - \frac{n\log(c(\cdots}{\cdots}$$

Mathematica [C] time = 0.18, size = 488, normalized size = 1.41

$$\frac{2in\log(c(a+bx)^n)\,\text{Li}_2\left(\frac{\sqrt{e}(a+bx)}{a\sqrt{e}-ib\sqrt{d}}\right)-2in\log(c(a+bx)^n)\,\text{Li}_2\left(\frac{\sqrt{e}(a+bx)}{\sqrt{e}a+ib\sqrt{d}}\right)+2in\log(a+bx)\log(c(a+bx)^n)\log\cdots}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(a + b*x)^n]^2/(d + e*x^2),x]
```

```
[Out] (2*n^2*ArcTan[(Sqrt[e]*x)/Sqrt[d]]*Log[a + b*x]^2 - 4*n*ArcTan[(Sqrt[e]*x)/
Sqrt[d]]*Log[a + b*x]*Log[c*(a + b*x)^n] + 2*ArcTan[(Sqrt[e]*x)/Sqrt[d]]*Lo
g[c*(a + b*x)^n]^2 - I*n^2*Log[a + b*x]^2*Log[1 - (Sqrt[e]*(a + b*x))/((-I)
*b*Sqrt[d] + a*Sqrt[e])] + (2*I)*n*Log[a + b*x]*Log[c*(a + b*x)^n]*Log[1 -
```

```
(Sqrt[e]*(a + b*x))/((-I)*b*Sqrt[d] + a*Sqrt[e])] + I*n^2*Log[a + b*x]^2*Lo
g[1 - (Sqrt[e]*(a + b*x))/(I*b*Sqrt[d] + a*Sqrt[e])] - (2*I)*n*Log[a + b*x]
*Log[c*(a + b*x)^n]*Log[1 - (Sqrt[e]*(a + b*x))/(I*b*Sqrt[d] + a*Sqrt[e])]
+ (2*I)*n*Log[c*(a + b*x)^n]*PolyLog[2, (Sqrt[e]*(a + b*x))/((-I)*b*Sqrt[d]
 + a*Sqrt[e])] - (2*I)*n*Log[c*(a + b*x)^n]*PolyLog[2, (Sqrt[e]*(a + b*x))/
(I*b*Sqrt[d] + a*Sqrt[e])] - (2*I)*n^2*PolyLog[3, (Sqrt[e]*(a + b*x))/((-I)
*b*Sqrt[d] + a*Sqrt[e])] + (2*I)*n^2*PolyLog[3, (Sqrt[e]*(a + b*x))/(I*b*Sq
rt[d] + a*Sqrt[e])])/(2*Sqrt[d]*Sqrt[e])
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\log\left((bx+a)^n c\right)^2}{ex^2+d}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)^2/(e*x^2+d),x, algorithm="fricas")
[Out] integral(log((b*x + a)^n*c)^2/(e*x^2 + d), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log\left((bx+a)^n c\right)^2}{ex^2+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)^2/(e*x^2+d),x, algorithm="giac")
[Out] integrate(log((b*x + a)^n*c)^2/(e*x^2 + d), x)
```

maple [F] time = 13.19, size = 0, normalized size = 0.00

$$\int \frac{\ln\left(c\,(bx+a)^n\right)^2}{e\,x^2+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(c*(b*x+a)^n)^2/(e*x^2+d),x)
[Out] int(ln(c*(b*x+a)^n)^2/(e*x^2+d),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log\left((bx+a)^n c\right)^2}{ex^2+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)^2/(e*x^2+d),x, algorithm="maxima")
[Out] integrate(log((b*x + a)^n*c)^2/(e*x^2 + d), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln\left(c\,(a+b\,x)^n\right)^2}{e\,x^2+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(c*(a + b*x)^n)^2/(d + e*x^2),x)
```

```
[Out] int(log(c*(a + b*x)^n)^2/(d + e*x^2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log\left(c\left(a+bx\right)^{n}\right)^{2}}{d+ex^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(c*(b*x+a)**n)**2/(e*x**2+d),x)
[Out] Integral(log(c*(a + b*x)**n)**2/(d + e*x**2), x)
```

3.331 $\int \frac{\log(c(a+bx)^n)}{d+ex^2}\,dx$

Optimal. Leaf size=229

$$\frac{\log\left(c(a+bx)^n\right)\log\left(\frac{b\left(\sqrt{-d}-\sqrt{e}x\right)}{a\sqrt{e}+b\sqrt{-d}}\right)}{2\sqrt{-d}\sqrt{e}}-\frac{\log\left(c(a+bx)^n\right)\log\left(\frac{b\left(\sqrt{-d}+\sqrt{e}x\right)}{b\sqrt{-d}-a\sqrt{e}}\right)}{2\sqrt{-d}\sqrt{e}}-\frac{n\mathrm{Li}_2\left(-\frac{\sqrt{e}(a+bx)}{b\sqrt{-d}-a\sqrt{e}}\right)}{2\sqrt{-d}\sqrt{e}}+\frac{n\mathrm{Li}_2\left(\frac{\sqrt{e}(a+bx)}{\sqrt{e}a+b\sqrt{-d}}\right)}{2\sqrt{-d}\sqrt{e}}$$

```
[Out] 1/2*ln(c*(b*x+a)^n)*ln(b*((-d)^(1/2)-x*e^(1/2))/(b*(-d)^(1/2)+a*e^(1/2)))/(
-d)^(1/2)/e^(1/2)-1/2*ln(c*(b*x+a)^n)*ln(b*((-d)^(1/2)+x*e^(1/2))/(b*(-d)^(
1/2)-a*e^(1/2)))/(-d)^(1/2)/e^(1/2)-1/2*n*polylog(2,-(b*x+a)*e^(1/2)/(b*(-d
)^(1/2)-a*e^(1/2)))/(-d)^(1/2)/e^(1/2)+1/2*n*polylog(2,(b*x+a)*e^(1/2)/(b*(
-d)^(1/2)+a*e^(1/2)))/(-d)^(1/2)/e^(1/2)
```

Rubi [A] time = 0.16, antiderivative size = 229, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {2409, 2394, 2393, 2391}

$$-\frac{n\text{PolyLog}\left(2,-\frac{\sqrt{e}(a+bx)}{b\sqrt{-d}-a\sqrt{e}}\right)}{2\sqrt{-d}\sqrt{e}}+\frac{n\text{PolyLog}\left(2,\frac{\sqrt{e}(a+bx)}{a\sqrt{e}+b\sqrt{-d}}\right)}{2\sqrt{-d}\sqrt{e}}+\frac{\log\left(c(a+bx)^n\right)\log\left(\frac{b\left(\sqrt{-d}-\sqrt{e}x\right)}{a\sqrt{e}+b\sqrt{-d}}\right)}{2\sqrt{-d}\sqrt{e}}-\frac{\log\left(c(a+bx)^n\right)\log}{2\sqrt{-d}\sqrt{}}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c*(a + b*x)^n]/(d + e*x^2),x]
```

```
[Out] (Log[c*(a + b*x)^n]*Log[(b*(Sqrt[-d] - Sqrt[e]*x))/(b*Sqrt[-d] + a*Sqrt[e])
])/(2*Sqrt[-d]*Sqrt[e]) - (Log[c*(a + b*x)^n]*Log[(b*(Sqrt[-d] + Sqrt[e]*x)
)/(b*Sqrt[-d] - a*Sqrt[e])])/(2*Sqrt[-d]*Sqrt[e]) - (n*PolyLog[2, -((Sqrt[e
]*(a + b*x))/(b*Sqrt[-d] - a*Sqrt[e]))])/(2*Sqrt[-d]*Sqrt[e]) + (n*PolyLog[
2, (Sqrt[e]*(a + b*x))/(b*Sqrt[-d] + a*Sqrt[e])])/(2*Sqrt[-d]*Sqrt[e])
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rubi steps

$$\int \frac{\log(c(a+bx)^n)}{d+ex^2}\,dx = \int \left(\frac{\sqrt{-d}\log(c(a+bx)^n)}{2d\left(\sqrt{-d}-\sqrt{e}\,x\right)} + \frac{\sqrt{-d}\log(c(a+bx)^n)}{2d\left(\sqrt{-d}+\sqrt{e}\,x\right)} \right) dx$$

$$= -\frac{\int \frac{\log(c(a+bx)^n)}{\sqrt{-d}-\sqrt{e}\,x}\,dx}{2\sqrt{-d}} - \frac{\int \frac{\log(c(a+bx)^n)}{\sqrt{-d}+\sqrt{e}\,x}\,dx}{2\sqrt{-d}}$$

$$= \frac{\log(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}-\sqrt{e}\,x\right)}{b\sqrt{-d}+a\sqrt{e}}\right)}{2\sqrt{-d}\,\sqrt{e}} - \frac{\log(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}+\sqrt{e}\,x\right)}{b\sqrt{-d}-a\sqrt{e}}\right)}{2\sqrt{-d}\,\sqrt{e}} - \frac{(bn)\int \ldots}{2\sqrt{-}\ldots}$$

$$= \frac{\log(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}-\sqrt{e}\,x\right)}{b\sqrt{-d}+a\sqrt{e}}\right)}{2\sqrt{-d}\,\sqrt{e}} - \frac{\log(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}+\sqrt{e}\,x\right)}{b\sqrt{-d}-a\sqrt{e}}\right)}{2\sqrt{-d}\,\sqrt{e}} + \frac{n\,\mathrm{Subst}\left(\int \ldots\right.}{\ldots}$$

$$= \frac{\log(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}-\sqrt{e}\,x\right)}{b\sqrt{-d}+a\sqrt{e}}\right)}{2\sqrt{-d}\,\sqrt{e}} - \frac{\log(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}+\sqrt{e}\,x\right)}{b\sqrt{-d}-a\sqrt{e}}\right)}{2\sqrt{-d}\,\sqrt{e}} - \frac{n\mathrm{Li}_2\left(-\frac{\sqrt{e}\ldots}{b\sqrt{-}\ldots}\right.}{2\sqrt{-d}\ldots}$$

Mathematica [A] time = 0.11, size = 178, normalized size = 0.78

$$\frac{\log(c(a+bx)^n)\left(\log\left(\frac{b\left(\sqrt{-d}-\sqrt{e}\,x\right)}{a\sqrt{e}+b\sqrt{-d}}\right)-\log\left(\frac{b\left(\sqrt{-d}+\sqrt{e}\,x\right)}{b\sqrt{-d}-a\sqrt{e}}\right)\right)-n\mathrm{Li}_2\left(-\frac{\sqrt{e}(a+bx)}{b\sqrt{-d}-a\sqrt{e}}\right)+n\mathrm{Li}_2\left(\frac{\sqrt{e}(a+bx)}{\sqrt{e}a+b\sqrt{-d}}\right)}{2\sqrt{-d}\,\sqrt{e}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(a + b*x)^n]/(d + e*x^2),x]
```

```
[Out] (Log[c*(a + b*x)^n]*(Log[(b*(Sqrt[-d] - Sqrt[e]*x))/(b*Sqrt[-d] + a*Sqrt[e]
)] - Log[(b*(Sqrt[-d] + Sqrt[e]*x))/(b*Sqrt[-d] - a*Sqrt[e])]) - n*PolyLog[
2, -((Sqrt[e]*(a + b*x))/(b*Sqrt[-d] - a*Sqrt[e]))] + n*PolyLog[2, (Sqrt[e]
*(a + b*x))/(b*Sqrt[-d] + a*Sqrt[e])])/(2*Sqrt[-d]*Sqrt[e])
```

fricas [F] time = 0.48, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\log\left((bx+a)^n c\right)}{ex^2+d}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)/(e*x^2+d),x, algorithm="fricas")
```

```
[Out] integral(log((b*x + a)^n*c)/(e*x^2 + d), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log\left((bx+a)^n c\right)}{ex^2+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)/(e*x^2+d),x, algorithm="giac")
```

```
[Out] integrate(log((b*x + a)^n*c)/(e*x^2 + d), x)
```

maple [C] time = 0.27, size = 419, normalized size = 1.83

$$-\frac{i\pi \arctan\left(\frac{ex}{\sqrt{de}}\right) \operatorname{csgn}(ic) \operatorname{csgn}\left(i (bx+a)^n\right) \operatorname{csgn}\left(ic (bx+a)^n\right)}{2\sqrt{de}}+\frac{i\pi \arctan\left(\frac{ex}{\sqrt{de}}\right) \operatorname{csgn}(ic) \operatorname{csgn}\left(ic (bx+a)^n\right)^2}{2\sqrt{de}}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(c*(b*x+a)^n)/(e*x^2+d),x)
```

```
[Out] (ln((b*x+a)^n)-n*ln(b*x+a))/(d*e)^(1/2)*arctan(1/2*(2*(b*x+a)*e-2*a*e)/b/(d
*e)^(1/2))+1/2*n*ln(b*x+a)/(-d*e)^(1/2)*ln((b*(-d*e)^(1/2)-(b*x+a)*e+a*e)/(
b*(-d*e)^(1/2)+a*e))-1/2*n*ln(b*x+a)/(-d*e)^(1/2)*ln((b*(-d*e)^(1/2)+(b*x+a
)*e-a*e)/(b*(-d*e)^(1/2)-a*e))+1/2*n/(-d*e)^(1/2)*dilog((b*(-d*e)^(1/2)-(b*
x+a)*e+a*e)/(b*(-d*e)^(1/2)+a*e))-1/2*n/(-d*e)^(1/2)*dilog((b*(-d*e)^(1/2)+
(b*x+a)*e-a*e)/(b*(-d*e)^(1/2)-a*e))+1/2*I/(d*e)^(1/2)*arctan(1/(d*e)^(1/2)
*e*x)*Pi*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)^2-1/2*I/(d*e)^(1/2)*arctan(1
/(d*e)^(1/2)*e*x)*Pi*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)*csgn(I*c)-1/2*I/
(d*e)^(1/2)*arctan(1/(d*e)^(1/2)*e*x)*Pi*csgn(I*c*(b*x+a)^n)^3+1/2*I/(d*e)^
(1/2)*arctan(1/(d*e)^(1/2)*e*x)*Pi*csgn(I*c*(b*x+a)^n)^2*csgn(I*c)+1/(d*e)^
(1/2)*arctan(1/(d*e)^(1/2)*e*x)*ln(c)
```

maxima [C] time = 1.24, size = 309, normalized size = 1.35

$$\frac{bn\left(\frac{2\arctan\left(\frac{ex}{\sqrt{de}}\right)\log(bx+a)}{b}+\frac{\arctan\left(\frac{(b^2x+ab)\sqrt{d}\sqrt{e}}{b^2d+a^2e},\frac{abex+a^2e}{b^2d+a^2e}\right)\log\left(ex^2+d\right)-\arctan\left(\frac{\sqrt{e}x}{\sqrt{d}}\right)\log\left(\frac{b^2ex^2+2abex+a^2e}{b^2d+a^2e}\right)-i\operatorname{Li}_2\left(\frac{abex+b^2d-(ib^2x-iab)\sqrt{d}\sqrt{e}}{b^2d+2iab\sqrt{d}\sqrt{e}-a^2e}\right)}{b}\right.}{2\sqrt{de}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)/(e*x^2+d),x, algorithm="maxima")
```

```
[Out] 1/2*b*n*(2*arctan(e*x/sqrt(d*e))*log(b*x + a)/b + (arctan2((b^2*x + a*b)*sq
rt(d)*sqrt(e)/(b^2*d + a^2*e), (a*b*e*x + a^2*e)/(b^2*d + a^2*e))*log(e*x^2
 + d) - arctan(sqrt(e)*x/sqrt(d))*log((b^2*e*x^2 + 2*a*b*e*x + a^2*e)/(b^2*
d + a^2*e)) - I*dilog((a*b*e*x + b^2*d - (I*b^2*x - I*a*b)*sqrt(d)*sqrt(e))
/(b^2*d + 2*I*a*b*sqrt(d)*sqrt(e) - a^2*e)) + I*dilog((a*b*e*x + b^2*d + (I
*b^2*x - I*a*b)*sqrt(d)*sqrt(e))/(b^2*d - 2*I*a*b*sqrt(d)*sqrt(e) - a^2*e))
)/b)/sqrt(d*e) - n*arctan(e*x/sqrt(d*e))*log(b*x + a)/sqrt(d*e) + arctan(e*
x/sqrt(d*e))*log((b*x + a)^n*c)/sqrt(d*e)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln\left(c\,{\left(a+b\,x\right)}^n\right)}{e\,x^2+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(c*(a + b*x)^n)/(d + e*x^2),x)
```

```
[Out] int(log(c*(a + b*x)^n)/(d + e*x^2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log\left(c(a+bx)^n\right)}{d+ex^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(c*(b*x+a)**n)/(e*x**2+d),x)
```

```
[Out] Integral(log(c*(a + b*x)**n)/(d + e*x**2), x)
```

3.332 $\int \frac{1}{(d+ex^2)\log(c(a+bx)^n)}\,dx$

Optimal. Leaf size=90

$$-\frac{\text{Int}\left(\frac{1}{\left(\sqrt{-d}-\sqrt{e}\,x\right)\log(c(a+bx)^n)},x\right)}{2\sqrt{-d}}-\frac{\text{Int}\left(\frac{1}{\left(\sqrt{-d}+\sqrt{e}\,x\right)\log(c(a+bx)^n)},x\right)}{2\sqrt{-d}}$$

```
[Out] -1/2*Unintegrable(1/ln(c*(b*x+a)^n)/((-d)^(1/2)-x*e^(1/2)),x)/(-d)^(1/2)-1/
2*Unintegrable(1/ln(c*(b*x+a)^n)/((-d)^(1/2)+x*e^(1/2)),x)/(-d)^(1/2)
```

Rubi [A] time = 0.11, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(d+ex^2)\log(c(a+bx)^n)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((d + e*x^2)*Log[c*(a + b*x)^n]),x]
```

```
[Out] -Defer[Int][1/((Sqrt[-d] - Sqrt[e]*x)*Log[c*(a + b*x)^n]), x]/(2*Sqrt[-d])
- Defer[Int][1/((Sqrt[-d] + Sqrt[e]*x)*Log[c*(a + b*x)^n]), x]/(2*Sqrt[-d])
```

Rubi steps

$$\begin{aligned}\int \frac{1}{(d+ex^2)\log(c(a+bx)^n)}\,dx &= \int \left(\frac{\sqrt{-d}}{2d\left(\sqrt{-d}-\sqrt{e}\,x\right)\log(c(a+bx)^n)}+\frac{\sqrt{-d}}{2d\left(\sqrt{-d}+\sqrt{e}\,x\right)\log(c(a+bx)^n)}\right) \\ &= -\frac{\int \frac{1}{\left(\sqrt{-d}-\sqrt{e}\,x\right)\log(c(a+bx)^n)}\,dx}{2\sqrt{-d}}-\frac{\int \frac{1}{\left(\sqrt{-d}+\sqrt{e}\,x\right)\log(c(a+bx)^n)}\,dx}{2\sqrt{-d}}\end{aligned}$$

Mathematica [A] time = 0.42, size = 0, normalized size = 0.00

$$\int \frac{1}{(d+ex^2)\log(c(a+bx)^n)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((d + e*x^2)*Log[c*(a + b*x)^n]),x]
```

```
[Out] Integrate[1/((d + e*x^2)*Log[c*(a + b*x)^n]), x]
```

fricas [A] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{1}{(ex^2+d)\log\left((bx+a)^n c\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x^2+d)/log(c*(b*x+a)^n),x, algorithm="fricas")
```

```
[Out] integral(1/((e*x^2 + d)*log((b*x + a)^n*c)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(ex^2+d)\log\left((bx+a)^n c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x^2+d)/log(c*(b*x+a)^n),x, algorithm="giac")
```

```
[Out] integrate(1/((e*x^2 + d)*log((b*x + a)^n*c)), x)
```

maple [A] time = 0.71, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(e\,x^{2}+d\right)\ln\left(c\left(bx+a\right)^{n}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(e*x^2+d)/ln(c*(b*x+a)^n),x)
```

```
[Out] int(1/(e*x^2+d)/ln(c*(b*x+a)^n),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(ex^{2}+d\right)\log\left(\left(bx+a\right)^{n}c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x^2+d)/log(c*(b*x+a)^n),x, algorithm="maxima")
```

```
[Out] integrate(1/((e*x^2 + d)*log((b*x + a)^n*c)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{\ln\left(c\left(a+b\,x\right)^{n}\right)\left(e\,x^{2}+d\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(log(c*(a + b*x)^n)*(d + e*x^2)),x)
```

```
[Out] int(1/(log(c*(a + b*x)^n)*(d + e*x^2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(d+ex^{2}\right)\log\left(c\left(a+bx\right)^{n}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x**2+d)/ln(c*(b*x+a)**n),x)
```

```
[Out] Integral(1/((d + e*x**2)*log(c*(a + b*x)**n)), x)
```

3.333 $\int \frac{\log\left(c-\frac{a(1-c)x^{-m}}{b}\right)}{x(a+bx^m)}\,dx$

Optimal. Leaf size=27

$$\frac{\mathrm{Li}_2\left(\frac{(1-c)(ax^{-m}+b)}{b}\right)}{am}$$

```
[Out] polylog(2,(1-c)*(b+a/(x^m))/b)/a/m
```

Rubi [A] time = 0.13, antiderivative size = 27, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {2475, 2412, 2393, 2391}

$$\frac{\mathrm{PolyLog}\left(2,\frac{(1-c)(ax^{-m}+b)}{b}\right)}{am}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c - (a*(1 - c))/(b*x^m)]/(x*(a + b*x^m)),x]
```

```
[Out] PolyLog[2, ((1 - c)*(b + a/x^m))/b]/(a*m)
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2412

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)/(x_))^(q_.)*(x_)^(m_.), x_Symbol] :> Int[(g + f*x)^q*(a + b*Log[c*(d + e*
x)^n])^p, x] /; FreeQ[{a, b, c, d, e, f, g, m, n, p, q}, x] && EqQ[m, q] &&
 IntegerQ[q]
```

Rule 2475

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_))^(p_.)]*(b_.))^(q_.)*(x_)^(m
_.)*((f_) + (g_.)*(x_)^(s_))^(r_.), x_Symbol] :> Dist[1/n, Subst[Int[x^(Sim
plify[(m + 1)/n] - 1)*(f + g*x^(s/n))^r*(a + b*Log[c*(d + e*x)^p])^q, x], x
, x^n], x] /; FreeQ[{a, b, c, d, e, f, g, m, n, p, q, r, s}, x] && IntegerQ
[r] && IntegerQ[s/n] && IntegerQ[Simplify[(m + 1)/n]] && (GtQ[(m + 1)/n, 0]
 || IGtQ[q, 0])
```

Rubi steps

$$\int \frac{\log\left(c-\frac{a(1-c)x^{-m}}{b}\right)}{x\left(a+bx^m\right)}\,dx = -\frac{\text{Subst}\left(\int \frac{\log\left(c-\frac{a(1-c)x}{b}\right)}{\left(a+\frac{b}{x}\right)x}\,dx, x, x^{-m}\right)}{m}$$
$$= -\frac{\text{Subst}\left(\int \frac{\log\left(c-\frac{a(1-c)x}{b}\right)}{b+ax}\,dx, x, x^{-m}\right)}{m}$$
$$= -\frac{\text{Subst}\left(\int \frac{\log\left(1-\frac{(1-c)x}{b}\right)}{x}\,dx, x, b+ax^{-m}\right)}{am}$$
$$= \frac{\text{Li}_2\left(\frac{(1-c)(b+ax^{-m})}{b}\right)}{am}$$

Mathematica [A] time = 0.02, size = 29, normalized size = 1.07

$$\frac{\text{Li}_2\left(-\frac{(c-1)x^{-m}(bx^m+a)}{b}\right)}{am}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c - (a*(1 - c))/(b*x^m)]/(x*(a + b*x^m)),x]
[Out] PolyLog[2, -(((-1 + c)*(a + b*x^m))/(b*x^m))]/(a*m)
```

fricas [A] time = 0.42, size = 33, normalized size = 1.22

$$\frac{\text{Li}_2\left(-\frac{bcx^m+ac-a}{bx^m}+1\right)}{am}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c-a*(1-c)/b/(x^m))/x/(a+b*x^m),x, algorithm="fricas")
[Out] dilog(-(b*c*x^m + a*c - a)/(b*x^m) + 1)/(a*m)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log\left(c+\frac{a(c-1)}{bx^m}\right)}{(bx^m+a)x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c-a*(1-c)/b/(x^m))/x/(a+b*x^m),x, algorithm="giac")
[Out] integrate(log(c + a*(c - 1)/(b*x^m))/((b*x^m + a)*x), x)
```

maple [A] time = 0.05, size = 24, normalized size = 0.89

$$\frac{\text{dilog}\left(\frac{(c-1)a\,x^{-m}}{b}+c\right)}{am}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(c-a*(1-c)/b/(x^m))/x/(a+b*x^m),x)
```

```
[Out] 1/m*dilog(c+a*(-1+c)/(x^m)/b)/a
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$(cm-m)\int\frac{\log(x)}{bcxx^m+a(c-1)x}\,dx+\frac{\log\left(bcx^m+ac-a\right)\log(x)-\log(b)\log(x)-\log(x)\log\left(x^m\right)}{a}+\frac{\log(b)\log\left(\frac{b}{}\right.}{am}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c-a*(1-c)/b/(x^m))/x/(a+b*x^m),x, algorithm="maxima")
```

```
[Out] (c*m - m)*integrate(log(x)/(b*c*x*x^m + a*(c - 1)*x), x) + (log(b*c*x^m + a
*c - a)*log(x) - log(b)*log(x) - log(x)*log(x^m))/a + log(b)*log((b*x^m + a
)/b)/(a*m) + (log(x^m)*log(b*x^m/a + 1) + dilog(-b*x^m/a))/(a*m) - (log(b*c
*x^m + a*c - a)*log((b*c*x^m + a*(c - 1))/a + 1) + dilog(-(b*c*x^m + a*(c -
 1))/a))/(a*m)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.04

$$\int\frac{\ln\left(c+\frac{a\,(c-1)}{b\,x^m}\right)}{x\,\left(a+b\,x^m\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(c + (a*(c - 1))/(b*x^m))/(x*(a + b*x^m)),x)
```

```
[Out] int(log(c + (a*(c - 1))/(b*x^m))/(x*(a + b*x^m)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(c-a*(1-c)/b/(x**m))/x/(a+b*x**m),x)
```

```
[Out] Timed out
```

3.334 $\int \frac{\log\left(\frac{x^{-m}\left(-a+ac+bcx^m\right)}{b}\right)}{x(a+bx^m)}\,dx$

Optimal. Leaf size=27

$$\frac{\operatorname{Li}_2\left(\frac{(1-c)(ax^{-m}+b)}{b}\right)}{am}$$

```
[Out] polylog(2,(1-c)*(b+a/(x^m))/b)/a/m
```

Rubi [A] time = 0.18, antiderivative size = 27, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.139, Rules used = {2480, 2475, 2412, 2393, 2391}

$$\frac{\operatorname{PolyLog}\left(2,\frac{(1-c)(ax^{-m}+b)}{b}\right)}{am}$$

Antiderivative was successfully verified.

```
[In] Int[Log[(-a + a*c + b*c*x^m)/(b*x^m)]/(x*(a + b*x^m)),x]
```

```
[Out] PolyLog[2, ((1 - c)*(b + a/x^m))/b]/(a*m)
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2412

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)/(x_))^(q_.)*(x_)^(m_.), x_Symbol] :> Int[(g + f*x)^q*(a + b*Log[c*(d + e*
x)^n])^p, x] /; FreeQ[{a, b, c, d, e, f, g, m, n, p, q}, x] && EqQ[m, q] &&
 IntegerQ[q]
```

Rule 2475

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_))^(p_.)]*(b_.))^(q_.)*(x_)^(m
_.)*((f_) + (g_.)*(x_)^(s_))^(r_.), x_Symbol] :> Dist[1/n, Subst[Int[x^(Sim
plify[(m + 1)/n] - 1)*(f + g*x^(s/n))^r*(a + b*Log[c*(d + e*x)^p])^q, x], x
, x^n], x] /; FreeQ[{a, b, c, d, e, f, g, m, n, p, q, r, s}, x] && IntegerQ
[r] && IntegerQ[s/n] && IntegerQ[Simplify[(m + 1)/n]] && (GtQ[(m + 1)/n, 0]
 || IGtQ[q, 0])
```

Rule 2480

```
Int[((a_.) + Log[(c_.)*(v_)^(p_.)]*(b_.))^(q_.)*(u_)^(r_.)*((h_.)*(x_))^(m_
.), x_Symbol] :> Int[(h*x)^m*ExpandToSum[u, x]^r*(a + b*Log[c*ExpandToSum[v
, x]^p])^q, x] /; FreeQ[{a, b, c, h, m, p, q, r}, x] && BinomialQ[{u, v}, x
] &&  !BinomialMatchQ[{u, v}, x]
```

Rubi steps

$$\int \frac{\log\left(\frac{x^{-m}(-a+ac+bcx^m)}{b}\right)}{x(a+bx^m)}\,dx = \int \frac{\log\left(c+\frac{(-a+ac)x^{-m}}{b}\right)}{x(a+bx^m)}\,dx$$
$$= -\frac{\text{Subst}\left(\int \frac{\log\left(c+\frac{(-a+ac)x}{b}\right)}{\left(a+\frac{b}{x}\right)x}\,dx, x, x^{-m}\right)}{m}$$
$$= -\frac{\text{Subst}\left(\int \frac{\log\left(c+\frac{(-a+ac)x}{b}\right)}{b+ax}\,dx, x, x^{-m}\right)}{m}$$
$$= -\frac{\text{Subst}\left(\int \frac{\log\left(1+\frac{(-a+ac)x}{ab}\right)}{x}\,dx, x, b+ax^{-m}\right)}{am}$$
$$= \frac{\text{Li}_2\left(\frac{(1-c)(b+ax^{-m})}{b}\right)}{am}$$

Mathematica [**A**] time = 0.01, size = 29, normalized size = 1.07

$$\frac{\text{Li}_2\left(-\frac{(c-1)x^{-m}(bx^m+a)}{b}\right)}{am}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[(-a + a*c + b*c*x^m)/(b*x^m)]/(x*(a + b*x^m)),x]
[Out] PolyLog[2, -(((-1 + c)*(a + b*x^m))/(b*x^m))]/(a*m)
```

fricas [**A**] time = 0.47, size = 33, normalized size = 1.22

$$\frac{\text{Li}_2\left(-\frac{bcx^m+ac-a}{bx^m}+1\right)}{am}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log((-a+a*c+b*c*x^m)/b/(x^m))/x/(a+b*x^m),x, algorithm="fricas")
[Out] dilog(-(b*c*x^m + a*c - a)/(b*x^m) + 1)/(a*m)
```

giac [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log\left(\frac{bcx^m+ac-a}{bx^m}\right)}{(bx^m+a)x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log((-a+a*c+b*c*x^m)/b/(x^m))/x/(a+b*x^m),x, algorithm="giac")
[Out] integrate(log((b*c*x^m + a*c - a)/(b*x^m))/((b*x^m + a)*x), x)
```

maple [**A**] time = 0.05, size = 24, normalized size = 0.89

$$\frac{\text{dilog}\left(\frac{(c-1)a\,x^{-m}}{b}+c\right)}{am}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln((-a+a*c+b*c*x^m)/b/(x^m))/x/(a+b*x^m),x)
```

```
[Out] 1/m*dilog(c+a*(c-1)/(x^m)/b)/a
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$(cm-m)\int \frac{\log(x)}{bcxx^m+a(c-1)x}\,dx+\frac{\log\left(bcx^m+ac-a\right)\log(x)-\log(b)\log(x)-\log(x)\log\left(x^m\right)}{a}+\frac{\log(b)\log\left(\frac{bx^m+}{b}\right.}{am}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log((-a+a*c+b*c*x^m)/b/(x^m))/x/(a+b*x^m),x, algorithm="maxima")
```

```
[Out] (c*m - m)*integrate(log(x)/(b*c*x*x^m + a*(c - 1)*x), x) + (log(b*c*x^m + a
*c - a)*log(x) - log(b)*log(x) - log(x)*log(x^m))/a + log(b)*log((b*x^m + a
)/b)/(a*m) + (log(x^m)*log(b*x^m/a + 1) + dilog(-b*x^m/a))/(a*m) - (log(b*c
*x^m + a*c - a)*log((b*c*x^m + a*(c - 1))/a + 1) + dilog(-(b*c*x^m + a*(c -
 1))/a))/(a*m)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{\ln\left(\frac{a\,c-a+b\,c\,x^m}{b\,x^m}\right)}{x\,\left(a+b\,x^m\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log((a*c - a + b*c*x^m)/(b*x^m))/(x*(a + b*x^m)),x)
```

```
[Out] int(log((a*c - a + b*c*x^m)/(b*x^m))/(x*(a + b*x^m)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln((-a+a*c+b*c*x**m)/b/(x**m))/x/(a+b*x**m),x)
```

```
[Out] Timed out
```

3.335 $\int \frac{\log\left(c\left(a-\frac{(d-acd)x^{-m}}{ce}\right)\right)}{x(d+ex^m)}\,dx$

Optimal. Leaf size=28

$$\frac{\text{Li}_2\left(\frac{(1-ac)(dx^{-m}+e)}{e}\right)}{dm}$$

```
[Out] polylog(2,(-a*c+1)*(e+d/(x^m))/e)/d/m
```

Rubi [A] time = 0.13, antiderivative size = 28, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {2475, 2412, 2393, 2391}

$$\frac{\text{PolyLog}\left(2,\frac{(1-ac)(dx^{-m}+e)}{e}\right)}{dm}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c*(a - (d - a*c*d)/(c*e*x^m))]/(x*(d + e*x^m)),x]
```

```
[Out] PolyLog[2, ((1 - a*c)*(e + d/x^m))/e]/(d*m)
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2412

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)/(x_))^(q_.)*(x_)^(m_.), x_Symbol] :> Int[(g + f*x)^q*(a + b*Log[c*(d + e*
x)^n])^p, x] /; FreeQ[{a, b, c, d, e, f, g, m, n, p, q}, x] && EqQ[m, q] &&
 IntegerQ[q]
```

Rule 2475

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_))^(p_.)]*(b_.))^(q_.)*(x_)^(m
_.)*((f_) + (g_.)*(x_)^(s_))^(r_.), x_Symbol] :> Dist[1/n, Subst[Int[x^(Sim
plify[(m + 1)/n] - 1)*(f + g*x^(s/n))^r*(a + b*Log[c*(d + e*x)^p])^q, x], x
, x^n], x] /; FreeQ[{a, b, c, d, e, f, g, m, n, p, q, r, s}, x] && IntegerQ
[r] && IntegerQ[s/n] && IntegerQ[Simplify[(m + 1)/n]] && (GtQ[(m + 1)/n, 0]
 || IGtQ[q, 0])
```

Rubi steps

$$\int \frac{\log \left(c \left(a-\frac{(d-acd)x^{-m}}{ce}\right)\right)}{x (d+ex^m)} \, dx = -\frac{\text{Subst}\left(\int \frac{\log\left(c\left(a-\frac{(d-acd)x}{ce}\right)\right)}{\left(d+\frac{e}{x}\right)x} \, dx, x, x^{-m}\right)}{m}$$
$$= -\frac{\text{Subst}\left(\int \frac{\log\left(c\left(a-\frac{(d-acd)x}{ce}\right)\right)}{e+dx} \, dx, x, x^{-m}\right)}{m}$$
$$= -\frac{\text{Subst}\left(\int \frac{\log\left(1-\frac{(d-acd)x}{de}\right)}{x} \, dx, x, e+dx^{-m}\right)}{dm}$$
$$= \frac{\text{Li}_2\left(\frac{(1-ac)(e+dx^{-m})}{e}\right)}{dm}$$

Mathematica [A] time = 0.02, size = 31, normalized size = 1.11

$$\frac{\text{Li}_2\left(-\frac{(ac-1)x^{-m}(ex^m+d)}{e}\right)}{dm}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(a - (d - a*c*d)/(c*e*x^m))]/(x*(d + e*x^m)),x]
[Out] PolyLog[2, -(((-1 + a*c)*(d + e*x^m))/(e*x^m))]/(d*m)
```

fricas [A] time = 0.44, size = 35, normalized size = 1.25

$$\frac{\text{Li}_2\left(-\frac{acex^m+(ac-1)d}{ex^m}+1\right)}{dm}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(a+(a*c*d-d)/c/e/(x^m)))/x/(d+e*x^m),x, algorithm="fricas")
[Out] dilog(-(a*c*e*x^m + (a*c - 1)*d)/(e*x^m) + 1)/(d*m)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log\left(\left(a+\frac{acd-d}{cex^m}\right)c\right)}{(ex^m+d)x} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(a+(a*c*d-d)/c/e/(x^m)))/x/(d+e*x^m),x, algorithm="giac")
[Out] integrate(log((a + (a*c*d - d)/(c*e*x^m))*c)/((e*x^m + d)*x), x)
```

maple [A] time = 0.05, size = 28, normalized size = 1.00

$$\frac{\text{dilog}\left(ac+\frac{(ac-1)d\,x^{-m}}{e}\right)}{dm}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(c*(a+(a*c*d-d)/c/e/(x^m)))/x/(e*x^m+d),x)
```

```
[Out] 1/m*dilog(a*c+d*(a*c-1)/e/(x^m))/d
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$(acm-m)\int \frac{\log(x)}{acexx^m+(acd-d)x}\,dx+\frac{\log\left(acex^m+(ac-1)d\right)\log(x)-\log(e)\log(x)-\log(x)\log\left(x^m\right)}{d}+\frac{\log(e}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(a+(a*c*d-d)/c/e/(x^m)))/x/(d+e*x^m),x, algorithm="maxima")
```

```
[Out] (a*c*m - m)*integrate(log(x)/(a*c*e*x*x^m + (a*c*d - d)*x), x) + (log(a*c*e
*x^m + (a*c - 1)*d)*log(x) - log(e)*log(x) - log(x)*log(x^m))/d + log(e)*lo
g((e*x^m + d)/e)/(d*m) + (log(x^m)*log(e*x^m/d + 1) + dilog(-e*x^m/d))/(d*m
) - (log(a*c*e*x^m + (a*c - 1)*d)*log((a*c*e*x^m + a*c*d - d)/d + 1) + dilo
g(-(a*c*e*x^m + a*c*d - d)/d))/(d*m)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{\ln\left(c\,\left(a-\frac{d-a\,c\,d}{c\,e\,x^m}\right)\right)}{x\,\left(d+e\,x^m\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(c*(a - (d - a*c*d)/(c*e*x^m)))/(x*(d + e*x^m)),x)
```

```
[Out] int(log(c*(a - (d - a*c*d)/(c*e*x^m)))/(x*(d + e*x^m)), x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(c*(a+(a*c*d-d)/c/e/(x**m)))/x/(d+e*x**m),x)
```

```
[Out] Exception raised: HeuristicGCDFailed
```

3.336 $\int \frac{\log\left(\frac{x^{-m}\left(-d+acd+acex^m\right)}{e}\right)}{x(d+ex^m)}\,dx$

Optimal. Leaf size=28

$$\frac{\text{Li}_2\left(\frac{(1-ac)(dx^{-m}+e)}{e}\right)}{dm}$$

[Out] polylog(2,(-a*c+1)*(e+d/(x^m))/e)/d/m

Rubi [A] time = 0.18, antiderivative size = 28, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.132, Rules used = {2480, 2475, 2412, 2393, 2391}

$$\frac{\text{PolyLog}\left(2,\frac{(1-ac)(dx^{-m}+e)}{e}\right)}{dm}$$

Antiderivative was successfully verified.

[In] Int[Log[(-d + a*c*d + a*c*e*x^m)/(e*x^m)]/(x*(d + e*x^m)),x]

[Out] PolyLog[2, ((1 - a*c)*(e + d/x^m))/e]/(d*m)

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2412

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)/(x_))^(q_.)*(x_)^(m_.), x_Symbol] :> Int[(g + f*x)^q*(a + b*Log[c*(d + e*
x)^n])^p, x] /; FreeQ[{a, b, c, d, e, f, g, m, n, p, q}, x] && EqQ[m, q] &&
 IntegerQ[q]
```

Rule 2475

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_))^(p_.)]*(b_.))^(q_.)*(x_)^(m
_.)*((f_) + (g_.)*(x_)^(s_))^(r_.), x_Symbol] :> Dist[1/n, Subst[Int[x^(Sim
plify[(m + 1)/n] - 1)*(f + g*x^(s/n))^r*(a + b*Log[c*(d + e*x)^p])^q, x], x
, x^n], x] /; FreeQ[{a, b, c, d, e, f, g, m, n, p, q, r, s}, x] && IntegerQ
[r] && IntegerQ[s/n] && IntegerQ[Simplify[(m + 1)/n]] && (GtQ[(m + 1)/n, 0]
 || IGtQ[q, 0])
```

Rule 2480

```
Int[((a_.) + Log[(c_.)*(v_)^(p_.)]*(b_.))^(q_.)*(u_)^(r_.)*((h_.)*(x_))^(m_
.), x_Symbol] :> Int[(h*x)^m*ExpandToSum[u, x]^r*(a + b*Log[c*ExpandToSum[v
, x]^p])^q, x] /; FreeQ[{a, b, c, h, m, p, q, r}, x] && BinomialQ[{u, v}, x
] &&  !BinomialMatchQ[{u, v}, x]
```

Rubi steps

$$\int \frac{\log\left(\frac{x^{-m}(-d+acd+acex^m)}{e}\right)}{x(d+ex^m)}\,dx = \int \frac{\log\left(ac+\frac{(-d+acd)x^{-m}}{e}\right)}{x(d+ex^m)}\,dx$$

$$= -\frac{\text{Subst}\left(\int \frac{\log\left(ac+\frac{(-d+acd)x}{e}\right)}{\left(d+\frac{e}{x}\right)x}\,dx, x, x^{-m}\right)}{m}$$

$$= -\frac{\text{Subst}\left(\int \frac{\log\left(ac+\frac{(-d+acd)x}{e}\right)}{e+dx}\,dx, x, x^{-m}\right)}{m}$$

$$= -\frac{\text{Subst}\left(\int \frac{\log\left(1+\frac{(-d+acd)x}{de}\right)}{x}\,dx, x, e+dx^{-m}\right)}{dm}$$

$$= \frac{\text{Li}_2\left(\frac{(1-ac)(e+dx^{-m})}{e}\right)}{dm}$$

Mathematica [A] time = 0.01, size = 31, normalized size = 1.11

$$\frac{\text{Li}_2\left(-\frac{(ac-1)x^{-m}(ex^m+d)}{e}\right)}{dm}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[(-d + a*c*d + a*c*e*x^m)/(e*x^m)]/(x*(d + e*x^m)),x]
```

```
[Out] PolyLog[2, -(((-1 + a*c)*(d + e*x^m))/(e*x^m))]/(d*m)
```

fricas [A] time = 0.43, size = 35, normalized size = 1.25

$$\frac{\text{Li}_2\left(-\frac{acex^m+(ac-1)d}{ex^m}+1\right)}{dm}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log((-d+a*c*d+a*c*e*x^m)/e/(x^m))/x/(d+e*x^m),x, algorithm="frica
s")
```

```
[Out] dilog(-(a*c*e*x^m + (a*c - 1)*d)/(e*x^m) + 1)/(d*m)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log\left(\frac{acex^m+acd-d}{ex^m}\right)}{(ex^m+d)x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log((-d+a*c*d+a*c*e*x^m)/e/(x^m))/x/(d+e*x^m),x, algorithm="giac"
)
```

```
[Out] integrate(log((a*c*e*x^m + a*c*d - d)/(e*x^m))/((e*x^m + d)*x), x)
```

maple [A] time = 0.05, size = 28, normalized size = 1.00

$$\frac{\text{dilog}\left(ac+\frac{(ac-1)d\,x^{-m}}{e}\right)}{dm}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln((-d+a*c*d+a*c*e*x^m)/e/(x^m))/x/(e*x^m+d),x)
```

```
[Out] 1/m*dilog(a*c+d*(a*c-1)/e/(x^m))/d
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$(acm-m)\int \frac{\log(x)}{acexx^m+(acd-d)x}\,dx+\frac{\log\left(acex^m+(ac-1)d\right)\log(x)-\log(e)\log(x)-\log(x)\log\left(x^m\right)}{d}+\frac{\log(e)\,\mathrm{lo}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log((-d+a*c*d+a*c*e*x^m)/e/(x^m))/x/(d+e*x^m),x, algorithm="maxim
a")
```

```
[Out] (a*c*m - m)*integrate(log(x)/(a*c*e*x*x^m + (a*c*d - d)*x), x) + (log(a*c*e
*x^m + (a*c - 1)*d)*log(x) - log(e)*log(x) - log(x)*log(x^m))/d + log(e)*lo
g((e*x^m + d)/e)/(d*m) + (log(x^m)*log(e*x^m/d + 1) + dilog(-e*x^m/d))/(d*m
) - (log(a*c*e*x^m + (a*c - 1)*d)*log((a*c*e*x^m + a*c*d - d)/d + 1) + dilo
g(-(a*c*e*x^m + a*c*d - d)/d))/(d*m)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{\ln\left(\frac{a\,c\,d-d+a\,c\,e\,x^m}{e\,x^m}\right)}{x\,\left(d+e\,x^m\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log((a*c*d - d + a*c*e*x^m)/(e*x^m))/(x*(d + e*x^m)),x)
```

```
[Out] int(log((a*c*d - d + a*c*e*x^m)/(e*x^m))/(x*(d + e*x^m)), x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln((-d+a*c*d+a*c*e*x**m)/e/(x**m))/x/(d+e*x**m),x)
```

```
[Out] Exception raised: HeuristicGCDFailed
```

3.337 $\int \frac{\log\left(\frac{2a}{a+bx}\right)}{a^2-b^2x^2}\,dx$

Optimal. Leaf size=24

$$\frac{\text{Li}_2\left(1-\frac{2a}{a+bx}\right)}{2ab}$$

```
[Out] 1/2*polylog(2,1-2*a/(b*x+a))/a/b
```

Rubi [A] time = 0.03, antiderivative size = 24, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077, Rules used = {2402, 2315}

$$\frac{\text{PolyLog}\left(2,1-\frac{2a}{a+bx}\right)}{2ab}$$

Antiderivative was successfully verified.

```
[In] Int[Log[(2*a)/(a + b*x)]/(a^2 - b^2*x^2),x]
```

```
[Out] PolyLog[2, 1 - (2*a)/(a + b*x)]/(2*a*b)
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{\log\left(\frac{2a}{a+bx}\right)}{a^2-b^2x^2}\,dx &= \frac{\text{Subst}\left(\int \frac{\log(2ax)}{1-2ax}\,dx,x,\frac{1}{a+bx}\right)}{b}\\ &= \frac{\text{Li}_2\left(1-\frac{2a}{a+bx}\right)}{2ab}\end{aligned}$$

Mathematica [A] time = 0.01, size = 27, normalized size = 1.12

$$\frac{\text{Li}_2\left(\frac{bx-a}{a+bx}\right)}{2ab}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[(2*a)/(a + b*x)]/(a^2 - b^2*x^2),x]
```

```
[Out] PolyLog[2, (-a + b*x)/(a + b*x)]/(2*a*b)
```

fricas [A] time = 0.46, size = 21, normalized size = 0.88

$$\frac{\text{Li}_2\left(-\frac{2\,a}{bx+a}+1\right)}{2\,ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(2*a/(b*x+a))/(-b^2*x^2+a^2),x, algorithm="fricas")
```

```
[Out] 1/2*dilog(-2*a/(b*x + a) + 1)/(a*b)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{\log\left(\frac{2a}{bx+a}\right)}{b^2x^2 - a^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(2*a/(b*x+a))/(-b^2*x^2+a^2),x, algorithm="giac")
```

```
[Out] integrate(-log(2*a/(b*x + a))/(b^2*x^2 - a^2), x)
```

maple [A] time = 0.05, size = 20, normalized size = 0.83

$$\frac{\operatorname{dilog}\left(\frac{2a}{bx+a}\right)}{2ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(2/(b*x+a)*a)/(-b^2*x^2+a^2),x)
```

```
[Out] 1/2/b*dilog(2/(b*x+a)*a)/a
```

maxima [B] time = 0.49, size = 120, normalized size = 5.00

$$\frac{1}{4}b\left(\frac{\log(bx+a)^2 - 2\log(bx+a)\log(bx-a)}{ab^2} + \frac{2\left(\log(bx+a)\log\left(-\frac{bx+a}{2a}+1\right) + \operatorname{Li}_2\left(\frac{bx+a}{2a}\right)\right)}{ab^2}\right) + \frac{1}{2}\left(\frac{\log(bx+a)}{ab}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(2*a/(b*x+a))/(-b^2*x^2+a^2),x, algorithm="maxima")
```

```
[Out] 1/4*b*((log(b*x + a)^2 - 2*log(b*x + a)*log(b*x - a))/(a*b^2) + 2*(log(b*x
+ a)*log(-1/2*(b*x + a)/a + 1) + dilog(1/2*(b*x + a)/a))/(a*b^2)) + 1/2*(lo
g(b*x + a)/(a*b) - log(b*x - a)/(a*b))*log(2*a/(b*x + a))
```

mupad [B] time = 0.28, size = 19, normalized size = 0.79

$$\frac{\operatorname{Li}_2\left(\frac{2\,a}{a+b\,x}\right)}{2\,a\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log((2*a)/(a + b*x))/(a^2 - b^2*x^2),x)
```

```
[Out] dilog((2*a)/(a + b*x))/(2*a*b)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{\log(2)}{-a^2 + b^2x^2}\,dx - \int \frac{\log\left(\frac{a}{a+bx}\right)}{-a^2 + b^2x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(2*a/(b*x+a))/(-b**2*x**2+a**2),x)
```

```
[Out] -Integral(log(2)/(-a**2 + b**2*x**2), x) - Integral(log(a/(a + b*x))/(-a**2
 + b**2*x**2), x)
```

3.338 $\int \frac{\log\left(\frac{2a}{a+bx}\right)}{(a-bx)(a+bx)}\,dx$

Optimal. Leaf size=24

$$\frac{\text{Li}_2\left(1-\frac{2a}{a+bx}\right)}{2ab}$$

```
[Out] 1/2*polylog(2,1-2*a/(b*x+a))/a/b
```

Rubi [A] time = 0.13, antiderivative size = 24, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {2411, 2343, 2333, 2315}

$$\frac{\text{PolyLog}\left(2,1-\frac{2a}{a+bx}\right)}{2ab}$$

Antiderivative was successfully verified.

```
[In] Int[Log[(2*a)/(a + b*x)]/((a - b*x)*(a + b*x)),x]
```

```
[Out] PolyLog[2, 1 - (2*a)/(a + b*x)]/(2*a*b)
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2333

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)/(x_))^(q_.)*(
x_)^(m_.), x_Symbol] :> Int[(e + d*x)^q*(a + b*Log[c*x^n])^p, x] /; FreeQ[{
a, b, c, d, e, m, n, p}, x] && EqQ[m, q] && IntegerQ[q]
```

Rule 2343

```
Int[((a_.) + Log[(c_.)*(x_)^(n_)]*(b_.))/((x_)*((d_) + (e_.)*(x_)^(r_.))),
x_Symbol] :> Dist[1/n, Subst[Int[(a + b*Log[c*x])/(x*(d + e*x^(r/n))), x],
x, x^n], x] /; FreeQ[{a, b, c, d, e, n, r}, x] && IntegerQ[r/n]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rubi steps

$$\int \frac{\log\left(\frac{2a}{a+bx}\right)}{(a-bx)(a+bx)}\,dx = \frac{\text{Subst}\left(\int \frac{\log\left(\frac{2a}{x}\right)}{(2a-x)x}\,dx, x, a+bx\right)}{b}$$
$$= -\frac{\text{Subst}\left(\int \frac{\log(2ax)}{\left(2a-\frac{1}{x}\right)x}\,dx, x, \frac{1}{a+bx}\right)}{b}$$
$$= -\frac{\text{Subst}\left(\int \frac{\log(2ax)}{-1+2ax}\,dx, x, \frac{1}{a+bx}\right)}{b}$$
$$= \frac{\text{Li}_2\left(1-\frac{2a}{a+bx}\right)}{2ab}$$

Mathematica [A] time = 0.00, size = 27, normalized size = 1.12

$$\frac{\text{Li}_2\left(\frac{bx-a}{a+bx}\right)}{2ab}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[(2*a)/(a + b*x)]/((a - b*x)*(a + b*x)),x]
[Out] PolyLog[2, (-a + b*x)/(a + b*x)]/(2*a*b)
```

fricas [A] time = 0.45, size = 21, normalized size = 0.88

$${\rm Li}_2\left(-\frac{2\,a}{bx+a}+1\right) \over 2\,ab$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(2*a/(b*x+a))/(-b*x+a)/(b*x+a),x, algorithm="fricas")
[Out] 1/2*dilog(-2*a/(b*x + a) + 1)/(a*b)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{\log\left(\frac{2\,a}{bx+a}\right)}{(bx+a)(bx-a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(2*a/(b*x+a))/(-b*x+a)/(b*x+a),x, algorithm="giac")
[Out] integrate(-log(2*a/(b*x + a))/((b*x + a)*(b*x - a)), x)
```

maple [A] time = 0.05, size = 20, normalized size = 0.83

$$\frac{\text{dilog}\left(\frac{2a}{bx+a}\right)}{2ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(2/(b*x+a)*a)/(-b*x+a)/(b*x+a),x)
```

```
[Out] 1/2/b*dilog(2/(b*x+a)*a)/a
```

maxima [B] time = 0.50, size = 120, normalized size = 5.00

$$\frac{1}{4}b\left(\frac{\log(bx+a)^2-2\log(bx+a)\log(bx-a)}{ab^2}+\frac{2\left(\log(bx+a)\log\left(-\frac{bx+a}{2a}+1\right)+\mathrm{Li}_2\left(\frac{bx+a}{2a}\right)\right)}{ab^2}\right)+\frac{1}{2}\left(\frac{\log(bx+}{ab}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(2*a/(b*x+a))/(-b*x+a)/(b*x+a),x, algorithm="maxima")
```

```
[Out] 1/4*b*((log(b*x + a)^2 - 2*log(b*x + a)*log(b*x - a))/(a*b^2) + 2*(log(b*x
+ a)*log(-1/2*(b*x + a)/a + 1) + dilog(1/2*(b*x + a)/a))/(a*b^2)) + 1/2*(lo
g(b*x + a)/(a*b) - log(b*x - a)/(a*b))*log(2*a/(b*x + a))
```

mupad [B] time = 0.20, size = 19, normalized size = 0.79

$$\frac{\mathrm{Li}_2\left(\frac{2a}{a+bx}\right)}{2ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log((2*a)/(a + b*x))/((a + b*x)*(a - b*x)),x)
```

```
[Out] dilog((2*a)/(a + b*x))/(2*a*b)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\frac{\log(2)}{-a^2+b^2x^2}\,dx-\int\frac{\log\left(\frac{a}{a+bx}\right)}{-a^2+b^2x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(2*a/(b*x+a))/(-b*x+a)/(b*x+a),x)
```

```
[Out] -Integral(log(2)/(-a**2 + b**2*x**2), x) - Integral(log(a/(a + b*x))/(-a**2
 + b**2*x**2), x)
```

3.339 $\int \frac{\log\left(\frac{a(1-c)+b(1+c)x}{a+bx}\right)}{a^2-b^2x^2} dx$

Optimal. Leaf size=37

$$\frac{\text{Li}_2\left(1-\frac{a(1-c)+b(c+1)x}{a+bx}\right)}{2ab}$$

[Out] 1/2*polylog(2,1+(-a*(1-c)-b*(1+c)*x)/(b*x+a))/a/b

Rubi [A] time = 0.03, antiderivative size = 37, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.026, Rules used = {2447}

$$\frac{\text{PolyLog}\left(2,1-\frac{a(1-c)+b(c+1)x}{a+bx}\right)}{2ab}$$

Antiderivative was successfully verified.

[In] Int[Log[(a*(1 - c) + b*(1 + c)*x)/(a + b*x)]/(a^2 - b^2*x^2),x]

[Out] PolyLog[2, 1 - (a*(1 - c) + b*(1 + c)*x)/(a + b*x)]/(2*a*b)

Rule 2447

```
Int[Log[u_]*(Pq_)^(m_.), x_Symbol] :> With[{C = FullSimplify[(Pq^m*(1 - u))
/D[u, x]]}, Simp[C*PolyLog[2, 1 - u], x] /; FreeQ[C, x]] /; IntegerQ[m] &&
PolyQ[Pq, x] && RationalFunctionQ[u, x] && LeQ[RationalFunctionExponents[u,
 x][[2]], Expon[Pq, x]]
```

Rubi steps

$$\int \frac{\log\left(\frac{a(1-c)+b(1+c)x}{a+bx}\right)}{a^2-b^2x^2} dx = \frac{\text{Li}_2\left(1-\frac{a(1-c)+b(1+c)x}{a+bx}\right)}{2ab}$$

Mathematica [B] time = 0.20, size = 252, normalized size = 6.81

$$2\text{Li}_2\left(\frac{(c+1)(a-bx)}{2a}\right)-2\text{Li}_2\left(\frac{(c+1)(a+bx)}{2ac}\right)+\log^2\left(\frac{2ac}{(c+1)(a+bx)}\right)+2\log\left(-\frac{a(-c)+a+b(c+1)x}{2ac}\right)\log\left(\frac{2ac}{(c+1)(a+bx)}\right)-2\log\left(\frac{a(-c)+a}{a+}\right.$$

Antiderivative was successfully verified.

[In] Integrate[Log[(a*(1 - c) + b*(1 + c)*x)/(a + b*x)]/(a^2 - b^2*x^2),x]

[Out] (Log[(2*a*c)/((1 + c)*(a + b*x))]^2 - 2*Log[a - b*x]*Log[(a + b*x)/(2*a)] + 2*Log[a - b*x]*Log[(a - a*c + b*(1 + c)*x)/(2*a)] + 2*Log[(2*a*c)/((1 + c)*(a + b*x))]*Log[-1/2*(a - a*c + b*(1 + c)*x)/(a*c)] - 2*Log[a - b*x]*Log[(a - a*c + b*(1 + c)*x)/(a + b*x)] - 2*Log[(2*a*c)/((1 + c)*(a + b*x))]*Log[(a - a*c + b*(1 + c)*x)/(a + b*x)] - 2*PolyLog[2, (a - b*x)/(2*a)] + 2*PolyLog[2, ((1 + c)*(a - b*x))/(2*a)] - 2*PolyLog[2, ((1 + c)*(a + b*x))/(2*a*c)])/(4*a*b)

fricas [A] time = 0.43, size = 34, normalized size = 0.92

$$\frac{\text{Li}_2\left(\frac{ac-(bc+b)x-a}{bx+a}+1\right)}{2\,ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log((a*(1-c)+b*(1+c)*x)/(b*x+a))/(-b^2*x^2+a^2),x, algorithm="fri
cas")
```

```
[Out] 1/2*dilog((a*c - (b*c + b)*x - a)/(b*x + a) + 1)/(a*b)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log((a*(1-c)+b*(1+c)*x)/(b*x+a))/(-b^2*x^2+a^2),x, algorithm="gia
c")
```

```
[Out] Timed out
```

maple [A] time = 0.06, size = 24, normalized size = 0.65

$$\frac{\operatorname{dilog}\left(-\frac{2ac}{bx+a}+c+1\right)}{2ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln((a*(1-c)+b*(1+c)*x)/(b*x+a))/(-b^2*x^2+a^2),x)
```

```
[Out] 1/2/b*dilog(1+c-2*a*c/(b*x+a))/a
```

maxima [B] time = 0.50, size = 246, normalized size = 6.65

$$\frac{1}{2}\left(\frac{\log(bx+a)}{ab}-\frac{\log(bx-a)}{ab}\right)\log\left(\frac{b(c+1)x-a(c-1)}{bx+a}\right)+\frac{\log(bx+a)^2-2\log(bx+a)\log(bx-a)}{4ab}+\frac{\log(b}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log((a*(1-c)+b*(1+c)*x)/(b*x+a))/(-b^2*x^2+a^2),x, algorithm="max
ima")
```

```
[Out] 1/2*(log(b*x + a)/(a*b) - log(b*x - a)/(a*b))*log((b*(c + 1)*x - a*(c - 1))
/(b*x + a)) + 1/4*(log(b*x + a)^2 - 2*log(b*x + a)*log(b*x - a))/(a*b) + 1/
2*(log(b*x - a)*log(1/2*(b*(c + 1)*x - a*(c + 1))/a + 1) + dilog(-1/2*(b*(c
 + 1)*x - a*(c + 1))/a))/(a*b) + 1/2*(log(b*x + a)*log(-1/2*(b*x + a)/a + 1
) + dilog(1/2*(b*x + a)/a))/(a*b) - 1/2*(log(b*x + a)*log(-1/2*(b*(c + 1)*x
 + a*(c + 1))/(a*c) + 1) + dilog(1/2*(b*(c + 1)*x + a*(c + 1))/(a*c)))/(a*b
)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\ln\left(-\frac{a\,(c-1)-b\,x\,(c+1)}{a+b\,x}\right)}{a^2-b^2\,x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(-(a*(c - 1) - b*x*(c + 1))/(a + b*x))/(a^2 - b^2*x^2),x)
```

```
[Out] int(log(-(a*(c - 1) - b*x*(c + 1))/(a + b*x))/(a^2 - b^2*x^2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln((a*(1-c)+b*(c+1)*x)/(b*x+a))/(-b**2*x**2+a**2),x)
```

```
[Out] Timed out
```

3.340 $\int \frac{\log\left(\frac{a(1-c)+b(1+c)x}{a+bx}\right)}{(a-bx)(a+bx)}\,dx$

Optimal. Leaf size=27

$$\frac{\text{Li}_2\left(\frac{c(a-bx)}{a+bx}\right)}{2ab}$$

```
[Out] 1/2*polylog(2,c*(-b*x+a)/(b*x+a))/a/b
```

Rubi [A] time = 0.07, antiderivative size = 27, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 39, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.051, Rules used = {2502, 2315}

$$\frac{\text{PolyLog}\left(2,\frac{c(a-bx)}{a+bx}\right)}{2ab}$$

Antiderivative was successfully verified.

```
[In] Int[Log[(a*(1 - c) + b*(1 + c)*x)/(a + b*x)]/((a - b*x)*(a + b*x)),x]
```

```
[Out] PolyLog[2, (c*(a - b*x))/(a + b*x)]/(2*a*b)
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2502

```
Int[Log[((e_.)*((c_.) + (d_.)*(x_)))/((a_.) + (b_.)*(x_))]*(u_), x_Symbol]
:> With[{g = Coeff[Simplify[1/(u*(a + b*x))], x, 0], h = Coeff[Simplify[1/(
u*(a + b*x))], x, 1]}, -Dist[(b - d*e)/(h*(b*c - a*d)), Subst[Int[Log[e*x]/
(1 - e*x), x], x, (c + d*x)/(a + b*x)], x] /; EqQ[g*(b - d*e) - h*(a - c*e)
, 0]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b*c - a*d, 0] && LinearQ[Simplify
[1/(u*(a + b*x))], x]
```

Rubi steps

$$\begin{aligned}\int \frac{\log\left(\frac{a(1-c)+b(1+c)x}{a+bx}\right)}{(a-bx)(a+bx)}\,dx &= \frac{\text{Subst}\left(\int \frac{\log(x)}{1-x}\,dx,x,\frac{a(1-c)+b(1+c)x}{a+bx}\right)}{2ab}\\ &= \frac{\text{Li}_2\left(\frac{c(a-bx)}{a+bx}\right)}{2ab}\end{aligned}$$

Mathematica [B] time = 0.16, size = 252, normalized size = 9.33

$$2\text{Li}_2\left(\frac{(c+1)(a-bx)}{2a}\right)-2\text{Li}_2\left(\frac{(c+1)(a+bx)}{2ac}\right)+\log^2\left(\frac{2ac}{(c+1)(a+bx)}\right)+2\log\left(-\frac{a(-c)+a+b(c+1)x}{2ac}\right)\log\left(\frac{2ac}{(c+1)(a+bx)}\right)-2\log\left(\frac{a(-c}{}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[(a*(1 - c) + b*(1 + c)*x)/(a + b*x)]/((a - b*x)*(a + b*x)),x]
```

```
[Out] (Log[(2*a*c)/((1 + c)*(a + b*x))]^2 - 2*Log[a - b*x]*Log[(a + b*x)/(2*a)] +
 2*Log[a - b*x]*Log[(a - a*c + b*(1 + c)*x)/(2*a)] + 2*Log[(2*a*c)/((1 + c)
```

```
*(a + b*x))]*Log[-1/2*(a - a*c + b*(1 + c)*x)/(a*c)] - 2*Log[a - b*x]*Log[(
a - a*c + b*(1 + c)*x)/(a + b*x)] - 2*Log[(2*a*c)/((1 + c)*(a + b*x))]*Log[
(a - a*c + b*(1 + c)*x)/(a + b*x)] - 2*PolyLog[2, (a - b*x)/(2*a)] + 2*Poly
Log[2, ((1 + c)*(a - b*x))/(2*a)] - 2*PolyLog[2, ((1 + c)*(a + b*x))/(2*a*c
)])/(4*a*b)
```

fricas [A] time = 0.42, size = 34, normalized size = 1.26

$$\frac{\mathrm{Li}_2\left(\frac{ac-(bc+b)x-a}{bx+a}+1\right)}{2\,ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log((a*(1-c)+b*(1+c)*x)/(b*x+a))/(-b*x+a)/(b*x+a),x, algorithm="f
ricas")
```

```
[Out] 1/2*dilog((a*c - (b*c + b)*x - a)/(b*x + a) + 1)/(a*b)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log((a*(1-c)+b*(1+c)*x)/(b*x+a))/(-b*x+a)/(b*x+a),x, algorithm="g
iac")
```

```
[Out] Timed out
```

maple [A] time = 0.05, size = 24, normalized size = 0.89

$$\frac{\mathrm{dilog}\left(-\frac{2ac}{bx+a}+c+1\right)}{2ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln((a*(1-c)+b*(1+c)*x)/(b*x+a))/(-b*x+a)/(b*x+a),x)
```

```
[Out] 1/2/b*dilog(-2/(b*x+a)*a*c+c+1)/a
```

maxima [B] time = 0.51, size = 246, normalized size = 9.11

$$\frac{1}{2}\left(\frac{\log\left(bx+a\right)}{ab}-\frac{\log\left(bx-a\right)}{ab}\right)\log\left(\frac{b(c+1)x-a(c-1)}{bx+a}\right)+\frac{\log\left(bx+a\right)^2-2\,\log\left(bx+a\right)\log\left(bx-a\right)}{4\,ab}+\frac{\log\left(bx-\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log((a*(1-c)+b*(1+c)*x)/(b*x+a))/(-b*x+a)/(b*x+a),x, algorithm="m
axima")
```

```
[Out] 1/2*(log(b*x + a)/(a*b) - log(b*x - a)/(a*b))*log((b*(c + 1)*x - a*(c - 1))
/(b*x + a)) + 1/4*(log(b*x + a)^2 - 2*log(b*x + a)*log(b*x - a))/(a*b) + 1/
2*(log(b*x - a)*log(1/2*(b*(c + 1)*x - a*(c + 1))/a + 1) + dilog(-1/2*(b*(c
 + 1)*x - a*(c + 1))/a))/(a*b) + 1/2*(log(b*x + a)*log(-1/2*(b*x + a)/a + 1
) + dilog(1/2*(b*x + a)/a))/(a*b) - 1/2*(log(b*x + a)*log(-1/2*(b*(c + 1)*x
 + a*(c + 1))/(a*c) + 1) + dilog(1/2*(b*(c + 1)*x + a*(c + 1))/(a*c)))/(a*b
)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{\ln\left(-\frac{a\,(c-1)-b\,x\,(c+1)}{a+b\,x}\right)}{(a+b\,x)\,(a-b\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(-(a*(c - 1) - b*x*(c + 1))/(a + b*x))/((a + b*x)*(a - b*x)),x)
```

```
[Out] int(log(-(a*(c - 1) - b*x*(c + 1))/(a + b*x))/((a + b*x)*(a - b*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln((a*(1-c)+b*(c+1)*x)/(b*x+a))/(-b*x+a)/(b*x+a),x)
```

```
[Out] Timed out
```

3.341 $\int \frac{\log\left(1-\frac{c(a-bx)}{a+bx}\right)}{a^2-b^2x^2}\,dx$

Optimal. Leaf size=27

$$\frac{\text{Li}_2\left(\frac{c(a-bx)}{a+bx}\right)}{2ab}$$

```
[Out] 1/2*polylog(2,c*(-b*x+a)/(b*x+a))/a/b
```

Rubi [A] time = 0.02, antiderivative size = 27, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.029, Rules used = {2447}

$$\frac{\text{PolyLog}\left(2,\frac{c(a-bx)}{a+bx}\right)}{2ab}$$

Antiderivative was successfully verified.

```
[In] Int[Log[1 - (c*(a - b*x))/(a + b*x)]/(a^2 - b^2*x^2),x]
```

```
[Out] PolyLog[2, (c*(a - b*x))/(a + b*x)]/(2*a*b)
```

Rule 2447

```
Int[Log[u_]*(Pq_)^(m_.), x_Symbol] :> With[{C = FullSimplify[(Pq^m*(1 - u))
/D[u, x]]}, Simp[C*PolyLog[2, 1 - u], x] /; FreeQ[C, x]] /; IntegerQ[m] &&
PolyQ[Pq, x] && RationalFunctionQ[u, x] && LeQ[RationalFunctionExponents[u,
 x][[2]], Expon[Pq, x]]
```

Rubi steps

$$\int \frac{\log\left(1-\frac{c(a-bx)}{a+bx}\right)}{a^2-b^2x^2}\,dx=\frac{\text{Li}_2\left(\frac{c(a-bx)}{a+bx}\right)}{2ab}$$

Mathematica [B] time = 0.15, size = 252, normalized size = 9.33

$$\frac{2\text{Li}_2\left(\frac{(c+1)(a-bx)}{2a}\right)-2\text{Li}_2\left(\frac{(c+1)(a+bx)}{2ac}\right)+\log^2\left(\frac{2ac}{(c+1)(a+bx)}\right)+2\log\left(-\frac{a(-c)+a+b(c+1)x}{2ac}\right)\log\left(\frac{2ac}{(c+1)(a+bx)}\right)-2\log\left(\frac{a(-c)+a}{a+}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[1 - (c*(a - b*x))/(a + b*x)]/(a^2 - b^2*x^2),x]
```

```
[Out] (Log[(2*a*c)/((1 + c)*(a + b*x))]^2 - 2*Log[a - b*x]*Log[(a + b*x)/(2*a)] +
 2*Log[a - b*x]*Log[(a - a*c + b*(1 + c)*x)/(2*a)] + 2*Log[(2*a*c)/((1 + c)
*(a + b*x))]*Log[-1/2*(a - a*c + b*(1 + c)*x)/(a*c)] - 2*Log[a - b*x]*Log[(
a - a*c + b*(1 + c)*x)/(a + b*x)] - 2*Log[(2*a*c)/((1 + c)*(a + b*x))]*Log[
(a - a*c + b*(1 + c)*x)/(a + b*x)] - 2*PolyLog[2, (a - b*x)/(2*a)] + 2*Poly
Log[2, ((1 + c)*(a - b*x))/(2*a)] - 2*PolyLog[2, ((1 + c)*(a + b*x))/(2*a*c
)])/(4*a*b)
```

fricas [A] time = 0.42, size = 34, normalized size = 1.26

$$\frac{\text{Li}_2\left(\frac{ac-(bc+b)x-a}{bx+a}+1\right)}{2\,ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(1-c*(-b*x+a)/(b*x+a))/(-b^2*x^2+a^2),x, algorithm="fricas")
```

```
[Out] 1/2*dilog((a*c - (b*c + b)*x - a)/(b*x + a) + 1)/(a*b)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(1-c*(-b*x+a)/(b*x+a))/(-b^2*x^2+a^2),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 0.05, size = 24, normalized size = 0.89

$$\frac{\operatorname{dilog}\left(-\frac{2ac}{bx+a}+c+1\right)}{2ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(1-c*(-b*x+a)/(b*x+a))/(-b^2*x^2+a^2),x)
```

```
[Out] 1/2/b*dilog(-2/(b*x+a)*a*c+c+1)/a
```

maxima [B] time = 0.52, size = 243, normalized size = 9.00

$$\frac{1}{2}\left(\frac{\log\left(bx+a\right)}{ab}-\frac{\log\left(bx-a\right)}{ab}\right)\log\left(\frac{(bx-a)c}{bx+a}+1\right)+\frac{\log\left(bx+a\right)^2-2\log\left(bx+a\right)\log\left(bx-a\right)}{4\,ab}+\frac{\log\left(bx-a\right)\,\mathrm{l}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(1-c*(-b*x+a)/(b*x+a))/(-b^2*x^2+a^2),x, algorithm="maxima")
```

```
[Out] 1/2*(log(b*x + a)/(a*b) - log(b*x - a)/(a*b))*log((b*x - a)*c/(b*x + a) + 1
) + 1/4*(log(b*x + a)^2 - 2*log(b*x + a)*log(b*x - a))/(a*b) + 1/2*(log(b*x
 - a)*log(1/2*(b*(c + 1)*x - a*(c + 1))/a + 1) + dilog(-1/2*(b*(c + 1)*x -
a*(c + 1))/a))/(a*b) + 1/2*(log(b*x + a)*log(-1/2*(b*x + a)/a + 1) + dilog(
1/2*(b*x + a)/a))/(a*b) - 1/2*(log(b*x + a)*log(-1/2*(b*(c + 1)*x + a*(c +
1))/(a*c) + 1) + dilog(1/2*(b*(c + 1)*x + a*(c + 1))/(a*c)))/(a*b)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{\ln\left(1-\frac{c\,(a-b\,x)}{a+b\,x}\right)}{a^2-b^2\,x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(1 - (c*(a - b*x))/(a + b*x))/(a^2 - b^2*x^2),x)
```

```
[Out] int(log(1 - (c*(a - b*x))/(a + b*x))/(a^2 - b^2*x^2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(1-c*(-b*x+a)/(b*x+a))/(-b**2*x**2+a**2),x)
```

```
[Out] Timed out
```

3.342 $\int \frac{\log\left(1-\frac{c(a-bx)}{a+bx}\right)}{(a-bx)(a+bx)}\,dx$

Optimal. Leaf size=27

$$\frac{\text{Li}_2\left(\frac{c(a-bx)}{a+bx}\right)}{2ab}$$

```
[Out] 1/2*polylog(2,c*(-b*x+a)/(b*x+a))/a/b
```

Rubi [A] time = 0.13, antiderivative size = 27, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.086, Rules used = {2517, 2502, 2315}

$$\frac{\text{PolyLog}\left(2,\frac{c(a-bx)}{a+bx}\right)}{2ab}$$

Antiderivative was successfully verified.

```
[In] Int[Log[1 - (c*(a - b*x))/(a + b*x)]/((a - b*x)*(a + b*x)),x]
```

```
[Out] PolyLog[2, (c*(a - b*x))/(a + b*x)]/(2*a*b)
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2502

```
Int[Log[((e_.)*((c_.) + (d_.)*(x_)))/((a_.) + (b_.)*(x_))]*(u_), x_Symbol]
:> With[{g = Coeff[Simplify[1/(u*(a + b*x))], x, 0], h = Coeff[Simplify[1/(
u*(a + b*x))], x, 1]}, -Dist[(b - d*e)/(h*(b*c - a*d)), Subst[Int[Log[e*x]/
(1 - e*x), x], x, (c + d*x)/(a + b*x)], x] /; EqQ[g*(b - d*e) - h*(a - c*e)
, 0]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b*c - a*d, 0] && LinearQ[Simplify
[1/(u*(a + b*x))], x]
```

Rule 2517

```
Int[Log[(e_.)*((f_.)*((g_) + (v_.)/(w_)))^(r_.)]^(s_.)*(u_.), x_Symbol] :>
Int[u*Log[e*((f*ExpandToSum[v + g*w, x])/ExpandToSum[w, x])^r]^s, x] /; Fre
eQ[{e, f, g, r, s}, x] && LinearQ[w, x] && (FreeQ[v, x] || LinearQ[v, x]) &
& AlgebraicFunctionQ[u, x]
```

Rubi steps

$$\begin{aligned}
\int \frac{\log\left(1-\frac{c(a-bx)}{a+bx}\right)}{(a-bx)(a+bx)}\,dx &= \int \frac{\log\left(\frac{a(1-c)+b(1+c)x}{a+bx}\right)}{(a-bx)(a+bx)}\,dx\\
&= \frac{\text{Subst}\left(\int \frac{\log(x)}{1-x}\,dx, x, \frac{a(1-c)+b(1+c)x}{a+bx}\right)}{2ab}\\
&= \frac{\text{Li}_2\left(\frac{c(a-bx)}{a+bx}\right)}{2ab}
\end{aligned}$$

Mathematica [B] time = 0.16, size = 252, normalized size = 9.33

$$2\text{Li}_2\left(\frac{(c+1)(a-bx)}{2a}\right)-2\text{Li}_2\left(\frac{(c+1)(a+bx)}{2ac}\right)+\log^2\left(\frac{2ac}{(c+1)(a+bx)}\right)+2\log\left(-\frac{a(-c)+a+b(c+1)x}{2ac}\right)\log\left(\frac{2ac}{(c+1)(a+bx)}\right)-2\log\left(\frac{a(-c}{}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[1 - (c*(a - b*x))/(a + b*x)]/((a - b*x)*(a + b*x)),x]
```

```
[Out] (Log[(2*a*c)/((1 + c)*(a + b*x))]^2 - 2*Log[a - b*x]*Log[(a + b*x)/(2*a)] +
 2*Log[a - b*x]*Log[(a - a*c + b*(1 + c)*x)/(2*a)] + 2*Log[(2*a*c)/((1 + c)
*(a + b*x))]*Log[-1/2*(a - a*c + b*(1 + c)*x)/(a*c)] - 2*Log[a - b*x]*Log[(
a - a*c + b*(1 + c)*x)/(a + b*x)] - 2*Log[(2*a*c)/((1 + c)*(a + b*x))]*Log[
(a - a*c + b*(1 + c)*x)/(a + b*x)] - 2*PolyLog[2, (a - b*x)/(2*a)] + 2*Poly
Log[2, ((1 + c)*(a - b*x))/(2*a)] - 2*PolyLog[2, ((1 + c)*(a + b*x))/(2*a*c
)])/(4*a*b)
```

fricas [A] time = 0.42, size = 34, normalized size = 1.26

$$\frac{\text{Li}_2\left(\frac{ac-(bc+b)x-a}{bx+a}+1\right)}{2\,ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(1-c*(-b*x+a)/(b*x+a))/(-b*x+a)/(b*x+a),x, algorithm="fricas")
```

```
[Out] 1/2*dilog((a*c - (b*c + b)*x - a)/(b*x + a) + 1)/(a*b)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(1-c*(-b*x+a)/(b*x+a))/(-b*x+a)/(b*x+a),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 0.05, size = 24, normalized size = 0.89

$$\frac{\text{dilog}\left(-\frac{2ac}{bx+a}+c+1\right)}{2ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(1-c*(-b*x+a)/(b*x+a))/(-b*x+a)/(b*x+a),x)
```

```
[Out] 1/2/b*dilog(-2/(b*x+a)*a*c+c+1)/a
```

maxima [B] time = 0.52, size = 243, normalized size = 9.00

$$\frac{1}{2}\left(\frac{\log(bx+a)}{ab}-\frac{\log(bx-a)}{ab}\right)\log\left(\frac{(bx-a)c}{bx+a}+1\right)+\frac{\log(bx+a)^2-2\,\log(bx+a)\log(bx-a)}{4\,ab}+\frac{\log(bx-a)\,\mathrm{l}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(1-c*(-b*x+a)/(b*x+a))/(-b*x+a)/(b*x+a),x, algorithm="maxima")
```

```
[Out] 1/2*(log(b*x + a)/(a*b) - log(b*x - a)/(a*b))*log((b*x - a)*c/(b*x + a) + 1
) + 1/4*(log(b*x + a)^2 - 2*log(b*x + a)*log(b*x - a))/(a*b) + 1/2*(log(b*x
 - a)*log(1/2*(b*(c + 1)*x - a*(c + 1))/a + 1) + dilog(-1/2*(b*(c + 1)*x -
```

```
a*(c + 1))/a))/(a*b) + 1/2*(log(b*x + a)*log(-1/2*(b*x + a)/a + 1) + dilog(
1/2*(b*x + a)/a))/(a*b) - 1/2*(log(b*x + a)*log(-1/2*(b*(c + 1)*x + a*(c +
1))/(a*c) + 1) + dilog(1/2*(b*(c + 1)*x + a*(c + 1))/(a*c)))/(a*b)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{\ln\left(1-\frac{c\,(a-b\,x)}{a+b\,x}\right)}{(a+b\,x)\,(a-b\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(1 - (c*(a - b*x))/(a + b*x))/((a + b*x)*(a - b*x)),x)
```

```
[Out] int(log(1 - (c*(a - b*x))/(a + b*x))/((a + b*x)*(a - b*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(1-c*(-b*x+a)/(b*x+a))/(-b*x+a)/(b*x+a),x)
```

```
[Out] Timed out
```

3.343 $\int \frac{\log^3(c(a+bx)^n)}{dx+ex^2} dx$

Optimal. Leaf size=238

$$\frac{6n^2 \log(c(a+bx)^n) \operatorname{Li}_3\left(-\frac{e(a+bx)}{bd-ae}\right)}{d} - \frac{3n \log^2(c(a+bx)^n) \operatorname{Li}_2\left(-\frac{e(a+bx)}{bd-ae}\right)}{d} - \frac{\log^3(c(a+bx)^n) \log\left(\frac{b(d+ex)}{bd-ae}\right)}{d} - \frac{6n^2 \operatorname{Li}_3}{}$$

```
[Out] ln(-b*x/a)*ln(c*(b*x+a)^n)^3/d-ln(c*(b*x+a)^n)^3*ln(b*(e*x+d)/(-a*e+b*d))/d
-3*n*ln(c*(b*x+a)^n)^2*polylog(2,-e*(b*x+a)/(-a*e+b*d))/d+3*n*ln(c*(b*x+a)^
n)^2*polylog(2,1+b*x/a)/d+6*n^2*ln(c*(b*x+a)^n)*polylog(3,-e*(b*x+a)/(-a*e+
b*d))/d-6*n^2*ln(c*(b*x+a)^n)*polylog(3,1+b*x/a)/d-6*n^3*polylog(4,-e*(b*x+
a)/(-a*e+b*d))/d+6*n^3*polylog(4,1+b*x/a)/d
```

Rubi [A] time = 0.35, antiderivative size = 238, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.292$, Rules used = {1593, 2416, 2396, 2433, 2374, 2383, 6589}

$$\frac{6n^2 \log(c(a+bx)^n) \operatorname{PolyLog}\left(3,-\frac{e(a+bx)}{bd-ae}\right)}{d} - \frac{3n \log^2(c(a+bx)^n) \operatorname{PolyLog}\left(2,-\frac{e(a+bx)}{bd-ae}\right)}{d} - \frac{6n^2 \operatorname{PolyLog}\left(3,\frac{bx}{a}+\right.}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c*(a + b*x)^n]^3/(d*x + e*x^2),x]
```

```
[Out] (Log[-((b*x)/a)]*Log[c*(a + b*x)^n]^3)/d - (Log[c*(a + b*x)^n]^3*Log[(b*(d
+ e*x))/(b*d - a*e)])/d - (3*n*Log[c*(a + b*x)^n]^2*PolyLog[2, -((e*(a + b*
x))/(b*d - a*e))])/d + (3*n*Log[c*(a + b*x)^n]^2*PolyLog[2, 1 + (b*x)/a])/d
 + (6*n^2*Log[c*(a + b*x)^n]*PolyLog[3, -((e*(a + b*x))/(b*d - a*e))])/d -
(6*n^2*Log[c*(a + b*x)^n]*PolyLog[3, 1 + (b*x)/a])/d - (6*n^3*PolyLog[4, -(
(e*(a + b*x))/(b*d - a*e))])/d + (6*n^3*PolyLog[4, 1 + (b*x)/a])/d
```

Rule 1593

```
Int[(u_.)*((a_.)*(x_)^(p_.) + (b_.)*(x_)^(q_.))^(n_.), x_Symbol] :> Int[u*x
^(n*p)*(a + b*x^(q - p))^n, x] /; FreeQ[{a, b, p, q}, x] && IntegerQ[n] &&
PosQ[q - p]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2383

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^p)/q
, x] - Dist[(b*n*p)/q, Int[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^(p - 1
))/x, x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
```

```
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\log^3(c(a+bx)^n)}{dx+ex^2}\,dx = \int \frac{\log^3(c(a+bx)^n)}{x(d+ex)}\,dx$$

$$= \int \left(\frac{\log^3(c(a+bx)^n)}{dx} - \frac{e\log^3(c(a+bx)^n)}{d(d+ex)}\right)dx$$

$$= \frac{\int \frac{\log^3(c(a+bx)^n)}{x}\,dx}{d} - \frac{e\int \frac{\log^3(c(a+bx)^n)}{d+ex}\,dx}{d}$$

$$= \frac{\log\left(-\frac{bx}{a}\right)\log^3(c(a+bx)^n)}{d} - \frac{\log^3(c(a+bx)^n)\log\left(\frac{b(d+ex)}{bd-ae}\right)}{d} - \frac{(3bn)\int \frac{\log\left(-\frac{bx}{a}\right)\log^2(c(a+b}{a+bx}}{d}$$

$$= \frac{\log\left(-\frac{bx}{a}\right)\log^3(c(a+bx)^n)}{d} - \frac{\log^3(c(a+bx)^n)\log\left(\frac{b(d+ex)}{bd-ae}\right)}{d} - \frac{(3n)\,\mathrm{Subst}\left(\int \frac{\log^2(cx^n)\log}{}\right.}{d}$$

$$= \frac{\log\left(-\frac{bx}{a}\right)\log^3(c(a+bx)^n)}{d} - \frac{\log^3(c(a+bx)^n)\log\left(\frac{b(d+ex)}{bd-ae}\right)}{d} - \frac{3n\log^2(c(a+bx)^n)\,\mathrm{Li}_2}{d}$$

$$= \frac{\log\left(-\frac{bx}{a}\right)\log^3(c(a+bx)^n)}{d} - \frac{\log^3(c(a+bx)^n)\log\left(\frac{b(d+ex)}{bd-ae}\right)}{d} - \frac{3n\log^2(c(a+bx)^n)\,\mathrm{Li}_2}{d}$$

$$= \frac{\log\left(-\frac{bx}{a}\right)\log^3(c(a+bx)^n)}{d} - \frac{\log^3(c(a+bx)^n)\log\left(\frac{b(d+ex)}{bd-ae}\right)}{d} - \frac{3n\log^2(c(a+bx)^n)\,\mathrm{Li}_2}{d}$$

Mathematica [B] time = 0.22, size = 494, normalized size = 2.08

$$\frac{-3n^2\left(n\log(a+bx)-\log\left(c(a+bx)^n\right)\right)\left(2\mathrm{Li}_3\left(\frac{e(a+bx)}{ae-bd}\right)-2\log(a+bx)\mathrm{Li}_2\left(\frac{e(a+bx)}{ae-bd}\right)-\log^2(a+bx)\log\left(\frac{b(d+ex)}{bd-ae}\right)-\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(a + b*x)^n]^3/(d*x + e*x^2),x]
```

```
[Out] (-(Log[x]*(n*Log[a + b*x] - Log[c*(a + b*x)^n])^3) + (n*Log[a + b*x] - Log[
c*(a + b*x)^n])^3*Log[d + e*x] + 3*n*(-(n*Log[a + b*x]) + Log[c*(a + b*x)^n
])^2*(Log[x]*(Log[a + b*x] - Log[1 + (b*x)/a]) - Log[a + b*x]*Log[(b*(d + e
*x))/(b*d - a*e)] - PolyLog[2, -((b*x)/a)] - PolyLog[2, (e*(a + b*x))/(-(b*
d) + a*e)]) - 3*n^2*(n*Log[a + b*x] - Log[c*(a + b*x)^n])*(Log[-((b*x)/a)]*
Log[a + b*x]^2 - Log[a + b*x]^2*Log[(b*(d + e*x))/(b*d - a*e)] - 2*Log[a +
b*x]*PolyLog[2, (e*(a + b*x))/(-(b*d) + a*e)] + 2*Log[a + b*x]*PolyLog[2, 1
 + (b*x)/a] + 2*PolyLog[3, (e*(a + b*x))/(-(b*d) + a*e)] - 2*PolyLog[3, 1 +
 (b*x)/a]) + n^3*(Log[-((b*x)/a)]*Log[a + b*x]^3 - Log[a + b*x]^3*Log[(b*(d
 + e*x))/(b*d - a*e)] - 3*Log[a + b*x]^2*PolyLog[2, (e*(a + b*x))/(-(b*d) +
 a*e)] + 3*Log[a + b*x]^2*PolyLog[2, 1 + (b*x)/a] + 6*Log[a + b*x]*PolyLog[
3, (e*(a + b*x))/(-(b*d) + a*e)] - 6*Log[a + b*x]*PolyLog[3, 1 + (b*x)/a] -
 6*PolyLog[4, (e*(a + b*x))/(-(b*d) + a*e)] + 6*PolyLog[4, 1 + (b*x)/a]))/d
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\log\left(\left(bx+a\right)^{n}c\right)^{3}}{ex^{2}+dx},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)^3/(e*x^2+d*x),x, algorithm="fricas")
```

```
[Out] integral(log((b*x + a)^n*c)^3/(e*x^2 + d*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\log\left(\left(bx+a\right)^{n}c\right)^{3}}{ex^{2}+dx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)^3/(e*x^2+d*x),x, algorithm="giac")
```

```
[Out] integrate(log((b*x + a)^n*c)^3/(e*x^2 + d*x), x)
```

maple [C] time = 1.08, size = 12205, normalized size = 51.28

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(c*(b*x+a)^n)^3/(e*x^2+d*x),x)
```

```
[Out] result too large to display
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\log\left(\left(bx+a\right)^{n}c\right)^{3}}{ex^{2}+dx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)^3/(e*x^2+d*x),x, algorithm="maxima")
```

```
[Out] integrate(log((b*x + a)^n*c)^3/(e*x^2 + d*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln\left(c\,(a+b\,x)^n\right)^3}{e\,x^2+d\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(c*(a + b*x)^n)^3/(d*x + e*x^2),x)
```

```
[Out] int(log(c*(a + b*x)^n)^3/(d*x + e*x^2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log\left(c\,(a+bx)^n\right)^3}{x\,(d+ex)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(c*(b*x+a)**n)**3/(e*x**2+d*x),x)
```

```
[Out] Integral(log(c*(a + b*x)**n)**3/(x*(d + e*x)), x)
```

3.344 $\int \frac{\log^2(c(a+bx)^n)}{dx+ex^2} dx$

Optimal. Leaf size=168

$$-\frac{2n\log\left(c(a+bx)^n\right)\mathrm{Li}_2\left(-\frac{e(a+bx)}{bd-ae}\right)}{d}-\frac{\log^2\left(c(a+bx)^n\right)\log\left(\frac{b(d+ex)}{bd-ae}\right)}{d}+\frac{2n\mathrm{Li}_2\left(\frac{bx}{a}+1\right)\log\left(c(a+bx)^n\right)}{d}+\frac{\log\left(-\frac{bx}{a}\right.}{}$$

```
[Out] ln(-b*x/a)*ln(c*(b*x+a)^n)^2/d-ln(c*(b*x+a)^n)^2*ln(b*(e*x+d)/(-a*e+b*d))/d
-2*n*ln(c*(b*x+a)^n)*polylog(2,-e*(b*x+a)/(-a*e+b*d))/d+2*n*ln(c*(b*x+a)^n)
*polylog(2,1+b*x/a)/d+2*n^2*polylog(3,-e*(b*x+a)/(-a*e+b*d))/d-2*n^2*polylo
g(3,1+b*x/a)/d
```

Rubi [A] time = 0.25, antiderivative size = 168, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {1593, 2416, 2396, 2433, 2374, 6589}

$$-\frac{2n\log\left(c(a+bx)^n\right)\mathrm{PolyLog}\left(2,-\frac{e(a+bx)}{bd-ae}\right)}{d}+\frac{2n\mathrm{PolyLog}\left(2,\frac{bx}{a}+1\right)\log\left(c(a+bx)^n\right)}{d}+\frac{2n^2\mathrm{PolyLog}\left(3,-\frac{e(a+bx)}{bd-ae}\right.}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c*(a + b*x)^n]^2/(d*x + e*x^2),x]
```

```
[Out] (Log[-((b*x)/a)]*Log[c*(a + b*x)^n]^2)/d - (Log[c*(a + b*x)^n]^2*Log[(b*(d
+ e*x))/(b*d - a*e)])/d - (2*n*Log[c*(a + b*x)^n]*PolyLog[2, -((e*(a + b*x)
)/(b*d - a*e))])/d + (2*n*Log[c*(a + b*x)^n]*PolyLog[2, 1 + (b*x)/a])/d + (
2*n^2*PolyLog[3, -((e*(a + b*x))/(b*d - a*e))])/d - (2*n^2*PolyLog[3, 1 + (
b*x)/a])/d
```

Rule 1593

```
Int[(u_.)*((a_.)*(x_)^(p_.) + (b_.)*(x_)^(q_.))^(n_.), x_Symbol] :> Int[u*x
^(n*p)*(a + b*x^(q - p))^n, x] /; FreeQ[{a, b, p, q}, x] && IntegerQ[n] &&
PosQ[q - p]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\log^2(c(a+bx)^n)}{dx+ex^2}\,dx = \int \frac{\log^2(c(a+bx)^n)}{x(d+ex)}\,dx$$
$$= \int \left(\frac{\log^2(c(a+bx)^n)}{dx} - \frac{e\log^2(c(a+bx)^n)}{d(d+ex)}\right)dx$$
$$= \frac{\int \frac{\log^2(c(a+bx)^n)}{x}\,dx}{d} - \frac{e\int \frac{\log^2(c(a+bx)^n)}{d+ex}\,dx}{d}$$
$$= \frac{\log\left(-\frac{bx}{a}\right)\log^2(c(a+bx)^n)}{d} - \frac{\log^2(c(a+bx)^n)\log\left(\frac{b(d+ex)}{bd-ae}\right)}{d} - \frac{(2bn)\int \frac{\log\left(-\frac{bx}{a}\right)\log(c(a+bx}{a+bx}}{d}$$
$$= \frac{\log\left(-\frac{bx}{a}\right)\log^2(c(a+bx)^n)}{d} - \frac{\log^2(c(a+bx)^n)\log\left(\frac{b(d+ex)}{bd-ae}\right)}{d} - \frac{(2n)\,\mathrm{Subst}\left(\int \frac{\log(cx^n)\log}{}\right.}{d}$$
$$= \frac{\log\left(-\frac{bx}{a}\right)\log^2(c(a+bx)^n)}{d} - \frac{\log^2(c(a+bx)^n)\log\left(\frac{b(d+ex)}{bd-ae}\right)}{d} - \frac{2n\log(c(a+bx)^n)\,\mathrm{Li}_2\left(\right.}{d}$$
$$= \frac{\log\left(-\frac{bx}{a}\right)\log^2(c(a+bx)^n)}{d} - \frac{\log^2(c(a+bx)^n)\log\left(\frac{b(d+ex)}{bd-ae}\right)}{d} - \frac{2n\log(c(a+bx)^n)\,\mathrm{Li}_2\left(\right.}{d}$$

Mathematica [A] time = 0.14, size = 292, normalized size = 1.74

$$\frac{-2n\left(n\log(a+bx)-\log\left(c(a+bx)^n\right)\right)\left(-\mathrm{Li}_2\left(\frac{e(a+bx)}{ae-bd}\right)-\log(a+bx)\log\left(\frac{b(d+ex)}{bd-ae}\right)-\mathrm{Li}_2\left(-\frac{bx}{a}\right)+\log(x)\left(\log(a+b\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(a + b*x)^n]^2/(d*x + e*x^2),x]
```

```
[Out] (Log[x]*(-(n*Log[a + b*x]) + Log[c*(a + b*x)^n])^2 - (-(n*Log[a + b*x]) + L
og[c*(a + b*x)^n])^2*Log[d + e*x] - 2*n*(n*Log[a + b*x] - Log[c*(a + b*x)^n
])*(Log[x]*(Log[a + b*x] - Log[1 + (b*x)/a]) - Log[a + b*x]*Log[(b*(d + e*x
))/(b*d - a*e)] - PolyLog[2, -((b*x)/a)] - PolyLog[2, (e*(a + b*x))/(-(b*d)
 + a*e)]) + n^2*(Log[-((b*x)/a)]*Log[a + b*x]^2 - Log[a + b*x]^2*Log[(b*(d
+ e*x))/(b*d - a*e)] - 2*Log[a + b*x]*PolyLog[2, (e*(a + b*x))/(-(b*d) + a*
e)] + 2*Log[a + b*x]*PolyLog[2, 1 + (b*x)/a] + 2*PolyLog[3, (e*(a + b*x))/(
-(b*d) + a*e)] - 2*PolyLog[3, 1 + (b*x)/a]))/d
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\log\left((bx+a)^n c\right)^2}{ex^2+dx}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)^2/(e*x^2+d*x),x, algorithm="fricas")
```

```
[Out] integral(log((b*x + a)^n*c)^2/(e*x^2 + d*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log\left((bx+a)^n c\right)^2}{ex^2+dx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)^2/(e*x^2+d*x),x, algorithm="giac")
```

```
[Out] integrate(log((b*x + a)^n*c)^2/(e*x^2 + d*x), x)
```

maple [C] time = 0.52, size = 2679, normalized size = 15.95

Expression too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(c*(b*x+a)^n)^2/(e*x^2+d*x),x)
```

```
[Out] I*n/d*ln(x)*ln((b*x+a)/a)*Pi*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)*csgn(I*c
)-I*n/d*ln(e*x+d)*ln((b*(e*x+d)+a*e-b*d)/(a*e-b*d))*Pi*csgn(I*(b*x+a)^n)*cs
gn(I*c*(b*x+a)^n)*csgn(I*c)-1/d*ln(e*x+d)*ln(c)^2-2*n^2/d*polylog(3,(b*x+a)
/a)+2*n^2*polylog(3,-e*(b*x+a)/(-a*e+b*d))/d-I*ln((b*x+a)^n)/d*ln(x)*Pi*csg
n(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)*csgn(I*c)+I*n/d*ln(e*x+d)*ln((b*(e*x+d)+
a*e-b*d)/(a*e-b*d))*Pi*csgn(I*c*(b*x+a)^n)^2*csgn(I*c)+I/d*ln(e*x+d)*ln((b*
x+a)^n)*Pi*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)*csgn(I*c)+I*n/d*dilog((b*x
+a)/a)*Pi*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)*csgn(I*c)+I*n/d*ln(e*x+d)*l
n((b*(e*x+d)+a*e-b*d)/(a*e-b*d))*Pi*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)^2
+1/d*ln(x)*ln(c)^2-I*n/d*dilog((b*(e*x+d)+a*e-b*d)/(a*e-b*d))*Pi*csgn(I*(b*
x+a)^n)*csgn(I*c*(b*x+a)^n)*csgn(I*c)-(-n*ln(b*x+a)+ln((b*x+a)^n))^2/d*ln((
b*x+a)*e-a*e+b*d)+(-n*ln(b*x+a)+ln((b*x+a)^n))^2/d*ln(b*x)-2*n/d*dilog((b*x
+a)/a)*ln(c)+2*n/d*dilog((b*(e*x+d)+a*e-b*d)/(a*e-b*d))*ln(c)-n^2/d*ln(b*x+
a)^2*ln(1+e*(b*x+a)/(-a*e+b*d))-2*n^2/d*ln(b*x+a)*polylog(2,-e*(b*x+a)/(-a*
e+b*d))+n^2/d*ln(b*x+a)^2*ln(1-(b*x+a)/a)+2*n^2/d*ln(b*x+a)*polylog(2,(b*x+
a)/a)-I*n/d*ln(x)*ln((b*x+a)/a)*Pi*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)^2-
I/d*ln(x)*ln(c)*Pi*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)*csgn(I*c)-I*n/d*ln
(x)*ln((b*x+a)/a)*Pi*csgn(I*c*(b*x+a)^n)^2*csgn(I*c)+I/d*ln(e*x+d)*ln(c)*Pi
*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)*csgn(I*c)+I*n/d*dilog((b*(e*x+d)+a*e
-b*d)/(a*e-b*d))*Pi*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)^2+I*ln((b*x+a)^n)
/d*ln(x)*Pi*csgn(I*c*(b*x+a)^n)^2*csgn(I*c)+2*ln((b*x+a)^n)/d*ln(x)*ln(c)-1
/4/d*ln(x)*Pi^2*csgn(I*c*(b*x+a)^n)^6+1/4/d*ln(e*x+d)*Pi^2*csgn(I*c*(b*x+a)
^n)^6-2*n*(-n*ln(b*x+a)+ln((b*x+a)^n))/d*dilog(((b*x+a)*e-a*e+b*d)/(-a*e+b*
d))+2*n*(-n*ln(b*x+a)+ln((b*x+a)^n))/d*dilog(-1/a*b*x)-2/d*ln(e*x+d)*ln((b*
x+a)^n)*ln(c)+I/d*ln(x)*ln(c)*Pi*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)^2+I*
n/d*ln(x)*ln((b*x+a)/a)*Pi*csgn(I*c*(b*x+a)^n)^3+I*n/d*dilog((b*(e*x+d)+a*e
-b*d)/(a*e-b*d))*Pi*csgn(I*c*(b*x+a)^n)^2*csgn(I*c)+I/d*ln(x)*ln(c)*Pi*csgn
(I*c*(b*x+a)^n)^2*csgn(I*c)+I*ln((b*x+a)^n)/d*ln(x)*Pi*csgn(I*(b*x+a)^n)*cs
gn(I*c*(b*x+a)^n)^2-I/d*ln(e*x+d)*ln(c)*Pi*csgn(I*c*(b*x+a)^n)^2*csgn(I*c)-
2*n*(-n*ln(b*x+a)+ln((b*x+a)^n))/d*ln(b*x+a)*ln(((b*x+a)*e-a*e+b*d)/(-a*e+b
```

```
*d))+2*n*(-n*ln(b*x+a)+ln((b*x+a)^n))/d*ln(b*x+a)*ln(-1/a*b*x)-1/4/d*ln(x)*
Pi^2*csgn(I*c*(b*x+a)^n)^4*csgn(I*c)^2+1/4/d*ln(e*x+d)*Pi^2*csgn(I*(b*x+a)^
n)^2*csgn(I*c*(b*x+a)^n)^4-1/2/d*ln(e*x+d)*Pi^2*csgn(I*(b*x+a)^n)*csgn(I*c*
(b*x+a)^n)^5-1/2/d*ln(e*x+d)*Pi^2*csgn(I*c*(b*x+a)^n)^5*csgn(I*c)+1/4/d*ln(
e*x+d)*Pi^2*csgn(I*(b*x+a)^n)^2*csgn(I*c*(b*x+a)^n)^2*csgn(I*c)^2-1/2/d*ln(
e*x+d)*Pi^2*csgn(I*(b*x+a)^n)^2*csgn(I*c*(b*x+a)^n)^3*csgn(I*c)+1/d*ln(e*x+
d)*Pi^2*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)^4*csgn(I*c)+I*n/d*dilog((b*x+
a)/a)*Pi*csgn(I*c*(b*x+a)^n)^3+I/d*ln(e*x+d)*ln(c)*Pi*csgn(I*c*(b*x+a)^n)^3
-I*n/d*dilog((b*(e*x+d)+a*e-b*d)/(a*e-b*d))*Pi*csgn(I*c*(b*x+a)^n)^3+1/2/d*
ln(x)*Pi^2*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)^3*csgn(I*c)^2-1/2/d*ln(e*x
+d)*Pi^2*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)^3*csgn(I*c)^2+I/d*ln(e*x+d)*
ln((b*x+a)^n)*Pi*csgn(I*c*(b*x+a)^n)^3-1/d*ln(x)*Pi^2*csgn(I*(b*x+a)^n)*csg
n(I*c*(b*x+a)^n)^4*csgn(I*c)+1/2/d*ln(x)*Pi^2*csgn(I*(b*x+a)^n)^2*csgn(I*c*
(b*x+a)^n)^3*csgn(I*c)-2*n/d*ln(x)*ln((b*x+a)/a)*ln(c)+2*n/d*ln(e*x+d)*ln((
b*(e*x+d)+a*e-b*d)/(a*e-b*d))*ln(c)-1/4/d*ln(x)*Pi^2*csgn(I*(b*x+a)^n)^2*cs
gn(I*c*(b*x+a)^n)^2*csgn(I*c)^2+1/2/d*ln(x)*Pi^2*csgn(I*(b*x+a)^n)*csgn(I*c
*(b*x+a)^n)^5+1/2/d*ln(x)*Pi^2*csgn(I*c*(b*x+a)^n)^5*csgn(I*c)+1/4/d*ln(e*x
+d)*Pi^2*csgn(I*c*(b*x+a)^n)^4*csgn(I*c)^2-1/4/d*ln(x)*Pi^2*csgn(I*(b*x+a)^
n)^2*csgn(I*c*(b*x+a)^n)^4-I*n/d*ln(e*x+d)*ln((b*(e*x+d)+a*e-b*d)/(a*e-b*d)
)*Pi*csgn(I*c*(b*x+a)^n)^3-I*ln((b*x+a)^n)/d*ln(x)*Pi*csgn(I*c*(b*x+a)^n)^3
-I/d*ln(x)*ln(c)*Pi*csgn(I*c*(b*x+a)^n)^3-I/d*ln(e*x+d)*ln((b*x+a)^n)*Pi*cs
gn(I*c*(b*x+a)^n)^2*csgn(I*c)-I/d*ln(e*x+d)*ln((b*x+a)^n)*Pi*csgn(I*(b*x+a)
^n)*csgn(I*c*(b*x+a)^n)^2-I*n/d*dilog((b*x+a)/a)*Pi*csgn(I*(b*x+a)^n)*csgn(
I*c*(b*x+a)^n)^2-I*n/d*dilog((b*x+a)/a)*Pi*csgn(I*c*(b*x+a)^n)^2*csgn(I*c)-
I/d*ln(e*x+d)*ln(c)*Pi*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log\left(\left(bx+a\right)^n c\right)^2}{ex^2+dx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)^2/(e*x^2+d*x),x, algorithm="maxima")
```

```
[Out] integrate(log((b*x + a)^n*c)^2/(e*x^2 + d*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\ln\left(c\,{\left(a+b\,x\right)}^n\right)^2}{e\,x^2+d\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(c*(a + b*x)^n)^2/(d*x + e*x^2),x)
```

```
[Out] int(log(c*(a + b*x)^n)^2/(d*x + e*x^2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log\left(c\left(a+bx\right)^n\right)^2}{x\left(d+ex\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(c*(b*x+a)**n)**2/(e*x**2+d*x),x)
```

```
[Out] Integral(log(c*(a + b*x)**n)**2/(x*(d + e*x)), x)
```

3.345 $\int \frac{\log(c(a+bx)^n)}{dx+ex^2}\,dx$

Optimal. Leaf size=97

$$-\frac{\log\left(c(a+bx)^n\right)\log\left(\frac{b(d+ex)}{bd-ae}\right)}{d}+\frac{\log\left(-\frac{bx}{a}\right)\log\left(c(a+bx)^n\right)}{d}-\frac{n\text{Li}_2\left(-\frac{e(a+bx)}{bd-ae}\right)}{d}+\frac{n\text{Li}_2\left(\frac{bx}{a}+1\right)}{d}$$

```
[Out] ln(-b*x/a)*ln(c*(b*x+a)^n)/d-ln(c*(b*x+a)^n)*ln(b*(e*x+d)/(-a*e+b*d))/d-n*p
olylog(2,-e*(b*x+a)/(-a*e+b*d))/d+n*polylog(2,1+b*x/a)/d
```

Rubi [A] time = 0.12, antiderivative size = 97, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 9, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.409, Rules used = {1593, 36, 29, 31, 2416, 2394, 2315, 2393, 2391}

$$-\frac{n\text{PolyLog}\left(2,-\frac{e(a+bx)}{bd-ae}\right)}{d}+\frac{n\text{PolyLog}\left(2,\frac{bx}{a}+1\right)}{d}-\frac{\log\left(c(a+bx)^n\right)\log\left(\frac{b(d+ex)}{bd-ae}\right)}{d}+\frac{\log\left(-\frac{bx}{a}\right)\log\left(c(a+bx)^n\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c*(a + b*x)^n]/(d*x + e*x^2),x]
```

```
[Out] (Log[-((b*x)/a)]*Log[c*(a + b*x)^n])/d - (Log[c*(a + b*x)^n]*Log[(b*(d + e*
x))/(b*d - a*e)])/d - (n*PolyLog[2, -((e*(a + b*x))/(b*d - a*e))])/d + (n*P
olyLog[2, 1 + (b*x)/a])/d
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 1593

```
Int[(u_.)*((a_.)*(x_)^(p_.) + (b_.)*(x_)^(q_.))^(n_.), x_Symbol] :> Int[u*x
^(n*p)*(a + b*x^(q - p))^n, x] /; FreeQ[{a, b, p, q}, x] && IntegerQ[n] &&
PosQ[q - p]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
```

```
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rubi steps

$$\begin{aligned}
\int \frac{\log(c(a+bx)^n)}{dx+ex^2}\,dx &= \int \frac{\log(c(a+bx)^n)}{x(d+ex)}\,dx \\
&= \int \left(\frac{\log(c(a+bx)^n)}{dx} - \frac{e\log(c(a+bx)^n)}{d(d+ex)}\right)dx \\
&= \frac{\int \frac{\log(c(a+bx)^n)}{x}\,dx}{d} - \frac{e\int \frac{\log(c(a+bx)^n)}{d+ex}\,dx}{d} \\
&= \frac{\log\left(-\frac{bx}{a}\right)\log(c(a+bx)^n)}{d} - \frac{\log(c(a+bx)^n)\log\left(\frac{b(d+ex)}{bd-ae}\right)}{d} - \frac{(bn)\int \frac{\log\left(-\frac{bx}{a}\right)}{a+bx}\,dx}{d} + \frac{(bn)\int
\end{aligned}$$

$$\begin{aligned}
&= \frac{\log\left(-\frac{bx}{a}\right)\log(c(a+bx)^n)}{d} - \frac{\log(c(a+bx)^n)\log\left(\frac{b(d+ex)}{bd-ae}\right)}{d} + \frac{n\mathrm{Li}_2\left(1+\frac{bx}{a}\right)}{d} + \frac{n\,\mathrm{Subst}\Big(
\end{aligned}$$

$$\begin{aligned}
&= \frac{\log\left(-\frac{bx}{a}\right)\log(c(a+bx)^n)}{d} - \frac{\log(c(a+bx)^n)\log\left(\frac{b(d+ex)}{bd-ae}\right)}{d} - \frac{n\mathrm{Li}_2\left(-\frac{e(a+bx)}{bd-ae}\right)}{d} + \frac{n\mathrm{Li}_2\big(1+}{d}
\end{aligned}$$

Mathematica [A] time = 0.02, size = 98, normalized size = 1.01

$$-\frac{\log(c(a+bx)^n)\log\left(\frac{b(d+ex)}{bd-ae}\right)}{d} + \frac{\log\left(-\frac{bx}{a}\right)\log(c(a+bx)^n)}{d} - \frac{n\mathrm{Li}_2\left(-\frac{e(a+bx)}{bd-ae}\right)}{d} + \frac{n\mathrm{Li}_2\left(\frac{a+bx}{a}\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(a + b*x)^n]/(d*x + e*x^2),x]
```

```
[Out] (Log[-((b*x)/a)]*Log[c*(a + b*x)^n])/d - (Log[c*(a + b*x)^n]*Log[(b*(d + e*
x))/(b*d - a*e)])/d + (n*PolyLog[2, (a + b*x)/a])/d - (n*PolyLog[2, -((e*(a
 + b*x))/(b*d - a*e))])/d
```

fricas [F] time = 0.42, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\log\left((bx+a)^n c\right)}{ex^2+dx}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)/(e*x^2+d*x),x, algorithm="fricas")
```

```
[Out] integral(log((b*x + a)^n*c)/(e*x^2 + d*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log\left((bx+a)^n c\right)}{ex^2+dx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)/(e*x^2+d*x),x, algorithm="giac")
```

```
[Out] integrate(log((b*x + a)^n*c)/(e*x^2 + d*x), x)
```

maple [C] time = 0.23, size = 420, normalized size = 4.33

$$-\frac{i\pi\,\mathrm{csgn}\left(ic\right)\mathrm{csgn}\left(i\left(bx+a\right)^n\right)\mathrm{csgn}\left(ic\left(bx+a\right)^n\right)\ln(x)}{2d}+\frac{i\pi\,\mathrm{csgn}\left(ic\right)\mathrm{csgn}\left(i\left(bx+a\right)^n\right)\mathrm{csgn}\left(ic\left(bx+a\right)^n\right)\ln}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(c*(b*x+a)^n)/(e*x^2+d*x),x)
```

```
[Out] ln((b*x+a)^n)/d*ln(x)-1/d*ln(e*x+d)*ln((b*x+a)^n)-n/d*dilog((b*x+a)/a)-n/d*
ln(x)*ln((b*x+a)/a)+n/d*dilog((a*e-b*d+(e*x+d)*b)/(a*e-b*d))+n/d*ln(e*x+d)*
ln((a*e-b*d+(e*x+d)*b)/(a*e-b*d))-1/2*I*Pi*csgn(I*c*(b*x+a)^n)^3/d*ln(x)-1/
2*I*Pi*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)^2/d*ln(e*x+d)-1/2*I*Pi*csgn(I*
(b*x+a)^n)*csgn(I*c*(b*x+a)^n)*csgn(I*c)/d*ln(x)+1/2*I*Pi*csgn(I*c*(b*x+a)^
n)^3/d*ln(e*x+d)-1/2*I*Pi*csgn(I*c*(b*x+a)^n)^2*csgn(I*c)/d*ln(e*x+d)+1/2*I
*Pi*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)*csgn(I*c)/d*ln(e*x+d)+1/2*I*Pi*cs
gn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)^2/d*ln(x)+1/2*I*Pi*csgn(I*c*(b*x+a)^n)^
2*csgn(I*c)/d*ln(x)+ln(c)/d*ln(x)-ln(c)/d*ln(e*x+d)
```

maxima [A] time = 0.68, size = 123, normalized size = 1.27

$$-bn\left(\frac{\log\left(\frac{bx}{a}+1\right)\log(x)+\mathrm{Li}_2\left(-\frac{bx}{a}\right)}{bd}-\frac{\log\left(ex+d\right)\log\left(-\frac{bex+bd}{bd-ae}+1\right)+\mathrm{Li}_2\left(\frac{bex+bd}{bd-ae}\right)}{bd}\right)-\left(\frac{\log\left(ex+d\right)}{d}-\frac{\log(x)}{d}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)/(e*x^2+d*x),x, algorithm="maxima")
```

```
[Out] -b*n*((log(b*x/a + 1)*log(x) + dilog(-b*x/a))/(b*d) - (log(e*x + d)*log(-(b
*e*x + b*d)/(b*d - a*e) + 1) + dilog((b*e*x + b*d)/(b*d - a*e)))/(b*d)) - (
log(e*x + d)/d - log(x)/d)*log((b*x + a)^n*c)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\ln\left(c\,\left(a+b\,x\right)^n\right)}{e\,x^2+d\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(c*(a + b*x)^n)/(d*x + e*x^2),x)
```

```
[Out] int(log(c*(a + b*x)^n)/(d*x + e*x^2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log\left(c\left(a+bx\right)^n\right)}{x\left(d+ex\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(c*(b*x+a)**n)/(e*x**2+d*x),x)
```

```
[Out] Integral(log(c*(a + b*x)**n)/(x*(d + e*x)), x)
```

3.346 $\int \frac{1}{(dx+ex^2)\log(c(a+bx)^n)}\,dx$

Optimal. Leaf size=53

$$\frac{\mathrm{Int}\left(\frac{1}{x\log(c(a+bx)^n)},x\right)}{d}-\frac{e\mathrm{Int}\left(\frac{1}{(d+ex)\log(c(a+bx)^n)},x\right)}{d}$$

```
[Out] Unintegrable(1/x/ln(c*(b*x+a)^n),x)/d-e*Unintegrable(1/(e*x+d)/ln(c*(b*x+a)
^n),x)/d
```

Rubi [A] time = 0.11, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(dx+ex^2)\log(c(a+bx)^n)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((d*x + e*x^2)*Log[c*(a + b*x)^n]),x]
```

```
[Out] Defer[Int][1/(x*Log[c*(a + b*x)^n]), x]/d - (e*Defer[Int][1/((d + e*x)*Log[
c*(a + b*x)^n]), x])/d
```

Rubi steps

$$\begin{aligned}\int \frac{1}{(dx+ex^2)\log(c(a+bx)^n)}\,dx &= \int \frac{1}{x(d+ex)\log(c(a+bx)^n)}\,dx\\ &= \int \left(\frac{1}{dx\log(c(a+bx)^n)}-\frac{e}{d(d+ex)\log(c(a+bx)^n)}\right)dx\\ &= \frac{\int \frac{1}{x\log(c(a+bx)^n)}\,dx}{d}-\frac{e\int \frac{1}{(d+ex)\log(c(a+bx)^n)}\,dx}{d}\end{aligned}$$

Mathematica [A] time = 0.70, size = 0, normalized size = 0.00

$$\int \frac{1}{(dx+ex^2)\log(c(a+bx)^n)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((d*x + e*x^2)*Log[c*(a + b*x)^n]),x]
```

```
[Out] Integrate[1/((d*x + e*x^2)*Log[c*(a + b*x)^n]), x]
```

fricas [A] time = 0.44, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{1}{(ex^2+dx)\log\left((bx+a)^n c\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x^2+d*x)/log(c*(b*x+a)^n),x, algorithm="fricas")
```

```
[Out] integral(1/((e*x^2 + d*x)*log((b*x + a)^n*c)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(ex^2 + dx\right)\log\left((bx + a)^n c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x^2+d*x)/log(c*(b*x+a)^n),x, algorithm="giac")
[Out] integrate(1/((e*x^2 + d*x)*log((b*x + a)^n*c)), x)
```

maple [A] time = 0.71, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(e\,x^2 + dx\right)\ln\left(c\,(bx + a)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(e*x^2+d*x)/ln(c*(b*x+a)^n),x)
[Out] int(1/(e*x^2+d*x)/ln(c*(b*x+a)^n),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(ex^2 + dx\right)\log\left((bx + a)^n c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x^2+d*x)/log(c*(b*x+a)^n),x, algorithm="maxima")
[Out] integrate(1/((e*x^2 + d*x)*log((b*x + a)^n*c)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{1}{\ln\left(c\,(a + b\,x)^n\right)\,\left(e\,x^2 + d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(log(c*(a + b*x)^n)*(d*x + e*x^2)),x)
[Out] int(1/(log(c*(a + b*x)^n)*(d*x + e*x^2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{x\,(d + ex)\log\left(c\,(a + bx)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x**2+d*x)/ln(c*(b*x+a)**n),x)
[Out] Integral(1/(x*(d + e*x)*log(c*(a + b*x)**n)), x)
```

3.347 $\int \frac{\log^3(c(a+bx)^n)}{d+ex+fx^2}\,dx$

Optimal. Leaf size=500

$$-\frac{6n^2\log\left(c(a+bx)^n\right)\text{Li}_3\left(\frac{2f(a+bx)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}}+\frac{6n^2\log\left(c(a+bx)^n\right)\text{Li}_3\left(\frac{2f(a+bx)}{2af-b\left(e+\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}}+\frac{3n\log^2\left(c(a+bx)^n\right)}{\sqrt{e^2}}$$

```
[Out] ln(c*(b*x+a)^n)^3*ln(-b*(e+2*f*x-(-4*d*f+e^2)^(1/2))/(2*a*f-b*(e-(-4*d*f+e^
2)^(1/2))))/(-4*d*f+e^2)^(1/2)-ln(c*(b*x+a)^n)^3*ln(-b*(e+2*f*x+(-4*d*f+e^2
)^(1/2))/(2*a*f-b*(e+(-4*d*f+e^2)^(1/2))))/(-4*d*f+e^2)^(1/2)+3*n*ln(c*(b*x
+a)^n)^2*polylog(2,2*f*(b*x+a)/(2*a*f-b*(e-(-4*d*f+e^2)^(1/2))))/(-4*d*f+e^
2)^(1/2)-3*n*ln(c*(b*x+a)^n)^2*polylog(2,2*f*(b*x+a)/(2*a*f-b*(e+(-4*d*f+e^
2)^(1/2))))/(-4*d*f+e^2)^(1/2)-6*n^2*ln(c*(b*x+a)^n)*polylog(3,2*f*(b*x+a)/
(2*a*f-b*(e-(-4*d*f+e^2)^(1/2))))/(-4*d*f+e^2)^(1/2)+6*n^2*ln(c*(b*x+a)^n)*
polylog(3,2*f*(b*x+a)/(2*a*f-b*(e+(-4*d*f+e^2)^(1/2))))/(-4*d*f+e^2)^(1/2)+
6*n^3*polylog(4,2*f*(b*x+a)/(2*a*f-b*(e-(-4*d*f+e^2)^(1/2))))/(-4*d*f+e^2)^
(1/2)-6*n^3*polylog(4,2*f*(b*x+a)/(2*a*f-b*(e+(-4*d*f+e^2)^(1/2))))/(-4*d*f
+e^2)^(1/2)
```

Rubi [A] time = 0.70, antiderivative size = 500, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 6, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.240$, Rules used = {2418, 2396, 2433, 2374, 2383, 6589}

$$-\frac{6n^2\log\left(c(a+bx)^n\right)\text{PolyLog}\left(3,\frac{2f(a+bx)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}}+\frac{6n^2\log\left(c(a+bx)^n\right)\text{PolyLog}\left(3,\frac{2f(a+bx)}{2af-b\left(\sqrt{e^2-4df}+e\right)}\right)}{\sqrt{e^2-4df}}+\frac{3n\,\mathrm{l}}{}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c*(a + b*x)^n]^3/(d + e*x + f*x^2),x]
```

```
[Out] (Log[c*(a + b*x)^n]^3*Log[-((b*(e - Sqrt[e^2 - 4*d*f] + 2*f*x))/(2*a*f - b*
(e - Sqrt[e^2 - 4*d*f])))])/Sqrt[e^2 - 4*d*f] - (Log[c*(a + b*x)^n]^3*Log[-
((b*(e + Sqrt[e^2 - 4*d*f] + 2*f*x))/(2*a*f - b*(e + Sqrt[e^2 - 4*d*f])))])
/Sqrt[e^2 - 4*d*f] + (3*n*Log[c*(a + b*x)^n]^2*PolyLog[2, (2*f*(a + b*x))/(
2*a*f - b*(e - Sqrt[e^2 - 4*d*f]))])/Sqrt[e^2 - 4*d*f] - (3*n*Log[c*(a + b*
x)^n]^2*PolyLog[2, (2*f*(a + b*x))/(2*a*f - b*(e + Sqrt[e^2 - 4*d*f]))])/Sq
rt[e^2 - 4*d*f] - (6*n^2*Log[c*(a + b*x)^n]*PolyLog[3, (2*f*(a + b*x))/(2*a
*f - b*(e - Sqrt[e^2 - 4*d*f]))])/Sqrt[e^2 - 4*d*f] + (6*n^2*Log[c*(a + b*x
)^n]*PolyLog[3, (2*f*(a + b*x))/(2*a*f - b*(e + Sqrt[e^2 - 4*d*f]))])/Sqrt[
e^2 - 4*d*f] + (6*n^3*PolyLog[4, (2*f*(a + b*x))/(2*a*f - b*(e - Sqrt[e^2 -
 4*d*f]))])/Sqrt[e^2 - 4*d*f] - (6*n^3*PolyLog[4, (2*f*(a + b*x))/(2*a*f -
b*(e + Sqrt[e^2 - 4*d*f]))])/Sqrt[e^2 - 4*d*f]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2383

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^p)/q
, x] - Dist[(b*n*p)/q, Int[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^(p - 1
```

```
))/x, x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\log^3(c(a+bx)^n)}{d+ex+fx^2}\,dx = \int \left(\frac{2f\log^3(c(a+bx)^n)}{\sqrt{e^2-4df}\left(e-\sqrt{e^2-4df}+2fx\right)} - \frac{2f\log^3(c(a+bx)^n)}{\sqrt{e^2-4df}\left(e+\sqrt{e^2-4df}+2fx\right)} \right) dx$$

$$= \frac{(2f)\int \frac{\log^3(c(a+bx)^n)}{e-\sqrt{e^2-4df}+2fx}\,dx}{\sqrt{e^2-4df}} - \frac{(2f)\int \frac{\log^3(c(a+bx)^n)}{e+\sqrt{e^2-4df}+2fx}\,dx}{\sqrt{e^2-4df}}$$

$$= \frac{\log^3(c(a+bx)^n)\log\left(-\frac{b\left(e-\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}} - \frac{\log^3(c(a+bx)^n)\log\left(-\frac{b\left(e+\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e+\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}}$$

$$= \frac{\log^3(c(a+bx)^n)\log\left(-\frac{b\left(e-\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}} - \frac{\log^3(c(a+bx)^n)\log\left(-\frac{b\left(e+\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e+\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}}$$

$$= \frac{\log^3(c(a+bx)^n)\log\left(-\frac{b\left(e-\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}} - \frac{\log^3(c(a+bx)^n)\log\left(-\frac{b\left(e+\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e+\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}}$$

$$= \frac{\log^3(c(a+bx)^n)\log\left(-\frac{b\left(e-\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}} - \frac{\log^3(c(a+bx)^n)\log\left(-\frac{b\left(e+\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e+\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}}$$

$$= \frac{\log^3(c(a+bx)^n)\log\left(-\frac{b\left(e-\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}} - \frac{\log^3(c(a+bx)^n)\log\left(-\frac{b\left(e+\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e+\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}}$$

Mathematica [A] time = 0.81, size = 993, normalized size = 1.99

$$\frac{-2\sqrt{e^2-4df}\,\tan^{-1}\left(\frac{e+2fx}{\sqrt{4df-e^2}}\right)\log^3(a+bx)n^3+\sqrt{4df-e^2}\,\log^3(a+bx)\log\left(1-\frac{2f(a+bx)}{-eb+\sqrt{e^2-4df}\,b+2af}\right)n^3-\sqrt{4df}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(a + b*x)^n]^3/(d + e*x + f*x^2),x]
```

```
[Out] (-2*Sqrt[e^2 - 4*d*f]*n^3*ArcTan[(e + 2*f*x)/Sqrt[-e^2 + 4*d*f]]*Log[a + b*
x]^3 + 6*Sqrt[e^2 - 4*d*f]*n^2*ArcTan[(e + 2*f*x)/Sqrt[-e^2 + 4*d*f]]*Log[a
 + b*x]^2*Log[c*(a + b*x)^n] - 6*Sqrt[e^2 - 4*d*f]*n*ArcTan[(e + 2*f*x)/Sqr
t[-e^2 + 4*d*f]]*Log[a + b*x]*Log[c*(a + b*x)^n]^2 + 2*Sqrt[e^2 - 4*d*f]*Ar
```

```
cTan[(e + 2*f*x)/Sqrt[-e^2 + 4*d*f]]*Log[c*(a + b*x)^n]^3 + Sqrt[-e^2 + 4*d
*f]*n^3*Log[a + b*x]^3*Log[1 - (2*f*(a + b*x))/(-(b*e) + 2*a*f + b*Sqrt[e^2
 - 4*d*f])] - 3*Sqrt[-e^2 + 4*d*f]*n^2*Log[a + b*x]^2*Log[c*(a + b*x)^n]*Lo
g[1 - (2*f*(a + b*x))/(-(b*e) + 2*a*f + b*Sqrt[e^2 - 4*d*f])] + 3*Sqrt[-e^2
 + 4*d*f]*n*Log[a + b*x]*Log[c*(a + b*x)^n]^2*Log[1 - (2*f*(a + b*x))/(-(b*
e) + 2*a*f + b*Sqrt[e^2 - 4*d*f])] - Sqrt[-e^2 + 4*d*f]*n^3*Log[a + b*x]^3*
Log[1 + (2*f*(a + b*x))/(-2*a*f + b*(e + Sqrt[e^2 - 4*d*f]))] + 3*Sqrt[-e^2
 + 4*d*f]*n^2*Log[a + b*x]^2*Log[c*(a + b*x)^n]*Log[1 + (2*f*(a + b*x))/(-2
*a*f + b*(e + Sqrt[e^2 - 4*d*f]))] - 3*Sqrt[-e^2 + 4*d*f]*n*Log[a + b*x]*Lo
g[c*(a + b*x)^n]^2*Log[1 + (2*f*(a + b*x))/(-2*a*f + b*(e + Sqrt[e^2 - 4*d*
f]))] + 3*Sqrt[-e^2 + 4*d*f]*n*Log[c*(a + b*x)^n]^2*PolyLog[2, (2*f*(a + b*
x))/(2*a*f + b*(-e + Sqrt[e^2 - 4*d*f]))] - 3*Sqrt[-e^2 + 4*d*f]*n*Log[c*(a
 + b*x)^n]^2*PolyLog[2, (2*f*(a + b*x))/(2*a*f - b*(e + Sqrt[e^2 - 4*d*f]))
] - 6*Sqrt[-e^2 + 4*d*f]*n^2*Log[c*(a + b*x)^n]*PolyLog[3, (2*f*(a + b*x))/
(-(b*e) + 2*a*f + b*Sqrt[e^2 - 4*d*f])] + 6*Sqrt[-e^2 + 4*d*f]*n^2*Log[c*(a
 + b*x)^n]*PolyLog[3, (2*f*(a + b*x))/(2*a*f - b*(e + Sqrt[e^2 - 4*d*f]))]
+ 6*Sqrt[-e^2 + 4*d*f]*n^3*PolyLog[4, (2*f*(a + b*x))/(-(b*e) + 2*a*f + b*S
qrt[e^2 - 4*d*f])] - 6*Sqrt[-e^2 + 4*d*f]*n^3*PolyLog[4, (2*f*(a + b*x))/(2
*a*f - b*(e + Sqrt[e^2 - 4*d*f]))])/Sqrt[-(e^2 - 4*d*f)^2]
```

fricas [F] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\log\left(\left(bx+a\right)^{n}c\right)^{3}}{fx^{2}+ex+d},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)^3/(f*x^2+e*x+d),x, algorithm="fricas")
```

```
[Out] integral(log((b*x + a)^n*c)^3/(f*x^2 + e*x + d), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log\left(\left(bx+a\right)^{n}c\right)^{3}}{fx^{2}+ex+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)^3/(f*x^2+e*x+d),x, algorithm="giac")
```

```
[Out] integrate(log((b*x + a)^n*c)^3/(f*x^2 + e*x + d), x)
```

maple [F] time = 27.24, size = 0, normalized size = 0.00

$$\int \frac{\ln\left(c\left(bx+a\right)^{n}\right)^{3}}{f\,x^{2}+ex+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(c*(b*x+a)^n)^3/(f*x^2+e*x+d),x)
```

```
[Out] int(ln(c*(b*x+a)^n)^3/(f*x^2+e*x+d),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)^3/(f*x^2+e*x+d),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*d*f-e^2>0)', see `assume?` for mo
re details)Is 4*d*f-e^2 positive or negative?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln \left(c\,(a+b\,x)^n\right)^3}{f\,x^2+e\,x+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(c*(a + b*x)^n)^3/(d + e*x + f*x^2),x)
```

```
[Out] int(log(c*(a + b*x)^n)^3/(d + e*x + f*x^2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(c*(b*x+a)**n)**3/(f*x**2+e*x+d),x)
```

```
[Out] Timed out
```

3.348 $\int \frac{\log^2(c(a+bx)^n)}{d+ex+fx^2} dx$

Optimal. Leaf size=372

$$\frac{2n\log\left(c(a+bx)^n\right)\text{Li}_2\left(\frac{2f(a+bx)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}}-\frac{2n\log\left(c(a+bx)^n\right)\text{Li}_2\left(\frac{2f(a+bx)}{2af-b\left(e+\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}}+\frac{\log^2\left(c(a+bx)^n\right)\log\left(-\frac{b(-}{2a}\right.}{\sqrt{e^2-4df}}$$

```
[Out] ln(c*(b*x+a)^n)^2*ln(-b*(e+2*f*x-(-4*d*f+e^2)^(1/2))/(2*a*f-b*(e-(-4*d*f+e^
2)^(1/2))))/(-4*d*f+e^2)^(1/2)-ln(c*(b*x+a)^n)^2*ln(-b*(e+2*f*x+(-4*d*f+e^2
)^(1/2))/(2*a*f-b*(e+(-4*d*f+e^2)^(1/2))))/(-4*d*f+e^2)^(1/2)+2*n*ln(c*(b*x
+a)^n)*polylog(2,2*f*(b*x+a)/(2*a*f-b*(e-(-4*d*f+e^2)^(1/2))))/(-4*d*f+e^2)
^(1/2)-2*n*ln(c*(b*x+a)^n)*polylog(2,2*f*(b*x+a)/(2*a*f-b*(e+(-4*d*f+e^2)^(
1/2))))/(-4*d*f+e^2)^(1/2)-2*n^2*polylog(3,2*f*(b*x+a)/(2*a*f-b*(e-(-4*d*f+
e^2)^(1/2))))/(-4*d*f+e^2)^(1/2)+2*n^2*polylog(3,2*f*(b*x+a)/(2*a*f-b*(e+(-
4*d*f+e^2)^(1/2))))/(-4*d*f+e^2)^(1/2)
```

Rubi [A] time = 0.41, antiderivative size = 372, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {2418, 2396, 2433, 2374, 6589}

$$\frac{2n\log\left(c(a+bx)^n\right)\text{PolyLog}\left(2,\frac{2f(a+bx)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}}-\frac{2n\log\left(c(a+bx)^n\right)\text{PolyLog}\left(2,\frac{2f(a+bx)}{2af-b\left(\sqrt{e^2-4df}+e\right)}\right)}{\sqrt{e^2-4df}}-\frac{2n^2\text{PolyLo}}{}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c*(a + b*x)^n]^2/(d + e*x + f*x^2),x]
```

```
[Out] (Log[c*(a + b*x)^n]^2*Log[-((b*(e - Sqrt[e^2 - 4*d*f] + 2*f*x))/(2*a*f - b*
(e - Sqrt[e^2 - 4*d*f])))])/Sqrt[e^2 - 4*d*f] - (Log[c*(a + b*x)^n]^2*Log[-
((b*(e + Sqrt[e^2 - 4*d*f] + 2*f*x))/(2*a*f - b*(e + Sqrt[e^2 - 4*d*f])))])
/Sqrt[e^2 - 4*d*f] + (2*n*Log[c*(a + b*x)^n]*PolyLog[2, (2*f*(a + b*x))/(2*
a*f - b*(e - Sqrt[e^2 - 4*d*f]))])/Sqrt[e^2 - 4*d*f] - (2*n*Log[c*(a + b*x)
^n]*PolyLog[2, (2*f*(a + b*x))/(2*a*f - b*(e + Sqrt[e^2 - 4*d*f]))])/Sqrt[e
^2 - 4*d*f] - (2*n^2*PolyLog[3, (2*f*(a + b*x))/(2*a*f - b*(e - Sqrt[e^2 -
4*d*f]))])/Sqrt[e^2 - 4*d*f] + (2*n^2*PolyLog[3, (2*f*(a + b*x))/(2*a*f - b
*(e + Sqrt[e^2 - 4*d*f]))])/Sqrt[e^2 - 4*d*f]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
```

```
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\log^2(c(a+bx)^n)}{d+ex+fx^2}\,dx = \int \left(\frac{2f\log^2(c(a+bx)^n)}{\sqrt{e^2-4df}\left(e-\sqrt{e^2-4df}+2fx\right)} - \frac{2f\log^2(c(a+bx)^n)}{\sqrt{e^2-4df}\left(e+\sqrt{e^2-4df}+2fx\right)}\right)dx$$

$$= \frac{(2f)\int \frac{\log^2(c(a+bx)^n)}{e-\sqrt{e^2-4df}+2fx}\,dx}{\sqrt{e^2-4df}} - \frac{(2f)\int \frac{\log^2(c(a+bx)^n)}{e+\sqrt{e^2-4df}+2fx}\,dx}{\sqrt{e^2-4df}}$$

$$= \frac{\log^2(c(a+bx)^n)\log\left(-\frac{b\left(e-\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}} - \frac{\log^2(c(a+bx)^n)\log\left(-\frac{b\left(e+\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e+\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}}$$

$$= \frac{\log^2(c(a+bx)^n)\log\left(-\frac{b\left(e-\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}} - \frac{\log^2(c(a+bx)^n)\log\left(-\frac{b\left(e+\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e+\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}}$$

$$= \frac{\log^2(c(a+bx)^n)\log\left(-\frac{b\left(e-\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}} - \frac{\log^2(c(a+bx)^n)\log\left(-\frac{b\left(e+\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e+\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}}$$

$$= \frac{\log^2(c(a+bx)^n)\log\left(-\frac{b\left(e-\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}} - \frac{\log^2(c(a+bx)^n)\log\left(-\frac{b\left(e+\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e+\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}}$$

Mathematica [A] time = 0.45, size = 655, normalized size = 1.76

$$\frac{2n\sqrt{4df-e^2}\log\left(c(a+bx)^n\right)\operatorname{Li}_2\left(\frac{2f(a+bx)}{2af+b\left(\sqrt{e^2-4df}-e\right)}\right)-2n\sqrt{4df-e^2}\log\left(c(a+bx)^n\right)\operatorname{Li}_2\left(\frac{2f(a+bx)}{2af-b\left(e+\sqrt{e^2-4df}\right)}\right)+2n\sqrt{\cdots}}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(a + b*x)^n]^2/(d + e*x + f*x^2),x]
```

```
[Out] (2*Sqrt[e^2 - 4*d*f]*n^2*ArcTan[(e + 2*f*x)/Sqrt[-e^2 + 4*d*f]]*Log[a + b*x
]^2 - 4*Sqrt[e^2 - 4*d*f]*n*ArcTan[(e + 2*f*x)/Sqrt[-e^2 + 4*d*f]]*Log[a +
b*x]*Log[c*(a + b*x)^n] + 2*Sqrt[e^2 - 4*d*f]*ArcTan[(e + 2*f*x)/Sqrt[-e^2
+ 4*d*f]]*Log[c*(a + b*x)^n]^2 - Sqrt[-e^2 + 4*d*f]*n^2*Log[a + b*x]^2*Log[
1 - (2*f*(a + b*x))/(-(b*e) + 2*a*f + b*Sqrt[e^2 - 4*d*f])] + 2*Sqrt[-e^2 +
 4*d*f]*n*Log[a + b*x]*Log[c*(a + b*x)^n]*Log[1 - (2*f*(a + b*x))/(-(b*e) +
 2*a*f + b*Sqrt[e^2 - 4*d*f])] + Sqrt[-e^2 + 4*d*f]*n^2*Log[a + b*x]^2*Log[
1 + (2*f*(a + b*x))/(-2*a*f + b*(e + Sqrt[e^2 - 4*d*f]))] - 2*Sqrt[-e^2 + 4
*d*f]*n*Log[a + b*x]*Log[c*(a + b*x)^n]*Log[1 + (2*f*(a + b*x))/(-2*a*f + b
*(e + Sqrt[e^2 - 4*d*f]))] + 2*Sqrt[-e^2 + 4*d*f]*n*Log[c*(a + b*x)^n]*Poly
Log[2, (2*f*(a + b*x))/(2*a*f + b*(-e + Sqrt[e^2 - 4*d*f]))] - 2*Sqrt[-e^2
+ 4*d*f]*n*Log[c*(a + b*x)^n]*PolyLog[2, (2*f*(a + b*x))/(2*a*f - b*(e + Sq
rt[e^2 - 4*d*f]))] - 2*Sqrt[-e^2 + 4*d*f]*n^2*PolyLog[3, (2*f*(a + b*x))/(-
(b*e) + 2*a*f + b*Sqrt[e^2 - 4*d*f])] + 2*Sqrt[-e^2 + 4*d*f]*n^2*PolyLog[3,
 (2*f*(a + b*x))/(2*a*f - b*(e + Sqrt[e^2 - 4*d*f]))])/Sqrt[-(e^2 - 4*d*f)^
2]
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\log\left((bx+a)^n c\right)^2}{fx^2+ex+d}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)^2/(f*x^2+e*x+d),x, algorithm="fricas")
```

```
[Out] integral(log((b*x + a)^n*c)^2/(f*x^2 + e*x + d), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log\left((bx+a)^n c\right)^2}{fx^2+ex+d}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)^2/(f*x^2+e*x+d),x, algorithm="giac")
```

```
[Out] integrate(log((b*x + a)^n*c)^2/(f*x^2 + e*x + d), x)
```

maple [F] time = 20.05, size = 0, normalized size = 0.00

$$\int \frac{\ln\left(c\,(bx+a)^n\right)^2}{f\,x^2+ex+d}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(c*(b*x+a)^n)^2/(f*x^2+e*x+d),x)
```

```
[Out] int(ln(c*(b*x+a)^n)^2/(f*x^2+e*x+d),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)^2/(f*x^2+e*x+d),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*d*f-e^2>0)', see `assume?` for mo
re details)Is 4*d*f-e^2 positive or negative?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln\left(c\,{\left(a+b\,x\right)}^n\right)^2}{f\,x^2+e\,x+d} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(c*(a + b*x)^n)^2/(d + e*x + f*x^2),x)
```

```
[Out] int(log(c*(a + b*x)^n)^2/(d + e*x + f*x^2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log\left(c\left(a+bx\right)^{n}\right)^{2}}{d+ex+fx^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(c*(b*x+a)**n)**2/(f*x**2+e*x+d),x)
```

```
[Out] Integral(log(c*(a + b*x)**n)**2/(d + e*x + f*x**2), x)
```

3.349 $\int \frac{\log(c(a+bx)^n)}{d+ex+fx^2}\,dx$

Optimal. Leaf size=243

$$\frac{\log\left(c(a+bx)^n\right)\log\left(-\frac{b\left(-\sqrt{e^2-4df}+e+2fx\right)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}}-\frac{\log\left(c(a+bx)^n\right)\log\left(-\frac{b\left(\sqrt{e^2-4df}+e+2fx\right)}{2af-b\left(\sqrt{e^2-4df}+e\right)}\right)}{\sqrt{e^2-4df}}+\frac{n\text{Li}_2\left(\frac{2f(a+bx)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}}-\frac{nL}{}$$

```
[Out] ln(c*(b*x+a)^n)*ln(-b*(e+2*f*x-(-4*d*f+e^2)^(1/2))/(2*a*f-b*(e-(-4*d*f+e^2)
^(1/2))))/(-4*d*f+e^2)^(1/2)-ln(c*(b*x+a)^n)*ln(-b*(e+2*f*x+(-4*d*f+e^2)^(1
/2))/(2*a*f-b*(e+(-4*d*f+e^2)^(1/2))))/(-4*d*f+e^2)^(1/2)+n*polylog(2,2*f*(
b*x+a)/(2*a*f-b*(e-(-4*d*f+e^2)^(1/2))))/(-4*d*f+e^2)^(1/2)-n*polylog(2,2*f
*(b*x+a)/(2*a*f-b*(e+(-4*d*f+e^2)^(1/2))))/(-4*d*f+e^2)^(1/2)
```

Rubi [A] time = 0.23, antiderivative size = 243, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.174, Rules used = {2418, 2394, 2393, 2391}

$$\frac{n\text{PolyLog}\left(2,\frac{2f(a+bx)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}}-\frac{n\text{PolyLog}\left(2,\frac{2f(a+bx)}{2af-b\left(\sqrt{e^2-4df}+e\right)}\right)}{\sqrt{e^2-4df}}+\frac{\log\left(c(a+bx)^n\right)\log\left(-\frac{b\left(-\sqrt{e^2-4df}+e+2fx\right)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}}-\frac{\log}{}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c*(a + b*x)^n]/(d + e*x + f*x^2),x]
```

```
[Out] (Log[c*(a + b*x)^n]*Log[-((b*(e - Sqrt[e^2 - 4*d*f] + 2*f*x))/(2*a*f - b*(e
 - Sqrt[e^2 - 4*d*f])))])/Sqrt[e^2 - 4*d*f] - (Log[c*(a + b*x)^n]*Log[-((b*
(e + Sqrt[e^2 - 4*d*f] + 2*f*x))/(2*a*f - b*(e + Sqrt[e^2 - 4*d*f])))])/Sqr
t[e^2 - 4*d*f] + (n*PolyLog[2, (2*f*(a + b*x))/(2*a*f - b*(e - Sqrt[e^2 - 4
*d*f]))])/Sqrt[e^2 - 4*d*f] - (n*PolyLog[2, (2*f*(a + b*x))/(2*a*f - b*(e +
 Sqrt[e^2 - 4*d*f]))])/Sqrt[e^2 - 4*d*f]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rubi steps

$$\int \frac{\log(c(a+bx)^n)}{d+ex+fx^2}\,dx = \int \left(\frac{2f\log(c(a+bx)^n)}{\sqrt{e^2-4df}\left(e-\sqrt{e^2-4df}+2fx\right)} - \frac{2f\log(c(a+bx)^n)}{\sqrt{e^2-4df}\left(e+\sqrt{e^2-4df}+2fx\right)}\right)dx$$

$$= \frac{(2f)\int \frac{\log(c(a+bx)^n)}{e-\sqrt{e^2-4df}+2fx}\,dx}{\sqrt{e^2-4df}} - \frac{(2f)\int \frac{\log(c(a+bx)^n)}{e+\sqrt{e^2-4df}+2fx}\,dx}{\sqrt{e^2-4df}}$$

$$= \frac{\log(c(a+bx)^n)\log\left(-\frac{b\left(e-\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}} - \frac{\log(c(a+bx)^n)\log\left(-\frac{b\left(e+\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e+\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}} -$$

$$= \frac{\log(c(a+bx)^n)\log\left(-\frac{b\left(e-\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}} - \frac{\log(c(a+bx)^n)\log\left(-\frac{b\left(e+\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e+\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}} -$$

$$= \frac{\log(c(a+bx)^n)\log\left(-\frac{b\left(e-\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}} - \frac{\log(c(a+bx)^n)\log\left(-\frac{b\left(e+\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e+\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}} +$$

Mathematica [A] time = 0.18, size = 194, normalized size = 0.80

$$\frac{\log(c(a+bx)^n)\left(\log\left(\frac{b\left(\sqrt{e^2-4df}-e-2fx\right)}{2af+b\sqrt{e^2-4df}+b(-e)}\right)-\log\left(\frac{b\left(\sqrt{e^2-4df}+e+2fx\right)}{b\left(\sqrt{e^2-4df}+e\right)-2af}\right)\right)+n\text{Li}_2\left(\frac{2f(a+bx)}{2af+b\left(\sqrt{e^2-4df}-e\right)}\right)-n\text{Li}_2\left(\frac{2f(a}{2af-b(e+}\right.}{\sqrt{e^2-4df}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(a + b*x)^n]/(d + e*x + f*x^2),x]
```

```
[Out] (Log[c*(a + b*x)^n]*(Log[(b*(-e + Sqrt[e^2 - 4*d*f] - 2*f*x))/(-(b*e) + 2*a
*f + b*Sqrt[e^2 - 4*d*f])] - Log[(b*(e + Sqrt[e^2 - 4*d*f] + 2*f*x))/(-2*a*
f + b*(e + Sqrt[e^2 - 4*d*f]))]) + n*PolyLog[2, (2*f*(a + b*x))/(2*a*f + b*
(-e + Sqrt[e^2 - 4*d*f]))] - n*PolyLog[2, (2*f*(a + b*x))/(2*a*f - b*(e + S
qrt[e^2 - 4*d*f]))])/Sqrt[e^2 - 4*d*f]
```

fricas [F] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\log\left((bx+a)^n c\right)}{fx^2+ex+d}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)/(f*x^2+e*x+d),x, algorithm="fricas")
```

```
[Out] integral(log((b*x + a)^n*c)/(f*x^2 + e*x + d), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log\left((bx+a)^n c\right)}{fx^2+ex+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)/(f*x^2+e*x+d),x, algorithm="giac")
```

```
[Out] integrate(log((b*x + a)^n*c)/(f*x^2 + e*x + d), x)
```

maple [C] time = 0.26, size = 689, normalized size = 2.84

$$\frac{bn\ln\left(\frac{2af-be-2(bx+a)f+\sqrt{-4b^2df+b^2e^2}}{2af-be+\sqrt{-4b^2df+b^2e^2}}\right)\ln(bx+a)}{\sqrt{-4b^2df+b^2e^2}}-\frac{bn\ln\left(\frac{-2af+be+2(bx+a)f+\sqrt{-4b^2df+b^2e^2}}{-2af+be+\sqrt{-4b^2df+b^2e^2}}\right)\ln(bx+a)}{\sqrt{-4b^2df+b^2e^2}}-\frac{i\pi\arctan\left(\frac{2fx}{\sqrt{4df}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(c*(b*x+a)^n)/(f*x^2+e*x+d),x)
```

```
[Out] 2*b*(-n*ln(b*x+a)+ln((b*x+a)^n))/(4*b^2*d*f-b^2*e^2)^(1/2)*arctan((2*(b*x+a
)*f-2*a*f+b*e)/(4*b^2*d*f-b^2*e^2)^(1/2))+b*n/(-4*b^2*d*f+b^2*e^2)^(1/2)*ln
(b*x+a)*ln((-2*(b*x+a)*f+2*a*f-b*e+(-4*b^2*d*f+b^2*e^2)^(1/2))/(2*a*f-b*e+(
-4*b^2*d*f+b^2*e^2)^(1/2)))-b*n/(-4*b^2*d*f+b^2*e^2)^(1/2)*ln(b*x+a)*ln((2*
(b*x+a)*f-2*a*f+b*e+(-4*b^2*d*f+b^2*e^2)^(1/2))/(-2*a*f+b*e+(-4*b^2*d*f+b^2
*e^2)^(1/2)))+b*n/(-4*b^2*d*f+b^2*e^2)^(1/2)*dilog((-2*(b*x+a)*f+2*a*f-b*e+
(-4*b^2*d*f+b^2*e^2)^(1/2))/(2*a*f-b*e+(-4*b^2*d*f+b^2*e^2)^(1/2)))-b*n/(-4
*b^2*d*f+b^2*e^2)^(1/2)*dilog((2*(b*x+a)*f-2*a*f+b*e+(-4*b^2*d*f+b^2*e^2)^(
1/2))/(-2*a*f+b*e+(-4*b^2*d*f+b^2*e^2)^(1/2)))+I/(4*d*f-e^2)^(1/2)*arctan((
2*f*x+e)/(4*d*f-e^2)^(1/2))*Pi*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)^2-I/(4
*d*f-e^2)^(1/2)*arctan((2*f*x+e)/(4*d*f-e^2)^(1/2))*Pi*csgn(I*(b*x+a)^n)*cs
gn(I*c*(b*x+a)^n)*csgn(I*c)-I/(4*d*f-e^2)^(1/2)*arctan((2*f*x+e)/(4*d*f-e^2
)^(1/2))*Pi*csgn(I*c*(b*x+a)^n)^3+I/(4*d*f-e^2)^(1/2)*arctan((2*f*x+e)/(4*d
*f-e^2)^(1/2))*Pi*csgn(I*c*(b*x+a)^n)^2*csgn(I*c)+2/(4*d*f-e^2)^(1/2)*arcta
n((2*f*x+e)/(4*d*f-e^2)^(1/2))*ln(c)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)/(f*x^2+e*x+d),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*d*f-e^2>0)', see `assume?` for mo
re details)Is 4*d*f-e^2 positive or negative?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln\left(c\,{\left(a+b\,x\right)}^n\right)}{f\,x^2+e\,x+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(c*(a + b*x)^n)/(d + e*x + f*x^2),x)
```

```
[Out] int(log(c*(a + b*x)^n)/(d + e*x + f*x^2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log\left(c\left(a+bx\right)^{n}\right)}{d+ex+fx^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(c*(b*x+a)**n)/(f*x**2+e*x+d),x)
```

```
[Out] Integral(log(c*(a + b*x)**n)/(d + e*x + f*x**2), x)
```

3.350 $\int \frac{1}{(d+ex+fx^2)\log(c(a+bx)^n)}\,dx$

Optimal. Leaf size=105

$$\frac{2f\text{Int}\left(\frac{1}{\left(-\sqrt{e^2-4df}+e+2fx\right)\log(c(a+bx)^n)},x\right)}{\sqrt{e^2-4df}}-\frac{2f\text{Int}\left(\frac{1}{\left(\sqrt{e^2-4df}+e+2fx\right)\log(c(a+bx)^n)},x\right)}{\sqrt{e^2-4df}}$$

```
[Out] 2*f*Unintegrable(1/ln(c*(b*x+a)^n)/(e+2*f*x-(-4*d*f+e^2)^(1/2)),x)/(-4*d*f+
e^2)^(1/2)-2*f*Unintegrable(1/ln(c*(b*x+a)^n)/(e+2*f*x+(-4*d*f+e^2)^(1/2)),
x)/(-4*d*f+e^2)^(1/2)
```

Rubi [A] time = 0.20, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{\left(d+ex+fx^2\right)\log\left(c(a+bx)^n\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((d + e*x + f*x^2)*Log[c*(a + b*x)^n]),x]
```

```
[Out] (2*f*Defer[Int][1/((e - Sqrt[e^2 - 4*d*f] + 2*f*x)*Log[c*(a + b*x)^n]), x])
/Sqrt[e^2 - 4*d*f] - (2*f*Defer[Int][1/((e + Sqrt[e^2 - 4*d*f] + 2*f*x)*Log
[c*(a + b*x)^n]), x])/Sqrt[e^2 - 4*d*f]
```

Rubi steps

$$\int \frac{1}{\left(d+ex+fx^2\right)\log\left(c(a+bx)^n\right)}\,dx=\int \left(\frac{2f}{\sqrt{e^2-4df}\left(e-\sqrt{e^2-4df}+2fx\right)\log\left(c(a+bx)^n\right)}-\frac{}{\sqrt{e^2-4df}\ (}\right.$$

$$=\frac{(2f)\int \frac{1}{\left(e-\sqrt{e^2-4df}+2fx\right)\log(c(a+bx)^n)}\,dx}{\sqrt{e^2-4df}}-\frac{(2f)\int \frac{1}{\left(e+\sqrt{e^2-4df}+2fx\right)\log(c(a+bx}}{\sqrt{e^2-4df}}$$

Mathematica [A] time = 0.60, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(d+ex+fx^2\right)\log\left(c(a+bx)^n\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((d + e*x + f*x^2)*Log[c*(a + b*x)^n]),x]
```

```
[Out] Integrate[1/((d + e*x + f*x^2)*Log[c*(a + b*x)^n]), x]
```

fricas [A] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{1}{\left(fx^2+ex+d\right)\log\left((bx+a)^n c\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(f*x^2+e*x+d)/log(c*(b*x+a)^n),x, algorithm="fricas")
```

```
[Out] integral(1/((f*x^2 + e*x + d)*log((b*x + a)^n*c)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(fx^2 + ex + d)\log\left((bx + a)^n c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(f*x^2+e*x+d)/log(c*(b*x+a)^n),x, algorithm="giac")
[Out] integrate(1/((f*x^2 + e*x + d)*log((b*x + a)^n*c)), x)
```

maple [A] time = 1.46, size = 0, normalized size = 0.00

$$\int \frac{1}{(f\,x^2 + ex + d)\ln\left(c\,(bx + a)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(f*x^2+e*x+d)/ln(c*(b*x+a)^n),x)
[Out] int(1/(f*x^2+e*x+d)/ln(c*(b*x+a)^n),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(fx^2 + ex + d)\log\left((bx + a)^n c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(f*x^2+e*x+d)/log(c*(b*x+a)^n),x, algorithm="maxima")
[Out] integrate(1/((f*x^2 + e*x + d)*log((b*x + a)^n*c)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{\ln\left(c\,(a + b\,x)^n\right)\,(f\,x^2 + e\,x + d)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(log(c*(a + b*x)^n)*(d + e*x + f*x^2)),x)
[Out] int(1/(log(c*(a + b*x)^n)*(d + e*x + f*x^2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(f*x**2+e*x+d)/ln(c*(b*x+a)**n),x)
[Out] Timed out
```

3.351 $\int \frac{x^3 \log(x)}{a+bx+cx^2}\,dx$

Optimal. Leaf size=286

$$\frac{\left(-\frac{b(b^2-3ac)}{\sqrt{b^2-4ac}}-ac+b^2\right)\text{Li}_2\left(-\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2c^3}+\frac{\left(\frac{b(b^2-3ac)}{\sqrt{b^2-4ac}}-ac+b^2\right)\text{Li}_2\left(-\frac{2cx}{b+\sqrt{b^2-4ac}}\right)}{2c^3}+\frac{\log(x)\left(-\frac{b(b^2-3ac)}{\sqrt{b^2-4ac}}-ac+b^2\right)}{2c^3}$$

```
[Out] b*x/c^2-1/4*x^2/c-b*x*ln(x)/c^2+1/2*x^2*ln(x)/c+1/2*ln(x)*ln(1+2*c*x/(b-(-4
*a*c+b^2)^(1/2)))*(b^2-a*c-b*(-3*a*c+b^2)/(-4*a*c+b^2)^(1/2))/c^3+1/2*polyl
og(2,-2*c*x/(b-(-4*a*c+b^2)^(1/2)))*(b^2-a*c-b*(-3*a*c+b^2)/(-4*a*c+b^2)^(1
/2))/c^3+1/2*ln(x)*ln(1+2*c*x/(b+(-4*a*c+b^2)^(1/2)))*(b^2-a*c+b*(-3*a*c+b^
2)/(-4*a*c+b^2)^(1/2))/c^3+1/2*polylog(2,-2*c*x/(b+(-4*a*c+b^2)^(1/2)))*(b^
2-a*c+b*(-3*a*c+b^2)/(-4*a*c+b^2)^(1/2))/c^3
```

Rubi [A] time = 0.44, antiderivative size = 286, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {2357, 2295, 2304, 2317, 2391}

$$\frac{\left(-\frac{b(b^2-3ac)}{\sqrt{b^2-4ac}}-ac+b^2\right)\text{PolyLog}\left(2,-\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2c^3}+\frac{\left(\frac{b(b^2-3ac)}{\sqrt{b^2-4ac}}-ac+b^2\right)\text{PolyLog}\left(2,-\frac{2cx}{\sqrt{b^2-4ac}+b}\right)}{2c^3}+\log(x)\left(-\frac{b(b^2}{\sqrt{b^2}}\right.$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*Log[x])/(a + b*x + c*x^2),x]
```

```
[Out] (b*x)/c^2 - x^2/(4*c) - (b*x*Log[x])/c^2 + (x^2*Log[x])/(2*c) + ((b^2 - a*c
 - (b*(b^2 - 3*a*c))/Sqrt[b^2 - 4*a*c])*Log[x]*Log[1 + (2*c*x)/(b - Sqrt[b^
2 - 4*a*c])])/(2*c^3) + ((b^2 - a*c + (b*(b^2 - 3*a*c))/Sqrt[b^2 - 4*a*c])*
Log[x]*Log[1 + (2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/(2*c^3) + ((b^2 - a*c - (b
*(b^2 - 3*a*c))/Sqrt[b^2 - 4*a*c])*PolyLog[2, (-2*c*x)/(b - Sqrt[b^2 - 4*a*
c])])/(2*c^3) + ((b^2 - a*c + (b*(b^2 - 3*a*c))/Sqrt[b^2 - 4*a*c])*PolyLog[
2, (-2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/(2*c^3)
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2357

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] :> With[{
u = ExpandIntegrand[(a + b*Log[c*x^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /
; FreeQ[{a, b, c, n}, x] && RationalFunctionQ[RFx, x] && IGtQ[p, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{x^3\log(x)}{a+bx+cx^2}\,dx = \int\left(-\frac{b\log(x)}{c^2}+\frac{x\log(x)}{c}+\frac{\left(ab+\left(b^2-ac\right)x\right)\log(x)}{c^2\left(a+bx+cx^2\right)}\right)dx$$

$$= \frac{\int\frac{\left(ab+\left(b^2-ac\right)x\right)\log(x)}{a+bx+cx^2}\,dx}{c^2}-\frac{b\int\log(x)\,dx}{c^2}+\frac{\int x\log(x)\,dx}{c}$$

$$= \frac{bx}{c^2}-\frac{x^2}{4c}-\frac{bx\log(x)}{c^2}+\frac{x^2\log(x)}{2c}+\frac{\int\left(\frac{\left(b^2-ac+\frac{b\left(-b^2+3ac\right)}{\sqrt{b^2-4ac}}\right)\log(x)}{b-\sqrt{b^2-4ac}+2cx}+\frac{\left(b^2-ac-\frac{b\left(-b^2+3ac\right)}{\sqrt{b^2-4ac}}\right)\log(x)}{b+\sqrt{b^2-4ac}+2cx}\right)dx}{c^2}$$

$$= \frac{bx}{c^2}-\frac{x^2}{4c}-\frac{bx\log(x)}{c^2}+\frac{x^2\log(x)}{2c}+\frac{\left(b^2-ac-\frac{b\left(b^2-3ac\right)}{\sqrt{b^2-4ac}}\right)\int\frac{\log(x)}{b-\sqrt{b^2-4ac}+2cx}\,dx}{c^2}+\frac{\left(b^2-ac+\frac{b(\cdots}{\sqrt{\cdots}}\right.}{}$$

$$= \frac{bx}{c^2}-\frac{x^2}{4c}-\frac{bx\log(x)}{c^2}+\frac{x^2\log(x)}{2c}+\frac{\left(b^2-ac-\frac{b\left(b^2-3ac\right)}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(1+\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2c^3}+\frac{\left(b^2-\cdots\right.}{}$$

$$= \frac{bx}{c^2}-\frac{x^2}{4c}-\frac{bx\log(x)}{c^2}+\frac{x^2\log(x)}{2c}+\frac{\left(b^2-ac-\frac{b\left(b^2-3ac\right)}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(1+\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2c^3}+\frac{\left(b^2-\cdots\right.}{}$$

Mathematica [A] time = 0.69, size = 464, normalized size = 1.62

$$\frac{2\left(b^2-ac\right)\left(1-\frac{b}{\sqrt{b^2-4ac}}\right)\mathrm{Li}_2\left(\frac{2cx}{\sqrt{b^2-4ac}-b}\right)+\frac{4abc\,\mathrm{Li}_2\left(\frac{2cx}{\sqrt{b^2-4ac}-b}\right)}{\sqrt{b^2-4ac}}+2\left(b^2-ac\right)\left(\frac{b}{\sqrt{b^2-4ac}}+1\right)\mathrm{Li}_2\left(-\frac{2cx}{b+\sqrt{b^2-4ac}}\right)-\frac{4abc\,\mathrm{Li}_2\cdots}{\cdots}}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*Log[x])/(a + b*x + c*x^2),x]
```

```
[Out] (4*b*c*x - c^2*x^2 - 4*b*c*x*Log[x] + 2*c^2*x^2*Log[x] + (4*a*b*c*Log[x]*Lo
g[(b - Sqrt[b^2 - 4*a*c] + 2*c*x)/(b - Sqrt[b^2 - 4*a*c])])/Sqrt[b^2 - 4*a*
c] + 2*(b^2 - a*c)*(1 - b/Sqrt[b^2 - 4*a*c])*Log[x]*Log[(b - Sqrt[b^2 - 4*a
*c] + 2*c*x)/(b - Sqrt[b^2 - 4*a*c])] - (4*a*b*c*Log[x]*Log[(b + Sqrt[b^2 -
 4*a*c] + 2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/Sqrt[b^2 - 4*a*c] + 2*(b^2 - a*c
)*(1 + b/Sqrt[b^2 - 4*a*c])*Log[x]*Log[(b + Sqrt[b^2 - 4*a*c] + 2*c*x)/(b +
 Sqrt[b^2 - 4*a*c])] + (4*a*b*c*PolyLog[2, (2*c*x)/(-b + Sqrt[b^2 - 4*a*c])
])/Sqrt[b^2 - 4*a*c] + 2*(b^2 - a*c)*(1 - b/Sqrt[b^2 - 4*a*c])*PolyLog[2, (
2*c*x)/(-b + Sqrt[b^2 - 4*a*c])] - (4*a*b*c*PolyLog[2, (-2*c*x)/(b + Sqrt[b
^2 - 4*a*c])])/Sqrt[b^2 - 4*a*c] + 2*(b^2 - a*c)*(1 + b/Sqrt[b^2 - 4*a*c])*
PolyLog[2, (-2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/(4*c^3)
```

fricas [F] time = 0.43, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{x^3\log(x)}{cx^2+bx+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*log(x)/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] integral(x^3*log(x)/(c*x^2 + b*x + a), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^3 \log(x)}{cx^2 + bx + a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*log(x)/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] integrate(x^3*log(x)/(c*x^2 + b*x + a), x)
```

maple [B] time = 0.05, size = 791, normalized size = 2.77

$$-\frac{3ab\ln(x)\ln\left(\frac{2cx+b+\sqrt{-4ac+b^2}}{b+\sqrt{-4ac+b^2}}\right)}{2\sqrt{-4ac+b^2}\,c^2}+\frac{3ab\ln(x)\ln\left(\frac{-2cx-b+\sqrt{-4ac+b^2}}{-b+\sqrt{-4ac+b^2}}\right)}{2\sqrt{-4ac+b^2}\,c^2}+\frac{b^3\ln(x)\ln\left(\frac{2cx+b+\sqrt{-4ac+b^2}}{b+\sqrt{-4ac+b^2}}\right)}{2\sqrt{-4ac+b^2}\,c^3}-\frac{b^3\ln(x)\ln\left(\frac{-2c}{-}\right.}{2\sqrt{-4ac}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*ln(x)/(c*x^2+b*x+a),x)
```

```
[Out] 1/2*x^2*ln(x)/c-1/4/c*x^2-b*x*ln(x)/c^2+b*x/c^2-1/2/c^2*ln(x)*ln((-2*c*x+(-
4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b^2)^(1/2)))*a+1/2/c^3*ln(x)*ln((-2*c*x+(-4
*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b^2)^(1/2)))*b^2+3/2/c^2*ln(x)/(-4*a*c+b^2)^
(1/2)*ln((-2*c*x+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b^2)^(1/2)))*a*b-1/2/c^3
*ln(x)/(-4*a*c+b^2)^(1/2)*ln((-2*c*x+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b^2)
^(1/2)))*b^3-1/2/c^2*ln(x)*ln((b+2*c*x+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^
(1/2)))*a+1/2/c^3*ln(x)*ln((b+2*c*x+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/
2)))*b^2-3/2/c^2*ln(x)/(-4*a*c+b^2)^(1/2)*ln((b+2*c*x+(-4*a*c+b^2)^(1/2))/(
b+(-4*a*c+b^2)^(1/2)))*a*b+1/2/c^3*ln(x)/(-4*a*c+b^2)^(1/2)*ln((b+2*c*x+(-4
*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))*b^3-1/2/c^2*dilog((-2*c*x+(-4*a*c+
b^2)^(1/2)-b)/(-b+(-4*a*c+b^2)^(1/2)))*a+1/2/c^3*dilog((-2*c*x+(-4*a*c+b^2)
^(1/2)-b)/(-b+(-4*a*c+b^2)^(1/2)))*b^2+3/2/c^2/(-4*a*c+b^2)^(1/2)*dilog((-2
*c*x+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b^2)^(1/2)))*a*b-1/2/c^3/(-4*a*c+b^2
)^(1/2)*dilog((-2*c*x+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b^2)^(1/2)))*b^3-1/
2/c^2*dilog((b+2*c*x+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))*a+1/2/c^3*
dilog((b+2*c*x+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))*b^2-3/2/c^2/(-4*
a*c+b^2)^(1/2)*dilog((b+2*c*x+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))*a
*b+1/2/c^3/(-4*a*c+b^2)^(1/2)*dilog((b+2*c*x+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c
+b^2)^(1/2)))*b^3
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*log(x)/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^3\,\ln(x)}{c\,x^2+b\,x+a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*log(x))/(a + b*x + c*x^2),x)
```

```
[Out] int((x^3*log(x))/(a + b*x + c*x^2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*ln(x)/(c*x**2+b*x+a),x)
```

```
[Out] Timed out
```

3.352 $\int \frac{x^2 \log(x)}{a+bx+cx^2} dx$

Optimal. Leaf size=234

$$-\frac{\left(b-\frac{b^2-2ac}{\sqrt{b^2-4ac}}\right)\text{Li}_2\left(-\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2c^2}-\frac{\left(\frac{b^2-2ac}{\sqrt{b^2-4ac}}+b\right)\text{Li}_2\left(-\frac{2cx}{b+\sqrt{b^2-4ac}}\right)}{2c^2}-\frac{\log(x)\left(b-\frac{b^2-2ac}{\sqrt{b^2-4ac}}\right)\log\left(\frac{2cx}{b-\sqrt{b^2-4ac}}+1\right)}{2c^2}-$$

```
[Out] -x/c+x*ln(x)/c-1/2*ln(x)*ln(1+2*c*x/(b-(-4*a*c+b^2)^(1/2)))*(b+(2*a*c-b^2)/
(-4*a*c+b^2)^(1/2))/c^2-1/2*polylog(2,-2*c*x/(b-(-4*a*c+b^2)^(1/2)))*(b+(2*
a*c-b^2)/(-4*a*c+b^2)^(1/2))/c^2-1/2*ln(x)*ln(1+2*c*x/(b+(-4*a*c+b^2)^(1/2)
))*(b+(-2*a*c+b^2)/(-4*a*c+b^2)^(1/2))/c^2-1/2*polylog(2,-2*c*x/(b+(-4*a*c+
b^2)^(1/2)))*(b+(-2*a*c+b^2)/(-4*a*c+b^2)^(1/2))/c^2
```

Rubi [A] time = 0.36, antiderivative size = 234, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {2357, 2295, 2317, 2391}

$$-\frac{\left(b-\frac{b^2-2ac}{\sqrt{b^2-4ac}}\right)\text{PolyLog}\left(2,-\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2c^2}-\frac{\left(\frac{b^2-2ac}{\sqrt{b^2-4ac}}+b\right)\text{PolyLog}\left(2,-\frac{2cx}{\sqrt{b^2-4ac}+b}\right)}{2c^2}-\frac{\log(x)\left(b-\frac{b^2-2ac}{\sqrt{b^2-4ac}}\right)\log\left(\right.}{2c^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*Log[x])/(a + b*x + c*x^2),x]
```

```
[Out] -(x/c) + (x*Log[x])/c - ((b - (b^2 - 2*a*c)/Sqrt[b^2 - 4*a*c])*Log[x]*Log[1
 + (2*c*x)/(b - Sqrt[b^2 - 4*a*c])])/(2*c^2) - ((b + (b^2 - 2*a*c)/Sqrt[b^2
 - 4*a*c])*Log[x]*Log[1 + (2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/(2*c^2) - ((b -
 (b^2 - 2*a*c)/Sqrt[b^2 - 4*a*c])*PolyLog[2, (-2*c*x)/(b - Sqrt[b^2 - 4*a*c
])])/(2*c^2) - ((b + (b^2 - 2*a*c)/Sqrt[b^2 - 4*a*c])*PolyLog[2, (-2*c*x)/(
b + Sqrt[b^2 - 4*a*c])])/(2*c^2)
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2357

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] :> With[{
u = ExpandIntegrand[(a + b*Log[c*x^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /
; FreeQ[{a, b, c, n}, x] && RationalFunctionQ[RFx, x] && IGtQ[p, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{x^2 \log(x)}{a+bx+cx^2}\,dx = \int \left(\frac{\log(x)}{c} - \frac{(a+bx)\log(x)}{c\left(a+bx+cx^2\right)}\right)dx$$
$$= \frac{\int \log(x)\,dx}{c} - \frac{\int \frac{(a+bx)\log(x)}{a+bx+cx^2}\,dx}{c}$$
$$= -\frac{x}{c} + \frac{x\log(x)}{c} - \frac{\int \left(\frac{\left(b+\frac{-b^2+2ac}{\sqrt{b^2-4ac}}\right)\log(x)}{b-\sqrt{b^2-4ac}+2cx} + \frac{\left(b-\frac{-b^2+2ac}{\sqrt{b^2-4ac}}\right)\log(x)}{b+\sqrt{b^2-4ac}+2cx}\right)dx}{c}$$
$$= -\frac{x}{c} + \frac{x\log(x)}{c} - \frac{\left(b-\frac{b^2-2ac}{\sqrt{b^2-4ac}}\right)\int \frac{\log(x)}{b-\sqrt{b^2-4ac}+2cx}\,dx}{c} - \frac{\left(b+\frac{b^2-2ac}{\sqrt{b^2-4ac}}\right)\int \frac{\log(x)}{b+\sqrt{b^2-4ac}+2cx}\,dx}{c}$$
$$= -\frac{x}{c} + \frac{x\log(x)}{c} - \frac{\left(b-\frac{b^2-2ac}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(1+\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2c^2} - \frac{\left(b+\frac{b^2-2ac}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(1+\cdots\right.}{2c^2}$$
$$= -\frac{x}{c} + \frac{x\log(x)}{c} - \frac{\left(b-\frac{b^2-2ac}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(1+\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2c^2} - \frac{\left(b+\frac{b^2-2ac}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(1+\cdots\right.}{2c^2}$$

Mathematica [A] time = 0.28, size = 434, normalized size = 1.85

$$-\frac{b\left(1-\frac{b}{\sqrt{b^2-4ac}}\right)\mathrm{Li}_2\left(-\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2c^2} - \frac{b\left(\frac{b}{\sqrt{b^2-4ac}}+1\right)\mathrm{Li}_2\left(-\frac{2cx}{b+\sqrt{b^2-4ac}}\right)}{2c^2} - \frac{b\log(x)\left(1-\frac{b}{\sqrt{b^2-4ac}}\right)\log\left(\frac{-\sqrt{b^2-4ac}+b+2cx}{b-\sqrt{b^2-4ac}}\right)\cdots}{2c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*Log[x])/(a + b*x + c*x^2),x]
```

```
[Out] -(x/c) + (x*Log[x])/c - (a*Log[x]*Log[(b - Sqrt[b^2 - 4*a*c] + 2*c*x)/(b -
Sqrt[b^2 - 4*a*c])])/(c*Sqrt[b^2 - 4*a*c]) - (b*(1 - b/Sqrt[b^2 - 4*a*c])*L
og[x]*Log[(b - Sqrt[b^2 - 4*a*c] + 2*c*x)/(b - Sqrt[b^2 - 4*a*c])])/(2*c^2)
 + (a*Log[x]*Log[(b + Sqrt[b^2 - 4*a*c] + 2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/
(c*Sqrt[b^2 - 4*a*c]) - (b*(1 + b/Sqrt[b^2 - 4*a*c])*Log[x]*Log[(b + Sqrt[b
^2 - 4*a*c] + 2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/(2*c^2) - (a*PolyLog[2, (-2*
c*x)/(b - Sqrt[b^2 - 4*a*c])])/(c*Sqrt[b^2 - 4*a*c]) - (b*(1 - b/Sqrt[b^2 -
 4*a*c])*PolyLog[2, (-2*c*x)/(b - Sqrt[b^2 - 4*a*c])])/(2*c^2) + (a*PolyLog
[2, (-2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/(c*Sqrt[b^2 - 4*a*c]) - (b*(1 + b/Sq
rt[b^2 - 4*a*c])*PolyLog[2, (-2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/(2*c^2)
```

fricas [F] time = 0.43, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(\frac{x^2\log(x)}{cx^2+bx+a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(x)/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] integral(x^2*log(x)/(c*x^2 + b*x + a), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2\log(x)}{cx^2+bx+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(x)/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] integrate(x^2*log(x)/(c*x^2 + b*x + a), x)
```

maple [B] time = 0.05, size = 593, normalized size = 2.53

$$\frac{a\ln(x)\ln\left(\frac{2cx+b+\sqrt{-4ac+b^2}}{b+\sqrt{-4ac+b^2}}\right)}{\sqrt{-4ac+b^2}\,c}-\frac{a\ln(x)\ln\left(\frac{-2cx-b+\sqrt{-4ac+b^2}}{-b+\sqrt{-4ac+b^2}}\right)}{\sqrt{-4ac+b^2}\,c}-\frac{b^2\ln(x)\ln\left(\frac{2cx+b+\sqrt{-4ac+b^2}}{b+\sqrt{-4ac+b^2}}\right)}{2\sqrt{-4ac+b^2}\,c^2}+\frac{b^2\ln(x)\ln\left(\frac{-2cx-b+\sqrt{-4ac+b^2}}{-b+\sqrt{-4ac+b^2}}\right)}{2\sqrt{-4ac+b^2}\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*ln(x)/(c*x^2+b*x+a),x)
```

```
[Out] x*ln(x)/c-1/c*x-1/2/c^2*ln(x)*ln((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b+(-4*a*c+
b^2)^(1/2)))*b-1/c*ln(x)/(-4*a*c+b^2)^(1/2)*ln((-2*c*x-b+(-4*a*c+b^2)^(1/2)
)/(-b+(-4*a*c+b^2)^(1/2)))*a+1/2/c^2*ln(x)/(-4*a*c+b^2)^(1/2)*ln((-2*c*x-b+
(-4*a*c+b^2)^(1/2))/(-b+(-4*a*c+b^2)^(1/2)))*b^2-1/2/c^2*ln(x)*ln((2*c*x+b+
(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))*b+1/c*ln(x)/(-4*a*c+b^2)^(1/2)*
ln((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))*a-1/2/c^2*ln(x)/(-4
*a*c+b^2)^(1/2)*ln((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))*b^2
-1/2/c^2*dilog((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b+(-4*a*c+b^2)^(1/2)))*b-1/c
/(-4*a*c+b^2)^(1/2)*dilog((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b+(-4*a*c+b^2)^(1
/2)))*a+1/2/c^2/(-4*a*c+b^2)^(1/2)*dilog((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b+
(-4*a*c+b^2)^(1/2)))*b^2-1/2/c^2*dilog((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*
a*c+b^2)^(1/2)))*b+1/c/(-4*a*c+b^2)^(1/2)*dilog((2*c*x+b+(-4*a*c+b^2)^(1/2)
)/(b+(-4*a*c+b^2)^(1/2)))*a-1/2/c^2/(-4*a*c+b^2)^(1/2)*dilog((2*c*x+b+(-4*a
*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))*b^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(x)/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^2\,\ln(x)}{c\,x^2+b\,x+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*log(x))/(a + b*x + c*x^2),x)
```

```
[Out] int((x^2*log(x))/(a + b*x + c*x^2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*ln(x)/(c*x**2+b*x+a),x)
```

```
[Out] Timed out
```

3.353 $\int \frac{x \log(x)}{a+bx+cx^2} dx$

Optimal. Leaf size=193

$$\frac{\left(1-\frac{b}{\sqrt{b^2-4ac}}\right)\text{Li}_2\left(-\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2c}+\frac{\left(\frac{b}{\sqrt{b^2-4ac}}+1\right)\text{Li}_2\left(-\frac{2cx}{b+\sqrt{b^2-4ac}}\right)}{2c}+\frac{\log(x)\left(1-\frac{b}{\sqrt{b^2-4ac}}\right)\log\left(\frac{2cx}{b-\sqrt{b^2-4ac}}+1\right)}{2c}+\log($$

```
[Out] 1/2*ln(x)*ln(1+2*c*x/(b-(-4*a*c+b^2)^(1/2)))*(1-b/(-4*a*c+b^2)^(1/2))/c+1/2
*polylog(2,-2*c*x/(b-(-4*a*c+b^2)^(1/2)))*(1-b/(-4*a*c+b^2)^(1/2))/c+1/2*ln
(x)*ln(1+2*c*x/(b+(-4*a*c+b^2)^(1/2)))*(1+b/(-4*a*c+b^2)^(1/2))/c+1/2*polyl
og(2,-2*c*x/(b+(-4*a*c+b^2)^(1/2)))*(1+b/(-4*a*c+b^2)^(1/2))/c
```

Rubi [A] time = 0.18, antiderivative size = 193, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188, Rules used = {2357, 2317, 2391}

$$\frac{\left(1-\frac{b}{\sqrt{b^2-4ac}}\right)\text{PolyLog}\left(2,-\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2c}+\frac{\left(\frac{b}{\sqrt{b^2-4ac}}+1\right)\text{PolyLog}\left(2,-\frac{2cx}{\sqrt{b^2-4ac}+b}\right)}{2c}+\frac{\log(x)\left(1-\frac{b}{\sqrt{b^2-4ac}}\right)\log\left(\frac{2c}{b-\sqrt{b}}\right.}{2c}$$

Antiderivative was successfully verified.

```
[In] Int[(x*Log[x])/(a + b*x + c*x^2),x]
```

```
[Out] ((1 - b/Sqrt[b^2 - 4*a*c])*Log[x]*Log[1 + (2*c*x)/(b - Sqrt[b^2 - 4*a*c])])
/(2*c) + ((1 + b/Sqrt[b^2 - 4*a*c])*Log[x]*Log[1 + (2*c*x)/(b + Sqrt[b^2 -
4*a*c])])/(2*c) + ((1 - b/Sqrt[b^2 - 4*a*c])*PolyLog[2, (-2*c*x)/(b - Sqrt[
b^2 - 4*a*c])])/(2*c) + ((1 + b/Sqrt[b^2 - 4*a*c])*PolyLog[2, (-2*c*x)/(b +
 Sqrt[b^2 - 4*a*c])])/(2*c)
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2357

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] :> With[{
u = ExpandIntegrand[(a + b*Log[c*x^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /
; FreeQ[{a, b, c, n}, x] && RationalFunctionQ[RFx, x] && IGtQ[p, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{x\log(x)}{a+bx+cx^2}\,dx = \int \left(\frac{\left(1-\frac{b}{\sqrt{b^2-4ac}}\right)\log(x)}{b-\sqrt{b^2-4ac}+2cx} + \frac{\left(1+\frac{b}{\sqrt{b^2-4ac}}\right)\log(x)}{b+\sqrt{b^2-4ac}+2cx}\right) dx$$
$$= \left(1-\frac{b}{\sqrt{b^2-4ac}}\right)\int \frac{\log(x)}{b-\sqrt{b^2-4ac}+2cx}\,dx + \left(1+\frac{b}{\sqrt{b^2-4ac}}\right)\int \frac{\log(x)}{b+\sqrt{b^2-4ac}+2cx}$$
$$= \frac{\left(1-\frac{b}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(1+\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2c} + \frac{\left(1+\frac{b}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(1+\frac{2cx}{b+\sqrt{b^2-4ac}}\right)}{2c} - $$
$$= \frac{\left(1-\frac{b}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(1+\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2c} + \frac{\left(1+\frac{b}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(1+\frac{2cx}{b+\sqrt{b^2-4ac}}\right)}{2c} + $$

Mathematica [A] time = 0.15, size = 210, normalized size = 1.09

$$\frac{\left(\sqrt{b^2-4ac}-b\right)\text{Li}_2\left(\frac{2cx}{\sqrt{b^2-4ac}-b}\right)+\left(\sqrt{b^2-4ac}+b\right)\text{Li}_2\left(-\frac{2cx}{b+\sqrt{b^2-4ac}}\right)+\log(x)\left(\left(\sqrt{b^2-4ac}-b\right)\log\left(\frac{-\sqrt{b^2-4ac}}{b-\sqrt{b^2}}\right.\right.}{2c\sqrt{b^2-4ac}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*Log[x])/(a + b*x + c*x^2),x]
[Out] (Log[x]*((-b + Sqrt[b^2 - 4*a*c])*Log[(b - Sqrt[b^2 - 4*a*c] + 2*c*x)/(b -
Sqrt[b^2 - 4*a*c])] + (b + Sqrt[b^2 - 4*a*c])*Log[(b + Sqrt[b^2 - 4*a*c] +
2*c*x)/(b + Sqrt[b^2 - 4*a*c])]) + (-b + Sqrt[b^2 - 4*a*c])*PolyLog[2, (2*c
*x)/(-b + Sqrt[b^2 - 4*a*c])] + (b + Sqrt[b^2 - 4*a*c])*PolyLog[2, (-2*c*x)
/(b + Sqrt[b^2 - 4*a*c])])/(2*c*Sqrt[b^2 - 4*a*c])
```

fricas [F] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{x\log(x)}{cx^2+bx+a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*log(x)/(c*x^2+b*x+a),x, algorithm="fricas")
[Out] integral(x*log(x)/(c*x^2 + b*x + a), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x\log(x)}{cx^2+bx+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*log(x)/(c*x^2+b*x+a),x, algorithm="giac")
[Out] integrate(x*log(x)/(c*x^2 + b*x + a), x)
```

maple [B] time = 0.05, size = 361, normalized size = 1.87

$$\frac{b\,\text{dilog}\left(\frac{2cx+b+\sqrt{-4ac+b^2}}{b+\sqrt{-4ac+b^2}}\right)}{2\sqrt{-4ac+b^2}\,c} - \frac{b\,\text{dilog}\left(\frac{-2cx-b+\sqrt{-4ac+b^2}}{-b+\sqrt{-4ac+b^2}}\right)}{2\sqrt{-4ac+b^2}\,c} + \frac{\text{dilog}\left(\frac{2cx+b+\sqrt{-4ac+b^2}}{b+\sqrt{-4ac+b^2}}\right)}{2c} + \frac{\text{dilog}\left(\frac{-2cx-b+\sqrt{-4ac+b^2}}{-b+\sqrt{-4ac+b^2}}\right)}{2c} + \frac{(b\ln}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*ln(x)/(c*x^2+b*x+a),x)
```

```
[Out] 1/2*ln(x)*(ln((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b+(-4*a*c+b^2)^(1/2)))*(-4*a*
c+b^2)^(1/2)-ln((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b+(-4*a*c+b^2)^(1/2)))*b+ln
((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))*(-4*a*c+b^2)^(1/2)+ln
((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))*b)/c/(-4*a*c+b^2)^(1/
2)+1/2/c*dilog((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b+(-4*a*c+b^2)^(1/2)))-1/2/c
/(-4*a*c+b^2)^(1/2)*dilog((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b+(-4*a*c+b^2)^(1
/2)))*b+1/2/c*dilog((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))+1/
2/c/(-4*a*c+b^2)^(1/2)*dilog((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(
1/2)))*b
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*log(x)/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x\,\ln(x)}{c\,x^2+b\,x+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*log(x))/(a + b*x + c*x^2),x)
```

```
[Out] int((x*log(x))/(a + b*x + c*x^2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*ln(x)/(c*x**2+b*x+a),x)
```

```
[Out] Timed out
```

3.354 $\int \frac{\log(x)}{a+bx+cx^2}\,dx$

Optimal. Leaf size=153

$$\frac{\text{Li}_2\left(-\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{\sqrt{b^2-4ac}}-\frac{\text{Li}_2\left(-\frac{2cx}{b+\sqrt{b^2-4ac}}\right)}{\sqrt{b^2-4ac}}+\frac{\log(x)\log\left(\frac{2cx}{b-\sqrt{b^2-4ac}}+1\right)}{\sqrt{b^2-4ac}}-\frac{\log(x)\log\left(\frac{2cx}{\sqrt{b^2-4ac}+b}+1\right)}{\sqrt{b^2-4ac}}$$

```
[Out] ln(x)*ln(1+2*c*x/(b-(-4*a*c+b^2)^(1/2)))/(-4*a*c+b^2)^(1/2)-ln(x)*ln(1+2*c*
x/(b+(-4*a*c+b^2)^(1/2)))/(-4*a*c+b^2)^(1/2)+polylog(2,-2*c*x/(b-(-4*a*c+b^
2)^(1/2)))/(-4*a*c+b^2)^(1/2)-polylog(2,-2*c*x/(b+(-4*a*c+b^2)^(1/2)))/(-4*
a*c+b^2)^(1/2)
```

Rubi [A] time = 0.14, antiderivative size = 153, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {2357, 2317, 2391}

$$\frac{\text{PolyLog}\left(2,-\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{\sqrt{b^2-4ac}}-\frac{\text{PolyLog}\left(2,-\frac{2cx}{\sqrt{b^2-4ac}+b}\right)}{\sqrt{b^2-4ac}}+\frac{\log(x)\log\left(\frac{2cx}{b-\sqrt{b^2-4ac}}+1\right)}{\sqrt{b^2-4ac}}-\frac{\log(x)\log\left(\frac{2cx}{\sqrt{b^2-4ac}+b}+1\right)}{\sqrt{b^2-4ac}}$$

Antiderivative was successfully verified.

```
[In] Int[Log[x]/(a + b*x + c*x^2),x]
```

```
[Out] (Log[x]*Log[1 + (2*c*x)/(b - Sqrt[b^2 - 4*a*c])])/Sqrt[b^2 - 4*a*c] - (Log[
x]*Log[1 + (2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/Sqrt[b^2 - 4*a*c] + PolyLog[2,
 (-2*c*x)/(b - Sqrt[b^2 - 4*a*c])]/Sqrt[b^2 - 4*a*c] - PolyLog[2, (-2*c*x)/
(b + Sqrt[b^2 - 4*a*c])]/Sqrt[b^2 - 4*a*c]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2357

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] :> With[{
u = ExpandIntegrand[(a + b*Log[c*x^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /
; FreeQ[{a, b, c, n}, x] && RationalFunctionQ[RFx, x] && IGtQ[p, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{\log(x)}{a+bx+cx^2}\,dx = \int \left(\frac{2c\log(x)}{\sqrt{b^2-4ac}\left(b-\sqrt{b^2-4ac}+2cx\right)} - \frac{2c\log(x)}{\sqrt{b^2-4ac}\left(b+\sqrt{b^2-4ac}+2cx\right)}\right)dx$$

$$= \frac{(2c)\int \frac{\log(x)}{b-\sqrt{b^2-4ac}+2cx}\,dx}{\sqrt{b^2-4ac}} - \frac{(2c)\int \frac{\log(x)}{b+\sqrt{b^2-4ac}+2cx}\,dx}{\sqrt{b^2-4ac}}$$

$$= \frac{\log(x)\log\left(1+\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{\sqrt{b^2-4ac}} - \frac{\log(x)\log\left(1+\frac{2cx}{b+\sqrt{b^2-4ac}}\right)}{\sqrt{b^2-4ac}} - \frac{\int \frac{\log\left(1+\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{x}\,dx}{\sqrt{b^2-4ac}} +$$

$$= \frac{\log(x)\log\left(1+\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{\sqrt{b^2-4ac}} - \frac{\log(x)\log\left(1+\frac{2cx}{b+\sqrt{b^2-4ac}}\right)}{\sqrt{b^2-4ac}} + \frac{\operatorname{Li}_2\left(-\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{\sqrt{b^2-4ac}} -$$

Mathematica [A] time = 0.06, size = 144, normalized size = 0.94

$$\frac{\operatorname{Li}_2\left(\frac{2cx}{\sqrt{b^2-4ac}-b}\right)-\operatorname{Li}_2\left(-\frac{2cx}{b+\sqrt{b^2-4ac}}\right)+\log(x)\left(\log\left(\frac{-\sqrt{b^2-4ac}+b+2cx}{b-\sqrt{b^2-4ac}}\right)-\log\left(\frac{\sqrt{b^2-4ac}+b+2cx}{\sqrt{b^2-4ac}+b}\right)\right)}{\sqrt{b^2-4ac}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[x]/(a + b*x + c*x^2),x]
```

```
[Out] (Log[x]*(Log[(b - Sqrt[b^2 - 4*a*c] + 2*c*x)/(b - Sqrt[b^2 - 4*a*c])] - Log
[(b + Sqrt[b^2 - 4*a*c] + 2*c*x)/(b + Sqrt[b^2 - 4*a*c])]) + PolyLog[2, (2*
c*x)/(-b + Sqrt[b^2 - 4*a*c])] - PolyLog[2, (-2*c*x)/(b + Sqrt[b^2 - 4*a*c]
)])/Sqrt[b^2 - 4*a*c]
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(\frac{\log(x)}{cx^2+bx+a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(x)/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] integral(log(x)/(c*x^2 + b*x + a), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log(x)}{cx^2+bx+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(x)/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] integrate(log(x)/(c*x^2 + b*x + a), x)
```

maple [A] time = 0.05, size = 178, normalized size = 1.16

$$-\frac{\operatorname{dilog}\left(\frac{2cx+b+\sqrt{-4ac+b^2}}{b+\sqrt{-4ac+b^2}}\right)}{\sqrt{-4ac+b^2}}+\frac{\operatorname{dilog}\left(\frac{-2cx-b+\sqrt{-4ac+b^2}}{-b+\sqrt{-4ac+b^2}}\right)}{\sqrt{-4ac+b^2}}-\frac{\left(\ln\left(\frac{2cx+b+\sqrt{-4ac+b^2}}{b+\sqrt{-4ac+b^2}}\right)-\ln\left(\frac{-2cx-b+\sqrt{-4ac+b^2}}{-b+\sqrt{-4ac+b^2}}\right)\right)\ln(x)}{\sqrt{-4ac+b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(x)/(c*x^2+b*x+a),x)
```

```
[Out] -ln(x)*(ln((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))-ln((-2*c*x-
b+(-4*a*c+b^2)^(1/2))/(-b+(-4*a*c+b^2)^(1/2))))/(-4*a*c+b^2)^(1/2)+1/(-4*a*
c+b^2)^(1/2)*dilog((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b+(-4*a*c+b^2)^(1/2)))-1
/(-4*a*c+b^2)^(1/2)*dilog((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2
)))
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(x)/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\ln(x)}{c\,x^2+b\,x+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(x)/(a + b*x + c*x^2),x)
```

```
[Out] int(log(x)/(a + b*x + c*x^2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log(x)}{a+bx+cx^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(x)/(c*x**2+b*x+a),x)
```

```
[Out] Integral(log(x)/(a + b*x + c*x**2), x)
```

3.355 $\int \frac{\log(x)}{x(a+bx+cx^2)}\,dx$

Optimal. Leaf size=204

$$-\frac{\left(\frac{b}{\sqrt{b^2-4ac}}+1\right)\text{Li}_2\left(-\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2a}-\frac{\left(1-\frac{b}{\sqrt{b^2-4ac}}\right)\text{Li}_2\left(-\frac{2cx}{b+\sqrt{b^2-4ac}}\right)}{2a}-\frac{\log(x)\left(\frac{b}{\sqrt{b^2-4ac}}+1\right)\log\left(\frac{2cx}{b-\sqrt{b^2-4ac}}+1\right)}{2a}-\text{log}$$

```
[Out] 1/2*ln(x)^2/a-1/2*ln(x)*ln(1+2*c*x/(b+(-4*a*c+b^2)^(1/2)))*(1-b/(-4*a*c+b^2
)^(1/2))/a-1/2*polylog(2,-2*c*x/(b+(-4*a*c+b^2)^(1/2)))*(1-b/(-4*a*c+b^2)^(
1/2))/a-1/2*ln(x)*ln(1+2*c*x/(b-(-4*a*c+b^2)^(1/2)))*(1+b/(-4*a*c+b^2)^(1/2
))/a-1/2*polylog(2,-2*c*x/(b-(-4*a*c+b^2)^(1/2)))*(1+b/(-4*a*c+b^2)^(1/2))/
a
```

Rubi [A] time = 0.28, antiderivative size = 204, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {2357, 2301, 2317, 2391}

$$-\frac{\left(\frac{b}{\sqrt{b^2-4ac}}+1\right)\text{PolyLog}\left(2,-\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2a}-\frac{\left(1-\frac{b}{\sqrt{b^2-4ac}}\right)\text{PolyLog}\left(2,-\frac{2cx}{\sqrt{b^2-4ac}+b}\right)}{2a}-\frac{\log(x)\left(\frac{b}{\sqrt{b^2-4ac}}+1\right)\log\left(\frac{\ }{b-\sqrt{\ }}\right.}{2a}$$

Antiderivative was successfully verified.

```
[In] Int[Log[x]/(x*(a + b*x + c*x^2)),x]
```

```
[Out] Log[x]^2/(2*a) - ((1 + b/Sqrt[b^2 - 4*a*c])*Log[x]*Log[1 + (2*c*x)/(b - Sqr
t[b^2 - 4*a*c])])/(2*a) - ((1 - b/Sqrt[b^2 - 4*a*c])*Log[x]*Log[1 + (2*c*x)
/(b + Sqrt[b^2 - 4*a*c])])/(2*a) - ((1 + b/Sqrt[b^2 - 4*a*c])*PolyLog[2, (-
2*c*x)/(b - Sqrt[b^2 - 4*a*c])])/(2*a) - ((1 - b/Sqrt[b^2 - 4*a*c])*PolyLog
[2, (-2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/(2*a)
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2357

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] :> With[{
u = ExpandIntegrand[(a + b*Log[c*x^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /
; FreeQ[{a, b, c, n}, x] && RationalFunctionQ[RFx, x] && IGtQ[p, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{\log(x)}{x\left(a+bx+cx^2\right)}\,dx = \int \left(\frac{\log(x)}{ax} + \frac{(-b-cx)\log(x)}{a\left(a+bx+cx^2\right)}\right)dx$$

$$= \frac{\int \frac{\log(x)}{x}\,dx}{a} + \frac{\int \frac{(-b-cx)\log(x)}{a+bx+cx^2}\,dx}{a}$$

$$= \frac{\log^2(x)}{2a} + \frac{\int \left(\frac{\left(-c-\frac{bc}{\sqrt{b^2-4ac}}\right)\log(x)}{b-\sqrt{b^2-4ac}+2cx} + \frac{\left(-c+\frac{bc}{\sqrt{b^2-4ac}}\right)\log(x)}{b+\sqrt{b^2-4ac}+2cx}\right)dx}{a}$$

$$= \frac{\log^2(x)}{2a} - \frac{\left(c\left(1-\frac{b}{\sqrt{b^2-4ac}}\right)\right)\int \frac{\log(x)}{b+\sqrt{b^2-4ac}+2cx}\,dx}{a} - \frac{\left(c\left(1+\frac{b}{\sqrt{b^2-4ac}}\right)\right)\int \frac{\log(x)}{b-\sqrt{b^2-4ac}+2cx}\,d}{a}$$

$$= \frac{\log^2(x)}{2a} - \frac{\left(1+\frac{b}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(1+\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2a} - \frac{\left(1-\frac{b}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(1+\right.}{2a}$$

$$= \frac{\log^2(x)}{2a} - \frac{\left(1+\frac{b}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(1+\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2a} - \frac{\left(1-\frac{b}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(1+\right.}{2a}$$

Mathematica [A] time = 0.22, size = 227, normalized size = 1.11

$$\frac{-\left(\sqrt{b^2-4ac}+b\right)\text{Li}_2\left(\frac{2cx}{\sqrt{b^2-4ac}-b}\right)+\left(b-\sqrt{b^2-4ac}\right)\text{Li}_2\left(-\frac{2cx}{b+\sqrt{b^2-4ac}}\right)+\log(x)\left(\log(x)\sqrt{b^2-4ac}-\left(\sqrt{b^2-4\right.\right.}{2a\sqrt{b^2-4ac}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[x]/(x*(a + b*x + c*x^2)),x]
```

```
[Out] (Log[x]*(Sqrt[b^2 - 4*a*c]*Log[x] - (b + Sqrt[b^2 - 4*a*c])*Log[(b - Sqrt[b
^2 - 4*a*c] + 2*c*x)/(b - Sqrt[b^2 - 4*a*c])] + (b - Sqrt[b^2 - 4*a*c])*Log
[(b + Sqrt[b^2 - 4*a*c] + 2*c*x)/(b + Sqrt[b^2 - 4*a*c])]) - (b + Sqrt[b^2
- 4*a*c])*PolyLog[2, (2*c*x)/(-b + Sqrt[b^2 - 4*a*c])] + (b - Sqrt[b^2 - 4*
a*c])*PolyLog[2, (-2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/(2*a*Sqrt[b^2 - 4*a*c])
```

fricas [F] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\log(x)}{cx^3+bx^2+ax}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(x)/x/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] integral(log(x)/(c*x^3 + b*x^2 + a*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log(x)}{\left(cx^2+bx+a\right)x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(x)/x/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] integrate(log(x)/((c*x^2 + b*x + a)*x), x)
```

maple [B] time = 0.06, size = 375, normalized size = 1.84

$$\frac{b\ln(x)\ln\left(\frac{2cx+b+\sqrt{-4ac+b^2}}{b+\sqrt{-4ac+b^2}}\right)}{2\sqrt{-4ac+b^2}\,a}-\frac{b\ln(x)\ln\left(\frac{-2cx-b+\sqrt{-4ac+b^2}}{-b+\sqrt{-4ac+b^2}}\right)}{2\sqrt{-4ac+b^2}\,a}+\frac{b\,\mathrm{dilog}\left(\frac{2cx+b+\sqrt{-4ac+b^2}}{b+\sqrt{-4ac+b^2}}\right)}{2\sqrt{-4ac+b^2}\,a}-\frac{b\,\mathrm{dilog}\left(\frac{-2cx-b+\sqrt{-4ac+b^2}}{-b+\sqrt{-4ac+b^2}}\right)}{2\sqrt{-4ac+b^2}\,a}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(x)/x/(c*x^2+b*x+a),x)
```

```
[Out] -1/2/a*ln(x)*ln((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b+(-4*a*c+b^2)^(1/2)))-1/2/
a*ln(x)/(-4*a*c+b^2)^(1/2)*ln((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b+(-4*a*c+b^2
)^(1/2)))*b-1/2/a*ln(x)*ln((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/
2)))+1/2/a*ln(x)/(-4*a*c+b^2)^(1/2)*ln((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*
a*c+b^2)^(1/2)))*b-1/2/a*dilog((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b+(-4*a*c+b^
2)^(1/2)))-1/2/a/(-4*a*c+b^2)^(1/2)*dilog((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b
+(-4*a*c+b^2)^(1/2)))*b-1/2/a*dilog((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c
+b^2)^(1/2)))+1/2/a/(-4*a*c+b^2)^(1/2)*dilog((2*c*x+b+(-4*a*c+b^2)^(1/2))/(
b+(-4*a*c+b^2)^(1/2)))*b+1/2*ln(x)^2/a
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(x)/x/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln(x)}{x\,\left(c\,x^2+b\,x+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(x)/(x*(a + b*x + c*x^2)),x)
```

```
[Out] int(log(x)/(x*(a + b*x + c*x^2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(x)/x/(c*x**2+b*x+a),x)
```

```
[Out] Timed out
```

3.356 $\int \frac{\log(x)}{x^2(a+bx+cx^2)}\,dx$

Optimal. Leaf size=251

$$\frac{\left(\frac{b^2-2ac}{\sqrt{b^2-4ac}}+b\right)\mathrm{Li}_2\left(-\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2a^2}+\frac{\left(b-\frac{b^2-2ac}{\sqrt{b^2-4ac}}\right)\mathrm{Li}_2\left(-\frac{2cx}{b+\sqrt{b^2-4ac}}\right)}{2a^2}+\frac{\log(x)\left(\frac{b^2-2ac}{\sqrt{b^2-4ac}}+b\right)\log\left(\frac{2cx}{b-\sqrt{b^2-4ac}}+1\right)}{2a^2}+\cdots$$

```
[Out] -1/a/x-ln(x)/a/x-1/2*b*ln(x)^2/a^2+1/2*ln(x)*ln(1+2*c*x/(b+(-4*a*c+b^2)^(1/
2)))*(b+(2*a*c-b^2)/(-4*a*c+b^2)^(1/2))/a^2+1/2*polylog(2,-2*c*x/(b+(-4*a*c
+b^2)^(1/2)))*(b+(2*a*c-b^2)/(-4*a*c+b^2)^(1/2))/a^2+1/2*ln(x)*ln(1+2*c*x/(
b-(-4*a*c+b^2)^(1/2)))*(b+(-2*a*c+b^2)/(-4*a*c+b^2)^(1/2))/a^2+1/2*polylog(
2,-2*c*x/(b-(-4*a*c+b^2)^(1/2)))*(b+(-2*a*c+b^2)/(-4*a*c+b^2)^(1/2))/a^2
```

Rubi [A] time = 0.39, antiderivative size = 251, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {2357, 2304, 2301, 2317, 2391}

$$\frac{\left(\frac{b^2-2ac}{\sqrt{b^2-4ac}}+b\right)\mathrm{PolyLog}\left(2,-\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2a^2}+\frac{\left(b-\frac{b^2-2ac}{\sqrt{b^2-4ac}}\right)\mathrm{PolyLog}\left(2,-\frac{2cx}{\sqrt{b^2-4ac}+b}\right)}{2a^2}+\frac{\log(x)\left(\frac{b^2-2ac}{\sqrt{b^2-4ac}}+b\right)\log\left(\cdots\right)}{2a^2}\cdots$$

Antiderivative was successfully verified.

```
[In] Int[Log[x]/(x^2*(a + b*x + c*x^2)),x]
```

```
[Out] -(1/(a*x)) - Log[x]/(a*x) - (b*Log[x]^2)/(2*a^2) + ((b + (b^2 - 2*a*c)/Sqrt
[b^2 - 4*a*c])*Log[x]*Log[1 + (2*c*x)/(b - Sqrt[b^2 - 4*a*c])])/(2*a^2) + (
(b - (b^2 - 2*a*c)/Sqrt[b^2 - 4*a*c])*Log[x]*Log[1 + (2*c*x)/(b + Sqrt[b^2
- 4*a*c])])/(2*a^2) + ((b + (b^2 - 2*a*c)/Sqrt[b^2 - 4*a*c])*PolyLog[2, (-2
*c*x)/(b - Sqrt[b^2 - 4*a*c])])/(2*a^2) + ((b - (b^2 - 2*a*c)/Sqrt[b^2 - 4*
a*c])*PolyLog[2, (-2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/(2*a^2)
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2357

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] :> With[{
u = ExpandIntegrand[(a + b*Log[c*x^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /
; FreeQ[{a, b, c, n}, x] && RationalFunctionQ[RFx, x] && IGtQ[p, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{\log(x)}{x^2\left(a+bx+cx^2\right)}\,dx = \int\left(\frac{\log(x)}{ax^2}-\frac{b\log(x)}{a^2x}+\frac{\left(b^2-ac+bcx\right)\log(x)}{a^2\left(a+bx+cx^2\right)}\right)dx$$
$$= \frac{\int \frac{\left(b^2-ac+bcx\right)\log(x)}{a+bx+cx^2}\,dx}{a^2}+\frac{\int \frac{\log(x)}{x^2}\,dx}{a}-\frac{b\int \frac{\log(x)}{x}\,dx}{a^2}$$
$$= -\frac{1}{ax}-\frac{\log(x)}{ax}-\frac{b\log^2(x)}{2a^2}+\frac{\int\left(\frac{\left(bc+\frac{c\left(b^2-2ac\right)}{\sqrt{b^2-4ac}}\right)\log(x)}{b-\sqrt{b^2-4ac}+2cx}+\frac{\left(bc-\frac{c\left(b^2-2ac\right)}{\sqrt{b^2-4ac}}\right)\log(x)}{b+\sqrt{b^2-4ac}+2cx}\right)dx}{a^2}$$
$$= -\frac{1}{ax}-\frac{\log(x)}{ax}-\frac{b\log^2(x)}{2a^2}+\frac{\left(c\left(b-\frac{b^2-2ac}{\sqrt{b^2-4ac}}\right)\right)\int \frac{\log(x)}{b+\sqrt{b^2-4ac}+2cx}\,dx}{a^2}+\frac{\left(c\left(b+\frac{b^2-2ac}{\sqrt{b^2-4ac}}\right)\right)\ldots}{a\ldots}$$
$$= -\frac{1}{ax}-\frac{\log(x)}{ax}-\frac{b\log^2(x)}{2a^2}+\frac{\left(b+\frac{b^2-2ac}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(1+\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2a^2}+\frac{\left(b-\frac{b^2-2ac}{\sqrt{b^2-4ac}}\right)\ldots}{\ldots}$$
$$= -\frac{1}{ax}-\frac{\log(x)}{ax}-\frac{b\log^2(x)}{2a^2}+\frac{\left(b+\frac{b^2-2ac}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(1+\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2a^2}+\frac{\left(b-\frac{b^2-2ac}{\sqrt{b^2-4ac}}\right)\ldots}{\ldots}$$

Mathematica [A] time = 0.39, size = 255, normalized size = 1.02

$$\frac{\left(\frac{b^2-2ac}{\sqrt{b^2-4ac}}+b\right)\text{Li}_2\left(\frac{2cx}{\sqrt{b^2-4ac}-b}\right)+\left(\frac{2ac-b^2}{\sqrt{b^2-4ac}}+b\right)\text{Li}_2\left(-\frac{2cx}{b+\sqrt{b^2-4ac}}\right)+\log(x)\left(\frac{b^2-2ac}{\sqrt{b^2-4ac}}+b\right)\log\left(\frac{-\sqrt{b^2-4ac}+b+2cx}{b-\sqrt{b^2-4ac}}\right)+\text{lo}\ldots}{2a^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[x]/(x^2*(a + b*x + c*x^2)),x]
```

```
[Out] ((-2*a)/x - (2*a*Log[x])/x - b*Log[x]^2 + (b + (b^2 - 2*a*c)/Sqrt[b^2 - 4*a
*c])*Log[x]*Log[(b - Sqrt[b^2 - 4*a*c] + 2*c*x)/(b - Sqrt[b^2 - 4*a*c])] +
(b + (-b^2 + 2*a*c)/Sqrt[b^2 - 4*a*c])*Log[x]*Log[(b + Sqrt[b^2 - 4*a*c] +
2*c*x)/(b + Sqrt[b^2 - 4*a*c])] + (b + (b^2 - 2*a*c)/Sqrt[b^2 - 4*a*c])*Pol
yLog[2, (2*c*x)/(-b + Sqrt[b^2 - 4*a*c])] + (b + (-b^2 + 2*a*c)/Sqrt[b^2 -
4*a*c])*PolyLog[2, (-2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/(2*a^2)
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\log(x)}{cx^4+bx^3+ax^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(x)/x^2/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] integral(log(x)/(c*x^4 + b*x^3 + a*x^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log(x)}{\left(cx^2+bx+a\right)x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(x)/x^2/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] integrate(log(x)/((c*x^2 + b*x + a)*x^2), x)
```

maple [B] time = 0.06, size = 608, normalized size = 2.42

$$\frac{c\ln(x)\ln\left(\frac{2cx+b+\sqrt{-4ac+b^2}}{b+\sqrt{-4ac+b^2}}\right)}{\sqrt{-4ac+b^2}\,a}-\frac{c\ln(x)\ln\left(\frac{-2cx-b+\sqrt{-4ac+b^2}}{-b+\sqrt{-4ac+b^2}}\right)}{\sqrt{-4ac+b^2}\,a}-\frac{b^2\ln(x)\ln\left(\frac{2cx+b+\sqrt{-4ac+b^2}}{b+\sqrt{-4ac+b^2}}\right)}{2\sqrt{-4ac+b^2}\,a^2}+\frac{b^2\ln(x)\ln\left(\frac{-2cx-b+\sqrt{-4ac+b^2}}{-b+\sqrt{-4ac+b^2}}\right)}{2\sqrt{-4ac+b^2}\,a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(x)/x^2/(c*x^2+b*x+a),x)
```

```
[Out] -ln(x)/a/x-1/a/x+1/2/a^2*ln(x)*ln((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b+(-4*a*c
+b^2)^(1/2)))*b-1/a*ln(x)/(-4*a*c+b^2)^(1/2)*ln((-2*c*x-b+(-4*a*c+b^2)^(1/2
))/(-b+(-4*a*c+b^2)^(1/2)))*c+1/2/a^2*ln(x)/(-4*a*c+b^2)^(1/2)*ln((-2*c*x-b
+(-4*a*c+b^2)^(1/2))/(-b+(-4*a*c+b^2)^(1/2)))*b^2+1/2/a^2*ln(x)*ln((2*c*x+b
+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))*b+1/a*ln(x)/(-4*a*c+b^2)^(1/2)
*ln((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))*c-1/2/a^2*ln(x)/(-
4*a*c+b^2)^(1/2)*ln((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))*b^
2+1/2/a^2*dilog((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b+(-4*a*c+b^2)^(1/2)))*b-1/
a/(-4*a*c+b^2)^(1/2)*dilog((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b+(-4*a*c+b^2)^(
1/2)))*c+1/2/a^2/(-4*a*c+b^2)^(1/2)*dilog((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b
+(-4*a*c+b^2)^(1/2)))*b^2+1/2/a^2*dilog((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4
*a*c+b^2)^(1/2)))*b+1/a/(-4*a*c+b^2)^(1/2)*dilog((2*c*x+b+(-4*a*c+b^2)^(1/2
))/(b+(-4*a*c+b^2)^(1/2)))*c-1/2/a^2/(-4*a*c+b^2)^(1/2)*dilog((2*c*x+b+(-4*
a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))*b^2-1/2*b*ln(x)^2/a^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(x)/x^2/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln(x)}{x^2\,\left(c\,x^2+b\,x+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(x)/(x^2*(a + b*x + c*x^2)),x)
```

```
[Out] int(log(x)/(x^2*(a + b*x + c*x^2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(x)/x**2/(c*x**2+b*x+a),x)
```

```
[Out] Timed out
```

3.357 $\int \frac{\log(x)}{x^3(a+bx+cx^2)}\,dx$

Optimal. Leaf size=308

$$-\frac{\left(\frac{b(b^2-3ac)}{\sqrt{b^2-4ac}}-ac+b^2\right)\mathrm{Li}_2\left(-\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2a^3}-\frac{\left(-\frac{b(b^2-3ac)}{\sqrt{b^2-4ac}}-ac+b^2\right)\mathrm{Li}_2\left(-\frac{2cx}{b+\sqrt{b^2-4ac}}\right)}{2a^3}+\frac{\log^2(x)\left(b^2-ac\right)}{2a^3}-\frac{\log(x)\left(\frac{b(b^2-\cdots}{\sqrt{b^2\cdots}}\right.}{\cdots}$$

```
[Out] -1/4/a/x^2+b/a^2/x-1/2*ln(x)/a/x^2+b*ln(x)/a^2/x+1/2*(-a*c+b^2)*ln(x)^2/a^3
-1/2*ln(x)*ln(1+2*c*x/(b+(-4*a*c+b^2)^(1/2)))*(b^2-a*c-b*(-3*a*c+b^2)/(-4*a
*c+b^2)^(1/2))/a^3-1/2*polylog(2,-2*c*x/(b+(-4*a*c+b^2)^(1/2)))*(b^2-a*c-b*
(-3*a*c+b^2)/(-4*a*c+b^2)^(1/2))/a^3-1/2*ln(x)*ln(1+2*c*x/(b-(-4*a*c+b^2)^(
1/2)))*(b^2-a*c+b*(-3*a*c+b^2)/(-4*a*c+b^2)^(1/2))/a^3-1/2*polylog(2,-2*c*x
/(b-(-4*a*c+b^2)^(1/2)))*(b^2-a*c+b*(-3*a*c+b^2)/(-4*a*c+b^2)^(1/2))/a^3
```

Rubi [A] time = 0.51, antiderivative size = 308, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {2357, 2304, 2301, 2317, 2391}

$$-\frac{\left(\frac{b(b^2-3ac)}{\sqrt{b^2-4ac}}-ac+b^2\right)\mathrm{PolyLog}\left(2,-\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2a^3}-\frac{\left(-\frac{b(b^2-3ac)}{\sqrt{b^2-4ac}}-ac+b^2\right)\mathrm{PolyLog}\left(2,-\frac{2cx}{\sqrt{b^2-4ac}+b}\right)}{2a^3}+\frac{\log^2(x)\left(b^2-a\cdots\right.}{2a^3}$$

Antiderivative was successfully verified.

```
[In] Int[Log[x]/(x^3*(a + b*x + c*x^2)),x]
```

```
[Out] -1/(4*a*x^2) + b/(a^2*x) - Log[x]/(2*a*x^2) + (b*Log[x])/(a^2*x) + ((b^2 -
a*c)*Log[x]^2)/(2*a^3) - ((b^2 - a*c + (b*(b^2 - 3*a*c))/Sqrt[b^2 - 4*a*c])
*Log[x]*Log[1 + (2*c*x)/(b - Sqrt[b^2 - 4*a*c])])/(2*a^3) - ((b^2 - a*c - (
b*(b^2 - 3*a*c))/Sqrt[b^2 - 4*a*c])*Log[x]*Log[1 + (2*c*x)/(b + Sqrt[b^2 -
4*a*c])])/(2*a^3) - ((b^2 - a*c + (b*(b^2 - 3*a*c))/Sqrt[b^2 - 4*a*c])*Poly
Log[2, (-2*c*x)/(b - Sqrt[b^2 - 4*a*c])])/(2*a^3) - ((b^2 - a*c - (b*(b^2 -
 3*a*c))/Sqrt[b^2 - 4*a*c])*PolyLog[2, (-2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/(
2*a^3)
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2357

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] :> With[{
u = ExpandIntegrand[(a + b*Log[c*x^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /
; FreeQ[{a, b, c, n}, x] && RationalFunctionQ[RFx, x] && IGtQ[p, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{\log(x)}{x^3\left(a+bx+cx^2\right)}\,dx = \int \left(\frac{\log(x)}{ax^3} - \frac{b\log(x)}{a^2x^2} + \frac{\left(b^2-ac\right)\log(x)}{a^3x} + \frac{\left(-b\left(b^2-2ac\right)-c\left(b^2-ac\right)x\right)\log(x)}{a^3\left(a+bx+cx^2\right)}\right) d$$

$$= \frac{\int \frac{\left(-b\left(b^2-2ac\right)-c\left(b^2-ac\right)x\right)\log(x)}{a+bx+cx^2}\,dx}{a^3} + \frac{\int \frac{\log(x)}{x^3}\,dx}{a} - \frac{b\int \frac{\log(x)}{x^2}\,dx}{a^2} + \frac{\left(b^2-ac\right)\int \frac{\log(x)}{x}\,dx}{a^3}$$

$$= -\frac{1}{4ax^2} + \frac{b}{a^2x} - \frac{\log(x)}{2ax^2} + \frac{b\log(x)}{a^2x} + \frac{\left(b^2-ac\right)\log^2(x)}{2a^3} + \frac{\int \left(\frac{\left(-\frac{bc\left(b^2-3ac\right)}{\sqrt{b^2-4ac}}-c\left(b^2-ac\right)\right)\log(x)}{b-\sqrt{b^2-4ac}+2cx}\right.}{}$$

$$= -\frac{1}{4ax^2} + \frac{b}{a^2x} - \frac{\log(x)}{2ax^2} + \frac{b\log(x)}{a^2x} + \frac{\left(b^2-ac\right)\log^2(x)}{2a^3} - \frac{\left(c\left(b^2-ac-\frac{b\left(b^2-3ac\right)}{\sqrt{b^2-4ac}}\right)\right)\int}{a^3}$$

$$= -\frac{1}{4ax^2} + \frac{b}{a^2x} - \frac{\log(x)}{2ax^2} + \frac{b\log(x)}{a^2x} + \frac{\left(b^2-ac\right)\log^2(x)}{2a^3} - \frac{\left(b^2-ac+\frac{b\left(b^2-3ac\right)}{\sqrt{b^2-4ac}}\right)\log(x}{2a^3}$$

$$= -\frac{1}{4ax^2} + \frac{b}{a^2x} - \frac{\log(x)}{2ax^2} + \frac{b\log(x)}{a^2x} + \frac{\left(b^2-ac\right)\log^2(x)}{2a^3} - \frac{\left(b^2-ac+\frac{b\left(b^2-3ac\right)}{\sqrt{b^2-4ac}}\right)\log(x}{2a^3}$$

Mathematica [A] time = 0.47, size = 311, normalized size = 1.01

$$-\frac{\frac{a^2}{x^2} + \frac{2a^2\log(x)}{x^2} + 2\left(\frac{b\left(b^2-3ac\right)}{\sqrt{b^2-4ac}} - ac + b^2\right)\text{Li}_2\left(\frac{2cx}{\sqrt{b^2-4ac}-b}\right) + 2\left(-\frac{b\left(b^2-3ac\right)}{\sqrt{b^2-4ac}} - ac + b^2\right)\text{Li}_2\left(-\frac{2cx}{b+\sqrt{b^2-4ac}}\right) - 2\log^2(x}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[x]/(x^3*(a + b*x + c*x^2)),x]
```

```
[Out] -1/4*(a^2/x^2 - (4*a*b)/x + (2*a^2*Log[x])/x^2 - (4*a*b*Log[x])/x - 2*(b^2
- a*c)*Log[x]^2 + 2*(b^2 - a*c + (b*(b^2 - 3*a*c))/Sqrt[b^2 - 4*a*c])*Log[x
]*Log[(b - Sqrt[b^2 - 4*a*c] + 2*c*x)/(b - Sqrt[b^2 - 4*a*c])] + 2*(b^2 - a
*c - (b*(b^2 - 3*a*c))/Sqrt[b^2 - 4*a*c])*Log[x]*Log[(b + Sqrt[b^2 - 4*a*c]
 + 2*c*x)/(b + Sqrt[b^2 - 4*a*c])] + 2*(b^2 - a*c + (b*(b^2 - 3*a*c))/Sqrt[
b^2 - 4*a*c])*PolyLog[2, (2*c*x)/(-b + Sqrt[b^2 - 4*a*c])] + 2*(b^2 - a*c -
 (b*(b^2 - 3*a*c))/Sqrt[b^2 - 4*a*c])*PolyLog[2, (-2*c*x)/(b + Sqrt[b^2 - 4
*a*c])])/a^3
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\log(x)}{cx^5+bx^4+ax^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(x)/x^3/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] integral(log(x)/(c*x^5 + b*x^4 + a*x^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log(x)}{(cx^2 + bx + a)x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(x)/x^3/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] integrate(log(x)/((c*x^2 + b*x + a)*x^3), x)
```

maple [B] time = 0.06, size = 816, normalized size = 2.65

$$-\frac{3bc\ln(x)\ln\left(\frac{2cx+b+\sqrt{-4ac+b^2}}{b+\sqrt{-4ac+b^2}}\right)}{2\sqrt{-4ac+b^2}\;a^2}+\frac{3bc\ln(x)\ln\left(\frac{-2cx-b+\sqrt{-4ac+b^2}}{-b+\sqrt{-4ac+b^2}}\right)}{2\sqrt{-4ac+b^2}\;a^2}+\frac{b^3\ln(x)\ln\left(\frac{2cx+b+\sqrt{-4ac+b^2}}{b+\sqrt{-4ac+b^2}}\right)}{2\sqrt{-4ac+b^2}\;a^3}-\frac{b^3\ln(x)\ln\left(\frac{-2cx-b+\sqrt{-4ac+b^2}}{-b+\sqrt{-4ac+b^2}}\right)}{2\sqrt{-4ac+b^2}\;a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(x)/x^3/(c*x^2+b*x+a),x)
```

```
[Out] b*ln(x)/a^2/x+b/a^2/x+1/2/a^2*ln(x)*ln((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b+(-
4*a*c+b^2)^(1/2)))*c-1/2/a^3*ln(x)*ln((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b+(-4
*a*c+b^2)^(1/2)))*b^2+3/2/a^2*ln(x)/(-4*a*c+b^2)^(1/2)*ln((-2*c*x-b+(-4*a*c
+b^2)^(1/2))/(-b+(-4*a*c+b^2)^(1/2)))*b*c-1/2/a^3*ln(x)/(-4*a*c+b^2)^(1/2)*
ln((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b+(-4*a*c+b^2)^(1/2)))*b^3+1/2/a^2*ln(x)
*ln((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))*c-1/2/a^3*ln(x)*ln
((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))*b^2-3/2/a^2*ln(x)/(-4
*a*c+b^2)^(1/2)*ln((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))*b*c
+1/2/a^3*ln(x)/(-4*a*c+b^2)^(1/2)*ln((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*
c+b^2)^(1/2)))*b^3+1/2/a^2*dilog((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b+(-4*a*c+
b^2)^(1/2)))*c-1/2/a^3*dilog((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b+(-4*a*c+b^2)
^(1/2)))*b^2+3/2/a^2/(-4*a*c+b^2)^(1/2)*dilog((-2*c*x-b+(-4*a*c+b^2)^(1/2))
/(-b+(-4*a*c+b^2)^(1/2)))*b*c-1/2/a^3/(-4*a*c+b^2)^(1/2)*dilog((-2*c*x-b+(-
4*a*c+b^2)^(1/2))/(-b+(-4*a*c+b^2)^(1/2)))*b^3+1/2/a^2*dilog((2*c*x+b+(-4*a
*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))*c-1/2/a^3*dilog((2*c*x+b+(-4*a*c+b^2
)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))*b^2-3/2/a^2/(-4*a*c+b^2)^(1/2)*dilog((2*c*
x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))*b*c+1/2/a^3/(-4*a*c+b^2)^(1
/2)*dilog((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))*b^3-1/2*ln(x
)/a/x^2-1/4/a/x^2-1/2*ln(x)^2/a^2*c+1/2*ln(x)^2/a^3*b^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(x)/x^3/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln(x)}{x^3\,\left(c\,x^2+b\,x+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(x)/(x^3*(a + b*x + c*x^2)),x)
```

```
[Out] int(log(x)/(x^3*(a + b*x + c*x^2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(x)/x**3/(c*x**2+b*x+a),x)
```

```
[Out] Timed out
```

3.358 $\int x^3 \log(fx^m)(a + b\log(c(d+ex)^n))\,dx$

Optimal. Leaf size=232

$$-\frac{1}{16}\left(mx^4 - 4x^4\log\left(fx^m\right)\right)\left(a + b\log\left(c(d+ex)^n\right)\right) - \frac{bd^4n\log\left(\frac{ex}{d}+1\right)\log\left(fx^m\right)}{4e^4} - \frac{bd^4mn\text{Li}_2\left(-\frac{ex}{d}\right)}{4e^4} + \frac{bd^4mn\log(\cdots}{16e^4}$$

```
[Out] -5/16*b*d^3*m*n*x/e^3+3/32*b*d^2*m*n*x^2/e^2-7/144*b*d*m*n*x^3/e+1/32*b*m*n
*x^4+1/4*b*d^3*n*x*ln(f*x^m)/e^3-1/8*b*d^2*n*x^2*ln(f*x^m)/e^2+1/12*b*d*n*x
^3*ln(f*x^m)/e-1/16*b*n*x^4*ln(f*x^m)+1/16*b*d^4*m*n*ln(e*x+d)/e^4-1/16*(m*
x^4-4*x^4*ln(f*x^m))*(a+b*ln(c*(e*x+d)^n))-1/4*b*d^4*n*ln(f*x^m)*ln(1+e*x/d
)/e^4-1/4*b*d^4*m*n*polylog(2,-e*x/d)/e^4
```

Rubi [A] time = 0.22, antiderivative size = 232, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.292, Rules used = {2426, 43, 2351, 2295, 2304, 2317, 2391}

$$-\frac{bd^4mn\text{PolyLog}\left(2,-\frac{ex}{d}\right)}{4e^4} - \frac{1}{16}\left(mx^4 - 4x^4\log\left(fx^m\right)\right)\left(a + b\log\left(c(d+ex)^n\right)\right) - \frac{bd^4n\log\left(\frac{ex}{d}+1\right)\log\left(fx^m\right)}{4e^4} + \frac{bd^3\cdots}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*Log[f*x^m]*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] (-5*b*d^3*m*n*x)/(16*e^3) + (3*b*d^2*m*n*x^2)/(32*e^2) - (7*b*d*m*n*x^3)/(1
44*e) + (b*m*n*x^4)/32 + (b*d^3*n*x*Log[f*x^m])/(4*e^3) - (b*d^2*n*x^2*Log[
f*x^m])/(8*e^2) + (b*d*n*x^3*Log[f*x^m])/(12*e) - (b*n*x^4*Log[f*x^m])/16 +
 (b*d^4*m*n*Log[d + e*x])/(16*e^4) - ((m*x^4 - 4*x^4*Log[f*x^m])*(a + b*Log
[c*(d + e*x)^n]))/16 - (b*d^4*n*Log[f*x^m]*Log[1 + (e*x)/d])/(4*e^4) - (b*d
^4*m*n*PolyLog[2, -((e*x)/d)])/(4*e^4)
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2351

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((f_.)*(x_))^(m_.)*((d_) + (e_.)*
(x_)^(r_.))^(q_.), x_Symbol] :> With[{u = ExpandIntegrand[a + b*Log[c*x^n],
```

```
 (f*x)^m*(d + e*x^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e,
 f, m, n, q, r}, x] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[m] && Integer
Q[r]))
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2426

```
Int[Log[(f_.)*(x_)^(m_.)]*((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_
.))*((g_.)*(x_))^(q_.), x_Symbol] :> -Simp[(((m*(g*x)^(q + 1))/(q + 1) - (g
*x)^(q + 1)*Log[f*x^m])*(a + b*Log[c*(d + e*x)^n]))/(g*(q + 1)), x] + (-Dis
t[(b*e*n)/(g*(q + 1)), Int[((g*x)^(q + 1)*Log[f*x^m])/(d + e*x), x], x] + D
ist[(b*e*m*n)/(g*(q + 1)^2), Int[(g*x)^(q + 1)/(d + e*x), x], x]) /; FreeQ[
{a, b, c, d, e, f, g, m, n, q}, x] && NeQ[q, -1]
```

Rubi steps

$$\int x^3\log\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)dx = -\frac{1}{16}\left(mx^4-4x^4\log\left(fx^m\right)\right)\left(a+b\log\left(c(d+ex)^n\right)\right)-\frac{1}{4}(ben)\int$$

$$= -\frac{1}{16}\left(mx^4-4x^4\log\left(fx^m\right)\right)\left(a+b\log\left(c(d+ex)^n\right)\right)-\frac{1}{4}(ben)\int$$

$$= -\frac{bd^3mnx}{16e^3}+\frac{bd^2mnx^2}{32e^2}-\frac{bdmnx^3}{48e}+\frac{1}{64}bmnx^4+\frac{bd^4mn\log(d+}{16e^4}$$

$$= -\frac{5bd^3mnx}{16e^3}+\frac{3bd^2mnx^2}{32e^2}-\frac{7bdmnx^3}{144e}+\frac{1}{32}bmnx^4+\frac{bd^3nx\log\left(\right.}{4e^3}$$

$$= -\frac{5bd^3mnx}{16e^3}+\frac{3bd^2mnx^2}{32e^2}-\frac{7bdmnx^3}{144e}+\frac{1}{32}bmnx^4+\frac{bd^3nx\log\left(\right.}{4e^3}$$

Mathematica [A] time = 0.19, size = 221, normalized size = 0.95

$$-6\log\left(fx^m\right)\left(-12ae^4x^4-12be^4x^4\log\left(c(d+ex)^n\right)+12bd^4n\log(d+ex)+benx\left(-12d^3+6d^2ex-4de^2x^2+3e\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*Log[f*x^m]*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] (-6*Log[f*x^m]*(-12*a*e^4*x^4 + b*e*n*x*(-12*d^3 + 6*d^2*e*x - 4*d*e^2*x^2
+ 3*e^3*x^3) + 12*b*d^4*n*Log[d + e*x] - 12*b*e^4*x^4*Log[c*(d + e*x)^n]) +
 m*(-90*b*d^3*e*n*x + 27*b*d^2*e^2*n*x^2 - 14*b*d*e^3*n*x^3 - 18*a*e^4*x^4
+ 9*b*e^4*n*x^4 + 18*b*d^4*n*(1 + 4*Log[x])*Log[d + e*x] - 18*b*e^4*x^4*Log
[c*(d + e*x)^n] - 72*b*d^4*n*Log[x]*Log[1 + (e*x)/d]) - 72*b*d^4*m*n*PolyLo
g[2, -((e*x)/d)])/(288*e^4)
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(bx^3\log\left((ex+d)^nc\right)\log\left(fx^m\right)+ax^3\log\left(fx^m\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*log(f*x^m)*(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
```

[Out] integral(b*x^3*log((e*x + d)^n*c)*log(f*x^m) + a*x^3*log(f*x^m), x)

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b\log\left((ex+d)^{n}c\right)+a\right)x^{3}\log\left(fx^{m}\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(x^3*log(f*x^m)*(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")

[Out] integrate((b*log((e*x + d)^n*c) + a)*x^3*log(f*x^m), x)

maple [C] time = 0.92, size = 2330, normalized size = 10.04

Expression too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] int(x^3*ln(f*x^m)*(b*ln(c*(e*x+d)^n)+a),x)

[Out] -1/16*a*m*x^4-1/16*n*b*ln(x^m)*x^4+1/4*b*ln(c)*x^4*ln(x^m)+1/4*x^4*ln(f)*a-1/16*I/e^2*Pi*x^2*b*d^2*n*csgn(I*x^m)*csgn(I*f*x^m)^2+1/24*I/e*Pi*x^3*b*d*n*csgn(I*f)*csgn(I*f*x^m)^2-1/8*I/e^4*b*d^4*n*ln(e*x+d)*Pi*csgn(I*f)*csgn(I*f*x^m)^2-1/8/e^2*ln(f)*x^2*b*d^2*n+1/4/e^3*ln(f)*b*d^3*n*x-1/4/e^4*b*d^4*n*ln(e*x+d)*ln(f)+1/12/e*ln(f)*x^3*b*d*n+1/4*a*x^4*ln(x^m)+1/8*I*x^4*ln(f)*Pi*b*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/8*I*x^4*ln(f)*Pi*b*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/8*I*x^4*Pi*ln(c)*b*csgn(I*f)*csgn(I*f*x^m)^2+1/24*I/e*Pi*x^3*b*d*n*csgn(I*x^m)*csgn(I*f*x^m)^2-1/16*I/e^2*Pi*x^2*b*d^2*n*csgn(I*f)*csgn(I*f*x^m)^2+1/8*I/e^3*Pi*b*d^3*n*csgn(I*f)*csgn(I*f*x^m)^2*x+1/8*I/e^3*Pi*b*d^3*n*csgn(I*x^m)*csgn(I*f*x^m)^2*x-1/16*b*Pi^2*csgn(I*c*(e*x+d)^n)^3*x^4*csgn(I*f*x^m)^3-1/16*b*Pi^2*csgn(I*c*(e*x+d)^n)^3*x^4*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/8*I*x^4*Pi*a*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/16*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x^4*csgn(I*x^m)*csgn(I*f*x^m)^2-1/16*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*x^4*csgn(I*f)*csgn(I*f*x^m)^2-1/16*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*x^4*csgn(I*x^m)*csgn(I*f*x^m)^2+1/4*x^4*ln(f)*ln(c)*b-1/16*x^4*ln(f)*b*n-1/16*b*m*x^4*ln(c)-1/8/e^2*n*b*ln(x^m)*x^2*d^2+1/4/e^3*n*b*ln(x^m)*x*d^3-1/4/e^4*n*b*ln(x^m)*d^4*ln(e*x+d)-1/8*I*x^4*Pi*ln(c)*b*csgn(I*f*x^m)^3-1/16*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*x^4*csgn(I*f*x^m)^3-1/16*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x^4*csgn(I*f)*csgn(I*f*x^m)^2+1/4*m/e^4*b*d^4*n*dilog(-1/d*e*x)+(1/4*b*x^4*ln(x^m)+1/16*b*x^4*(-2*I*Pi*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+2*I*Pi*csgn(I*f)*csgn(I*f*x^m)^2+2*I*Pi*csgn(I*x^m)*csgn(I*f*x^m)^2-2*I*Pi*csgn(I*f*x^m)^3+4*ln(f)-m))*ln((e*x+d)^n)+1/4*m/e^4*b*d^4*n*ln(e*x+d)*ln(-1/d*e*x)-1/8*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*x^4*ln(x^m)-205/576*b*d^4*m*n/e^4+1/8*I/e^4*b*d^4*n*ln(e*x+d)*Pi*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/8*I/e^3*Pi*b*d^3*n*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)*x+1/32*b*m*n*x^4+1/16*b*d^4*m*n*ln(e*x+d)/e^4-1/24*I/e*Pi*x^3*b*d*n*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/16*I/e^2*Pi*x^2*b*d^2*n*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/12/e*n*b*ln(x^m)*x^3*d-1/8*I/e^4*b*d^4*n*ln(e*x+d)*Pi*csgn(I*x^m)*csgn(I*f*x^m)^2-1/16*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*x^4*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/16*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*x^4*csgn(I*f)*csgn(I*f*x^m)^2+1/16*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*x^4*csgn(I*x^m)*csgn(I*f*x^m)^2+1/16*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x^4*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/8*I*x^4*Pi*a*csgn(I*f)*csgn(I*f*x^m)^2+1/8*I*x^4*Pi*a*csgn(I*x^m)*csgn(I*f*x^m)^2+1/32*I*m*Pi*b*x^4*csgn(I*c*(e*x+d)^n)^3+1/16*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x^4*csgn(I*f*x^m)^3+1/16*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*x^4*csgn(I*f*x^m)^3+1/16*b*Pi^2*csgn(I*c*(e*x+d)^n)^3*x^4*csgn(I*f)*csgn(I*f*x^m)^2+1/16*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*x^4*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/8*I/e^3*Pi*b*d^3*n*csgn(I*f*x^m)^3*x+1/8*I/e^4*b*d^4*n*ln(e*x+d)*Pi*csgn(I*f*

```
x^m)^3-1/24*I/e*Pi*x^3*b*d*n*csgn(I*f*x^m)^3+1/16*I/e^2*Pi*x^2*b*d^2*n*csgn
(I*f*x^m)^3+1/32*I*x^4*Pi*b*n*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/8*I*x^4
*ln(f)*Pi*b*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/8*I*x^4*Pi*ln
(c)*b*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/32*I*m*Pi*b*x^4*csgn(I*c)*csgn(
I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/8*I*x^4*ln(f)*Pi*b*csgn(I*c*(e*x+d)^n)^3
-1/32*I*x^4*Pi*b*n*csgn(I*x^m)*csgn(I*f*x^m)^2+1/8*I*b*Pi*csgn(I*c)*csgn(I*
c*(e*x+d)^n)^2*x^4*ln(x^m)+1/8*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)
^2*x^4*ln(x^m)+1/8*I*x^4*Pi*ln(c)*b*csgn(I*x^m)*csgn(I*f*x^m)^2-1/32*I*m*Pi
*b*x^4*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/32*I*m*Pi*b*x^4*csgn(I*(e*x+d)^n)*
csgn(I*c*(e*x+d)^n)^2-1/32*I*x^4*Pi*b*n*csgn(I*f)*csgn(I*f*x^m)^2+1/16*b*Pi
^2*csgn(I*c*(e*x+d)^n)^3*x^4*csgn(I*x^m)*csgn(I*f*x^m)^2-1/8*I*x^4*Pi*a*csg
n(I*f*x^m)^3-1/8*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*x^4*ln(x^m)+1/32*I*x^4*Pi*b*n
*csgn(I*f*x^m)^3-5/16*b*d^3*m*n*x/e^3+3/32*b*d^2*m*n*x^2/e^2-7/144*b*d*m*n*
x^3/e
```

maxima [A] time = 0.68, size = 231, normalized size = 1.00

$$\frac{1}{288}\left(\frac{72\left(\log\left(ex+d\right)\log\left(-\frac{ex+d}{d}+1\right)+\mathrm{Li}_2\left(\frac{ex+d}{d}\right)\right)bd^4n}{e^4}-\frac{18\,be^4x^4\log\left(\left(ex+d\right)^n\right)+14\,bde^3nx^3-27\,bd^2e^2nx\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*log(f*x^m)*(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
```

```
[Out] 1/288*(72*(log(e*x + d)*log(-(e*x + d)/d + 1) + dilog((e*x + d)/d))*b*d^4*n
/e^4 - (18*b*e^4*x^4*log((e*x + d)^n) + 14*b*d*e^3*n*x^3 - 27*b*d^2*e^2*n*x
^2 + 90*b*d^3*e*n*x - 18*b*d^4*n*log(e*x + d) + 9*(2*a*e^4 - (e^4*n - 2*e^4
*log(c))*b)*x^4)/e^4)*m + 1/48*(12*b*x^4*log((e*x + d)^n*c) + 12*a*x^4 - b*
e*n*(12*d^4*log(e*x + d)/e^5 + (3*e^3*x^4 - 4*d*e^2*x^3 + 6*d^2*e*x^2 - 12*
d^3*x)/e^4))*log(f*x^m)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^3\,\ln\left(f\,x^m\right)\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*log(f*x^m)*(a + b*log(c*(d + e*x)^n)),x)
```

```
[Out] int(x^3*log(f*x^m)*(a + b*log(c*(d + e*x)^n)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*ln(f*x**m)*(a+b*ln(c*(e*x+d)**n)),x)
```

```
[Out] Timed out
```

3.359 $\int x^2 \log\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)dx$

Optimal. Leaf size=195

$$-\frac{1}{9}\left(mx^3-3x^3\log\left(fx^m\right)\right)\left(a+b\log\left(c(d+ex)^n\right)\right)+\frac{bd^3n\log\left(\frac{ex}{d}+1\right)\log\left(fx^m\right)}{3e^3}+\frac{bd^3mn\text{Li}_2\left(-\frac{ex}{d}\right)}{3e^3}-\frac{bd^3mn\log(d}{9e^3}$$

```
[Out] 4/9*b*d^2*m*n*x/e^2-5/36*b*d*m*n*x^2/e+2/27*b*m*n*x^3-1/3*b*d^2*n*x*ln(f*x^
m)/e^2+1/6*b*d*n*x^2*ln(f*x^m)/e-1/9*b*n*x^3*ln(f*x^m)-1/9*b*d^3*m*n*ln(e*x
+d)/e^3-1/9*(m*x^3-3*x^3*ln(f*x^m))*(a+b*ln(c*(e*x+d)^n))+1/3*b*d^3*n*ln(f*
x^m)*ln(1+e*x/d)/e^3+1/3*b*d^3*m*n*polylog(2,-e*x/d)/e^3
```

Rubi [A] time = 0.18, antiderivative size = 195, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.292, Rules used = {2426, 43, 2351, 2295, 2304, 2317, 2391}

$$\frac{bd^3mn\text{PolyLog}\left(2,-\frac{ex}{d}\right)}{3e^3}-\frac{1}{9}\left(mx^3-3x^3\log\left(fx^m\right)\right)\left(a+b\log\left(c(d+ex)^n\right)\right)+\frac{bd^3n\log\left(\frac{ex}{d}+1\right)\log\left(fx^m\right)}{3e^3}-\frac{bd^2nx}{}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*Log[f*x^m]*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] (4*b*d^2*m*n*x)/(9*e^2) - (5*b*d*m*n*x^2)/(36*e) + (2*b*m*n*x^3)/27 - (b*d^
2*n*x*Log[f*x^m])/(3*e^2) + (b*d*n*x^2*Log[f*x^m])/(6*e) - (b*n*x^3*Log[f*x
^m])/9 - (b*d^3*m*n*Log[d + e*x])/(9*e^3) - ((m*x^3 - 3*x^3*Log[f*x^m])*(a
+ b*Log[c*(d + e*x)^n]))/9 + (b*d^3*n*Log[f*x^m]*Log[1 + (e*x)/d])/(3*e^3)
+ (b*d^3*m*n*PolyLog[2, -((e*x)/d)])/(3*e^3)
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2351

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((f_.)*(x_))^(m_.)*((d_) + (e_.)*
(x_)^(r_.))^(q_.), x_Symbol] :> With[{u = ExpandIntegrand[a + b*Log[c*x^n],
 (f*x)^m*(d + e*x^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e,
 f, m, n, q, r}, x] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[m] && Integer
```

```
Q[r]))
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2426

```
Int[Log[(f_.)*(x_)^(m_.)]*((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_
.))*((g_.)*(x_))^(q_.), x_Symbol] :> -Simp[(((m*(g*x)^(q + 1))/(q + 1) - (g
*x)^(q + 1)*Log[f*x^m])*(a + b*Log[c*(d + e*x)^n]))/(g*(q + 1)), x] + (-Dis
t[(b*e*n)/(g*(q + 1)), Int[((g*x)^(q + 1)*Log[f*x^m])/(d + e*x), x], x] + D
ist[(b*e*m*n)/(g*(q + 1)^2), Int[(g*x)^(q + 1)/(d + e*x), x], x]) /; FreeQ[
{a, b, c, d, e, f, g, m, n, q}, x] && NeQ[q, -1]
```

Rubi steps

$$\int x^2 \log\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)\,dx = -\frac{1}{9}\left(mx^3-3x^3\log\left(fx^m\right)\right)\left(a+b\log\left(c(d+ex)^n\right)\right)-\frac{1}{3}(ben)\int \frac{x}{}$$

$$= -\frac{1}{9}\left(mx^3-3x^3\log\left(fx^m\right)\right)\left(a+b\log\left(c(d+ex)^n\right)\right)-\frac{1}{3}(ben)\int\Big($$

$$= \frac{bd^2mnx}{9e^2}-\frac{bdmnx^2}{18e}+\frac{1}{27}bmnx^3-\frac{bd^3mn\log(d+ex)}{9e^3}-\frac{1}{9}\Big(mx^3$$

$$= \frac{4bd^2mnx}{9e^2}-\frac{5bdmnx^2}{36e}+\frac{2}{27}bmnx^3-\frac{bd^2nx\log\left(fx^m\right)}{3e^2}+\frac{bdnx^2\,\mathrm{l}}{}$$

$$= \frac{4bd^2mnx}{9e^2}-\frac{5bdmnx^2}{36e}+\frac{2}{27}bmnx^3-\frac{bd^2nx\log\left(fx^m\right)}{3e^2}+\frac{bdnx^2\,\mathrm{l}}{}$$

Mathematica [A] time = 0.18, size = 197, normalized size = 1.01

$$\frac{6\log\left(fx^m\right)\left(6ae^3x^3+6be^3x^3\log\left(c(d+ex)^n\right)+6bd^3n\log(d+ex)+benx\left(-6d^2+3dex-2e^2x^2\right)\right)+m\left(-12ae\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*Log[f*x^m]*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] (6*Log[f*x^m]*(6*a*e^3*x^3 + b*e*n*x*(-6*d^2 + 3*d*e*x - 2*e^2*x^2) + 6*b*d
^3*n*Log[d + e*x] + 6*b*e^3*x^3*Log[c*(d + e*x)^n]) + m*(48*b*d^2*e*n*x - 1
5*b*d*e^2*n*x^2 - 12*a*e^3*x^3 + 8*b*e^3*n*x^3 - 12*b*d^3*n*(1 + 3*Log[x])*
Log[d + e*x] - 12*b*e^3*x^3*Log[c*(d + e*x)^n] + 36*b*d^3*n*Log[x]*Log[1 +
(e*x)/d]) + 36*b*d^3*m*n*PolyLog[2, -((e*x)/d)])/(108*e^3)
```

fricas [F] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(bx^2\log\left((ex+d)^nc\right)\log\left(fx^m\right)+ax^2\log\left(fx^m\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(f*x^m)*(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
```

```
[Out] integral(b*x^2*log((e*x + d)^n*c)*log(f*x^m) + a*x^2*log(f*x^m), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b\log\left((ex+d)^nc\right)+a\right)x^2\log\left(fx^m\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(f*x^m)*(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*x^2*log(f*x^m), x)
```

maple [C] time = 0.86, size = 2162, normalized size = 11.09

Expression too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*ln(f*x^m)*(b*ln(c*(e*x+d)^n)+a),x)
```

```
[Out] -1/9*b*m*x^3*ln(c)+1/12*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)
^n)*x^3*csgn(I*f)*csgn(I*f*x^m)^2+1/12*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*c
sgn(I*c*(e*x+d)^n)*x^3*csgn(I*x^m)*csgn(I*f*x^m)^2-1/9*n*b*ln(x^m)*x^3+1/3*
b*ln(c)*x^3*ln(x^m)-1/9*a*m*x^3+1/6*I*x^3*Pi*ln(c)*b*csgn(I*f)*csgn(I*f*x^m
)^2+1/3*a*x^3*ln(x^m)+1/3*x^3*ln(f)*a+1/6*I*x^3*Pi*ln(c)*b*csgn(I*x^m)*csgn
(I*f*x^m)^2+1/6*I*x^3*Pi*ln(f)*b*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/6*I*x^3*
Pi*ln(f)*b*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/6*I*x^3*Pi*a*csgn(I*f)
*csgn(I*x^m)*csgn(I*f*x^m)-1/12*b*Pi^2*csgn(I*c*(e*x+d)^n)^3*x^3*csgn(I*f)*
csgn(I*x^m)*csgn(I*f*x^m)-1/12*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*
(e*x+d)^n)*x^3*csgn(I*f*x^m)^3+1/6*I/e^3*b*d^3*n*ln(e*x+d)*Pi*csgn(I*x^m)*c
sgn(I*f*x^m)^2-1/6*I/e^2*Pi*b*d^2*n*csgn(I*f)*csgn(I*f*x^m)^2*x-1/6*I/e^2*P
i*b*d^2*n*csgn(I*x^m)*csgn(I*f*x^m)^2*x+1/3*x^3*ln(c)*ln(f)*b-1/9*x^3*ln(f)
*b*n+(1/3*b*x^3*ln(x^m)+1/18*b*x^3*(-3*I*Pi*csgn(I*f)*csgn(I*x^m)*csgn(I*f*
x^m)+3*I*Pi*csgn(I*f)*csgn(I*f*x^m)^2+3*I*Pi*csgn(I*x^m)*csgn(I*f*x^m)^2-3*
I*Pi*csgn(I*f*x^m)^3+6*ln(f)-2*m))*ln((e*x+d)^n)-1/6*I*x^3*Pi*ln(f)*b*csgn(
I*c*(e*x+d)^n)^3+1/12*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x^3*csgn(I*f*x
^m)^3-1/12*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x^3*csgn(I*f)*csgn(I*f*x^
m)^2-1/12*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x^3*csgn(I*x^m)*csgn(I*f*x
^m)^2-1/9*b*d^3*m*n*ln(e*x+d)/e^3-1/3/e^2*ln(f)*b*d^2*n*x+1/6/e*ln(f)*x^2*b
*d*n+1/3/e^3*b*d^3*n*ln(e*x+d)*ln(f)+1/12*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c
*(e*x+d)^n)^2*x^3*csgn(I*f*x^m)^3+1/12*b*Pi^2*csgn(I*c*(e*x+d)^n)^3*x^3*csg
n(I*f)*csgn(I*f*x^m)^2+1/12*b*Pi^2*csgn(I*c*(e*x+d)^n)^3*x^3*csgn(I*x^m)*cs
gn(I*f*x^m)^2+1/6*I*x^3*Pi*a*csgn(I*f)*csgn(I*f*x^m)^2+1/6*I*x^3*Pi*a*csgn(
I*x^m)*csgn(I*f*x^m)^2-1/6*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*x^3*ln(x^m)-1/12*b*
Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*x^3*csgn(I*f)*csgn(I*f*x^m)^2-
1/12*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*x^3*csgn(I*x^m)*csgn(I*
f*x^m)^2+1/12*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x^3*csgn(I*f)*csgn(I*x
^m)*csgn(I*f*x^m)+1/12*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*x^3*c
sgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/6*I/e^3*b*d^3*n*ln(e*x+d)*Pi*csgn(I*f*
x^m)^3-1/12*I/e*Pi*x^2*b*d*n*csgn(I*f*x^m)^3+1/6*I/e^2*Pi*b*d^2*n*csgn(I*f*
x^m)^3*x+49/108*b*d^3*m*n/e^3-1/3*m/e^3*b*d^3*n*dilog(-1/d*e*x)-1/6*I*x^3*P
i*a*csgn(I*f*x^m)^3-1/12*b*Pi^2*csgn(I*c*(e*x+d)^n)^3*x^3*csgn(I*f*x^m)^3-1
/3*m/e^3*b*d^3*n*ln(e*x+d)*ln(-1/d*e*x)+1/18*I*m*Pi*b*x^3*csgn(I*c*(e*x+d)^
n)^3+1/18*I*x^3*Pi*b*n*csgn(I*f*x^m)^3-1/6*I*x^3*Pi*ln(c)*b*csgn(I*f*x^m)^3
+2/27*b*m*n*x^3-1/18*I*x^3*Pi*b*n*csgn(I*x^m)*csgn(I*f*x^m)^2+1/6*I*b*Pi*cs
gn(I*c)*csgn(I*c*(e*x+d)^n)^2*x^3*ln(x^m)+1/6*I*b*Pi*csgn(I*(e*x+d)^n)*csgn
(I*c*(e*x+d)^n)^2*x^3*ln(x^m)-1/6*I*x^3*Pi*ln(f)*b*csgn(I*c)*csgn(I*(e*x+d)
^n)*csgn(I*c*(e*x+d)^n)-1/6*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*
x+d)^n)*x^3*ln(x^m)+1/18*I*m*Pi*b*x^3*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*
(e*x+d)^n)+1/18*I*x^3*Pi*b*n*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/6*I*x^3*
Pi*ln(c)*b*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/18*I*m*Pi*b*x^3*csgn(I*c)*
csgn(I*c*(e*x+d)^n)^2-1/18*I*m*Pi*b*x^3*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^
```

```
n)^2-1/18*I*x^3*Pi*b*n*csgn(I*f)*csgn(I*f*x^m)^2-1/12*I/e*Pi*x^2*b*d*n*csgn
(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/6*I/e^3*b*d^3*n*ln(e*x+d)*Pi*csgn(I*f)*cs
gn(I*x^m)*csgn(I*f*x^m)+1/12*I/e*Pi*x^2*b*d*n*csgn(I*f)*csgn(I*f*x^m)^2+1/6
*I/e^2*Pi*b*d^2*n*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)*x+1/12*I/e*Pi*x^2*b*d
*n*csgn(I*x^m)*csgn(I*f*x^m)^2-1/12*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn
(I*c*(e*x+d)^n)*x^3*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/6*I/e^3*b*d^3*n*l
n(e*x+d)*Pi*csgn(I*f)*csgn(I*f*x^m)^2+1/6/e*n*b*ln(x^m)*x^2*d-1/3/e^2*n*b*l
n(x^m)*x*d^2+1/3/e^3*n*b*ln(x^m)*d^3*ln(e*x+d)+4/9*b*d^2*m*n*x/e^2-5/36*b*d
*m*n*x^2/e
```

maxima [A] time = 0.69, size = 207, normalized size = 1.06

$$-\frac{1}{108}\left(\frac{36\left(\log\left(ex+d\right)\log\left(-\frac{ex+d}{d}+1\right)+\text{Li}_2\left(\frac{ex+d}{d}\right)\right)bd^3n}{e^3}+\frac{12\,be^3x^3\log\left(\left(ex+d\right)^n\right)+15\,bde^2nx^2-48\,bd^2en\cdots}{\cdots}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(f*x^m)*(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
```

```
[Out] -1/108*(36*(log(e*x + d)*log(-(e*x + d)/d + 1) + dilog((e*x + d)/d))*b*d^3*
n/e^3 + (12*b*e^3*x^3*log((e*x + d)^n) + 15*b*d*e^2*n*x^2 - 48*b*d^2*e*n*x
+ 12*b*d^3*n*log(e*x + d) + 4*(3*a*e^3 - (2*e^3*n - 3*e^3*log(c))*b)*x^3)/e
^3)*m + 1/18*(6*b*x^3*log((e*x + d)^n*c) + 6*a*x^3 + b*e*n*(6*d^3*log(e*x +
 d)/e^4 - (2*e^2*x^3 - 3*d*e*x^2 + 6*d^2*x)/e^3))*log(f*x^m)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x^2\,\ln\left(f\,x^m\right)\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*log(f*x^m)*(a + b*log(c*(d + e*x)^n)),x)
```

```
[Out] int(x^2*log(f*x^m)*(a + b*log(c*(d + e*x)^n)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*ln(f*x**m)*(a+b*ln(c*(e*x+d)**n)),x)
```

```
[Out] Timed out
```

3.360 $\int x \log\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)\,dx$

Optimal. Leaf size=158

$$-\frac{1}{4}\left(mx^2-2x^2\log\left(fx^m\right)\right)\left(a+b\log\left(c(d+ex)^n\right)\right)-\frac{bd^2n\log\left(\frac{ex}{d}+1\right)\log\left(fx^m\right)}{2e^2}-\frac{bd^2mn\text{Li}_2\left(-\frac{ex}{d}\right)}{2e^2}+\frac{bd^2mn\log(d}{4e^2}$$

```
[Out] -3/4*b*d*m*n*x/e+1/4*b*m*n*x^2+1/2*b*d*n*x*ln(f*x^m)/e-1/4*b*n*x^2*ln(f*x^m
)+1/4*b*d^2*m*n*ln(e*x+d)/e^2-1/4*(m*x^2-2*x^2*ln(f*x^m))*(a+b*ln(c*(e*x+d)
^n))-1/2*b*d^2*n*ln(f*x^m)*ln(1+e*x/d)/e^2-1/2*b*d^2*m*n*polylog(2,-e*x/d)/
e^2
```

Rubi [A] time = 0.14, antiderivative size = 158, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.318, Rules used = {2426, 43, 2351, 2295, 2304, 2317, 2391}

$$-\frac{bd^2mn\text{PolyLog}\left(2,-\frac{ex}{d}\right)}{2e^2}-\frac{1}{4}\left(mx^2-2x^2\log\left(fx^m\right)\right)\left(a+b\log\left(c(d+ex)^n\right)\right)-\frac{bd^2n\log\left(\frac{ex}{d}+1\right)\log\left(fx^m\right)}{2e^2}+\frac{bd^2m}{}$$

Antiderivative was successfully verified.

```
[In] Int[x*Log[f*x^m]*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] (-3*b*d*m*n*x)/(4*e) + (b*m*n*x^2)/4 + (b*d*n*x*Log[f*x^m])/(2*e) - (b*n*x^
2*Log[f*x^m])/4 + (b*d^2*m*n*Log[d + e*x])/(4*e^2) - ((m*x^2 - 2*x^2*Log[f*
x^m])*(a + b*Log[c*(d + e*x)^n]))/4 - (b*d^2*n*Log[f*x^m]*Log[1 + (e*x)/d])
/(2*e^2) - (b*d^2*m*n*PolyLog[2, -((e*x)/d)])/(2*e^2)
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2351

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((f_.)*(x_))^(m_.)*((d_) + (e_.)*
(x_)^(r_.))^(q_.), x_Symbol] :> With[{u = ExpandIntegrand[a + b*Log[c*x^n],
 (f*x)^m*(d + e*x^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e,
 f, m, n, q, r}, x] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[m] && Integer
Q[r]))
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2426

```
Int[Log[(f_.)*(x_)^(m_.)]*((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_
.))*((g_.)*(x_))^(q_.), x_Symbol] :> -Simp[(((m*(g*x)^(q + 1))/(q + 1) - (g
*x)^(q + 1)*Log[f*x^m])*(a + b*Log[c*(d + e*x)^n]))/(g*(q + 1)), x] + (-Dis
t[(b*e*n)/(g*(q + 1)), Int[((g*x)^(q + 1)*Log[f*x^m])/(d + e*x), x], x] + D
ist[(b*e*m*n)/(g*(q + 1)^2), Int[(g*x)^(q + 1)/(d + e*x), x], x]) /; FreeQ[
{a, b, c, d, e, f, g, m, n, q}, x] && NeQ[q, -1]
```

Rubi steps

$$\int x\log\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)\,dx=-\frac{1}{4}\left(mx^2-2x^2\log\left(fx^m\right)\right)\left(a+b\log\left(c(d+ex)^n\right)\right)-\frac{1}{2}(ben)\int\frac{x^2}{}$$

$$=-\frac{1}{4}\left(mx^2-2x^2\log\left(fx^m\right)\right)\left(a+b\log\left(c(d+ex)^n\right)\right)-\frac{1}{2}(ben)\int\Bigg(-$$

$$=-\frac{bdmnx}{4e}+\frac{1}{8}bmnx^2+\frac{bd^2mn\log(d+ex)}{4e^2}-\frac{1}{4}\left(mx^2-2x^2\log\left(f\right.\right.$$

$$=-\frac{3bdmnx}{4e}+\frac{1}{4}bmnx^2+\frac{bdnx\log\left(fx^m\right)}{2e}-\frac{1}{4}bnx^2\log\left(fx^m\right)+\frac{bd}{}$$

$$=-\frac{3bdmnx}{4e}+\frac{1}{4}bmnx^2+\frac{bdnx\log\left(fx^m\right)}{2e}-\frac{1}{4}bnx^2\log\left(fx^m\right)+\frac{bd}{}$$

Mathematica [A] time = 0.13, size = 164, normalized size = 1.04

$$\frac{m\left(-ae^2x^2-be^2x^2\log\left(c(d+ex)^n\right)+bd^2n(2\log(x)+1)\log(d+ex)-2bd^2n\log(x)\log\left(\frac{ex}{d}+1\right)-3bdenx+be\right.}{4e}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*Log[f*x^m]*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] (Log[f*x^m]*(-2*b*d^2*n*Log[d + e*x] + e*x*(2*b*d*n + 2*a*e*x - b*e*n*x + 2
*b*e*x*Log[c*(d + e*x)^n])) + m*(-3*b*d*e*n*x - a*e^2*x^2 + b*e^2*n*x^2 + b
*d^2*n*(1 + 2*Log[x])*Log[d + e*x] - b*e^2*x^2*Log[c*(d + e*x)^n] - 2*b*d^2
*n*Log[x]*Log[1 + (e*x)/d]) - 2*b*d^2*m*n*PolyLog[2, -((e*x)/d)])/(4*e^2)
```

fricas [F] time = 0.48, size = 0, normalized size = 0.00

$$\text{integral}\left(bx\log\left((ex+d)^nc\right)\log\left(fx^m\right)+ax\log\left(fx^m\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*log(f*x^m)*(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
```

```
[Out] integral(b*x*log((e*x + d)^n*c)*log(f*x^m) + a*x*log(f*x^m), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(b\log\left((ex+d)^nc\right)+a\right)x\log\left(fx^m\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*log(f*x^m)*(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*x*log(f*x^m), x)
```

maple [C] time = 0.84, size = 1994, normalized size = 12.62

Expression too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*ln(f*x^m)*(b*ln(c*(e*x+d)^n)+a),x)
```

```
[Out] 1/4*I/e^2*b*d^2*n*ln(e*x+d)*Pi*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/2*a*x^
2*ln(x^m)-1/4*x^2*ln(f)*b*n+1/2*x^2*ln(f)*a-1/4*a*m*x^2+1/2*x^2*ln(f)*ln(c)
*b+1/4*I*x^2*Pi*a*csgn(I*f)*csgn(I*f*x^m)^2+1/4*I*x^2*Pi*a*csgn(I*x^m)*csgn
(I*f*x^m)^2-1/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*x^2*ln(x^m)-1/4*b*m*x^2*ln(c)+
(1/2*b*x^2*ln(x^m)+1/4*b*x^2*(-I*Pi*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+I*P
i*csgn(I*f)*csgn(I*f*x^m)^2+I*Pi*csgn(I*x^m)*csgn(I*f*x^m)^2-I*Pi*csgn(I*f*
x^m)^3+2*ln(f)-m))*ln((e*x+d)^n)-1/4*n*b*ln(x^m)*x^2+1/2*b*ln(c)*x^2*ln(x^m
)-1/4*I/e^2*b*d^2*n*ln(e*x+d)*Pi*csgn(I*f)*csgn(I*f*x^m)^2+1/8*b*Pi^2*csgn(
I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*x^2*csgn(I*x^m)*csgn(I*f*x^m)^2-
1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*x^2*ln(x^m)+1/8*
I*x^2*Pi*b*n*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/4*b*d^2*m*n*ln(e*x+d)/e^
2+1/2/e*n*b*ln(x^m)*x*d-1/2/e^2*n*b*ln(x^m)*d^2*ln(e*x+d)+1/8*b*Pi^2*csgn(I
*c)*csgn(I*c*(e*x+d)^n)^2*x^2*csgn(I*f*x^m)^3+1/8*b*Pi^2*csgn(I*(e*x+d)^n)*
csgn(I*c*(e*x+d)^n)^2*x^2*csgn(I*f*x^m)^3-1/8*b*Pi^2*csgn(I*c)*csgn(I*c*(e*
x+d)^n)^2*x^2*csgn(I*x^m)*csgn(I*f*x^m)^2-1/8*b*Pi^2*csgn(I*c)*csgn(I*(e*x+
d)^n)*csgn(I*c*(e*x+d)^n)*x^2*csgn(I*f*x^m)^3+1/4*I*b*Pi*csgn(I*c)*csgn(I*c
*(e*x+d)^n)^2*x^2*ln(x^m)+1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^
2*x^2*ln(x^m)+1/8*b*Pi^2*csgn(I*c*(e*x+d)^n)^3*x^2*csgn(I*f)*csgn(I*f*x^m)^
2+1/8*b*Pi^2*csgn(I*c*(e*x+d)^n)^3*x^2*csgn(I*x^m)*csgn(I*f*x^m)^2+1/8*b*Pi
^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*x^2*csgn(I*f)*csgn(I*f*x
^m)^2+1/8*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x^2*csgn(I*f)*csgn(I*x^m)*
csgn(I*f*x^m)+1/8*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*x^2*csgn(I
*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/4*I/e*Pi*b*d*n*csgn(I*f*x^m)^3*x+1/4*I/e^2*
b*d^2*n*ln(e*x+d)*Pi*csgn(I*f*x^m)^3+1/8*I*m*Pi*b*x^2*csgn(I*c)*csgn(I*(e*x
+d)^n)*csgn(I*c*(e*x+d)^n)-1/8*I*m*Pi*b*x^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2
-1/8*I*m*Pi*b*x^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/8*I*x^2*Pi*b*n*
csgn(I*f)*csgn(I*f*x^m)^2-1/8*I*x^2*Pi*b*n*csgn(I*x^m)*csgn(I*f*x^m)^2+1/2*
m/e^2*b*d^2*n*dilog(-1/d*e*x)+1/2*m/e^2*b*d^2*n*ln(e*x+d)*ln(-1/d*e*x)-1/8*
b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*x^2*csgn(I*f)*csgn(I
*x^m)*csgn(I*f*x^m)-1/4*I/e^2*b*d^2*n*ln(e*x+d)*Pi*csgn(I*x^m)*csgn(I*f*x^m
)^2+1/4*I/e*Pi*b*d*n*csgn(I*f)*csgn(I*f*x^m)^2*x-5/8*b*d^2*m*n/e^2-3/4*b*d*
m*n*x/e+1/2/e*ln(f)*b*d*n*x-1/2/e^2*b*d^2*n*ln(e*x+d)*ln(f)-1/4*I*x^2*Pi*a*
csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/4*I*x^2*ln(f)*Pi*b*csgn(I*c)*csgn(I*c
*(e*x+d)^n)^2+1/4*b*m*n*x^2+1/8*I*m*Pi*b*x^2*csgn(I*c*(e*x+d)^n)^3-1/4*I*x^
2*ln(f)*Pi*b*csgn(I*c*(e*x+d)^n)^3-1/4*I*x^2*Pi*ln(c)*b*csgn(I*f*x^m)^3+1/8
*I*x^2*Pi*b*n*csgn(I*f*x^m)^3+1/4*I*x^2*ln(f)*Pi*b*csgn(I*(e*x+d)^n)*csgn(I
*c*(e*x+d)^n)^2+1/4*I*x^2*Pi*ln(c)*b*csgn(I*f)*csgn(I*f*x^m)^2-1/8*b*Pi^2*c
sgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*x^2*csgn(I*f)*csgn(I*f*x^m)^2-1/8*b*
Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*x^2*csgn(I*x^m)*csgn(I*f*x^m)^
2-1/8*b*Pi^2*csgn(I*c*(e*x+d)^n)^3*x^2*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-
1/4*I*x^2*ln(f)*Pi*b*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/4*I*
x^2*Pi*ln(c)*b*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/4*I*x^2*Pi*ln(c)*b*csg
n(I*x^m)*csgn(I*f*x^m)^2-1/8*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x^2*csg
n(I*f)*csgn(I*f*x^m)^2-1/4*I/e*Pi*b*d*n*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)
*x+1/4*I/e*Pi*b*d*n*csgn(I*x^m)*csgn(I*f*x^m)^2*x-1/8*b*Pi^2*csgn(I*c*(e*x+
d)^n)^3*x^2*csgn(I*f*x^m)^3-1/4*I*x^2*Pi*a*csgn(I*f*x^m)^3
```

maxima [A] time = 0.67, size = 178, normalized size = 1.13

$$\frac{1}{4}\left(\frac{2\left(\log\left(ex+d\right)\log\left(-\frac{ex+d}{d}+1\right)+\mathrm{Li}_2\left(\frac{ex+d}{d}\right)\right)bd^2n}{e^2}-\frac{be^2x^2\log\left(\left(ex+d\right)^n\right)+3\,bdenx-bd^2n\log\left(ex+d\right)+\left(\right.}{e^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*log(f*x^m)*(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
```

```
[Out] 1/4*(2*(log(e*x + d)*log(-(e*x + d)/d + 1) + dilog((e*x + d)/d))*b*d^2*n/e^
2 - (b*e^2*x^2*log((e*x + d)^n) + 3*b*d*e*n*x - b*d^2*n*log(e*x + d) + (a*e
^2 - (e^2*n - e^2*log(c))*b)*x^2)/e^2)*m - 1/4*(b*e*n*(2*d^2*log(e*x + d)/e
^3 + (e*x^2 - 2*d*x)/e^2) - 2*b*x^2*log((e*x + d)^n*c) - 2*a*x^2)*log(f*x^m
)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x\,\ln\left(f\,x^m\right)\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*log(f*x^m)*(a + b*log(c*(d + e*x)^n)),x)
```

```
[Out] int(x*log(f*x^m)*(a + b*log(c*(d + e*x)^n)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*ln(f*x**m)*(a+b*ln(c*(e*x+d)**n)),x)
```

```
[Out] Timed out
```

3.361 $\int \log(fx^m)\left(a+b\log\left(c(d+ex)^n\right)\right)\,dx$

Optimal. Leaf size=99

$$-x\left(m-\log\left(fx^m\right)\right)\left(a+b\log\left(c(d+ex)^n\right)\right)+\frac{bdn\log\left(\frac{ex}{d}+1\right)\log\left(fx^m\right)}{e}+\frac{bdmn\text{Li}_2\left(-\frac{ex}{d}\right)}{e}-\frac{bdmn\log(d+ex)}{e}-bn$$

[Out] 2*b*m*n*x-b*n*x*ln(f*x^m)-b*d*m*n*ln(e*x+d)/e-x*(m-ln(f*x^m))*(a+b*ln(c*(e*x+d)^n))+b*d*n*ln(f*x^m)*ln(1+e*x/d)/e+b*d*m*n*polylog(2,-e*x/d)/e

Rubi [A] time = 0.09, antiderivative size = 99, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.286$, Rules used = {2422, 43, 2351, 2295, 2317, 2391}

$$\frac{bdmn\text{PolyLog}\left(2,-\frac{ex}{d}\right)}{e}-x\left(m-\log\left(fx^m\right)\right)\left(a+b\log\left(c(d+ex)^n\right)\right)+\frac{bdn\log\left(\frac{ex}{d}+1\right)\log\left(fx^m\right)}{e}-\frac{bdmn\log(d+e}{e}$$

Antiderivative was successfully verified.

[In] Int[Log[f*x^m]*(a + b*Log[c*(d + e*x)^n]),x]

[Out] 2*b*m*n*x - b*n*x*Log[f*x^m] - (b*d*m*n*Log[d + e*x])/e - x*(m - Log[f*x^m])*(a + b*Log[c*(d + e*x)^n]) + (b*d*n*Log[f*x^m]*Log[1 + (e*x)/d])/e + (b*d*m*n*PolyLog[2, -((e*x)/d)])/e

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2351

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((f_.)*(x_))^(m_.)*((d_) + (e_.)*
(x_)^(r_.))^(q_.), x_Symbol] :> With[{u = ExpandIntegrand[a + b*Log[c*x^n],
 (f*x)^m*(d + e*x^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e,
 f, m, n, q, r}, x] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[m] && Integer
Q[r]))
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2422

```
Int[Log[(f_.)*(x_)^(m_.)]*((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_
.)), x_Symbol] :> -Simp[x*(m - Log[f*x^m])*(a + b*Log[c*(d + e*x)^n]), x] +
```

```
(-Dist[b*e*n, Int[(x*Log[f*x^m])/(d + e*x), x], x] + Dist[b*e*m*n, Int[x/(
d + e*x), x], x]) /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int \log\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)\,dx = -x\left(m-\log\left(fx^m\right)\right)\left(a+b\log\left(c(d+ex)^n\right)\right)-(ben)\int \frac{x\log\left(fx^m\right)}{d+ex}$$

$$= -x\left(m-\log\left(fx^m\right)\right)\left(a+b\log\left(c(d+ex)^n\right)\right)-(ben)\int\left(\frac{\log\left(fx^m\right)}{e}\right.$$

$$= bmnx-\frac{bdmn\log(d+ex)}{e}-x\left(m-\log\left(fx^m\right)\right)\left(a+b\log\left(c(d+ex\right.\right.$$

$$= 2bmnx-bnx\log\left(fx^m\right)-\frac{bdmn\log(d+ex)}{e}-x\left(m-\log\left(fx^m\right)\right)\left(\right.$$

$$= 2bmnx-bnx\log\left(fx^m\right)-\frac{bdmn\log(d+ex)}{e}-x\left(m-\log\left(fx^m\right)\right)\left(\right.$$

Mathematica [A] time = 0.08, size = 116, normalized size = 1.17

$$\frac{\log\left(fx^m\right)\left(ex\left(a+b\log\left(c(d+ex)^n\right)-bn\right)+bdn\log(d+ex)\right)-m\left(aex+bex\log\left(c(d+ex)^n\right)+bdn(\log(x)+\right.}{e}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[f*x^m]*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] (Log[f*x^m]*(b*d*n*Log[d + e*x] + e*x*(a - b*n + b*Log[c*(d + e*x)^n])) - m
*(a*e*x - 2*b*e*n*x + b*d*n*(1 + Log[x])*Log[d + e*x] + b*e*x*Log[c*(d + e*
x)^n] - b*d*n*Log[x]*Log[1 + (e*x)/d]) + b*d*m*n*PolyLog[2, -((e*x)/d)])/e
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(b\log\left((ex+d)^n c\right)\log\left(fx^m\right)+a\log\left(fx^m\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
```

```
[Out] integral(b*log((e*x + d)^n*c)*log(f*x^m) + a*log(f*x^m), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(b\log\left((ex+d)^n c\right)+a\right)\log\left(fx^m\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*log(f*x^m), x)
```

maple [C] time = 0.75, size = 1724, normalized size = 17.41

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(f*x^m)*(b*ln(c*(e*x+d)^n)+a),x)
```

```
[Out] -1/2*I*b*d*n/e*ln(e*x+d)*Pi*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+a*x*ln(f)-b
*m*x*ln(c)+ln(x^m)*x*a+(b*x*ln(x^m)+1/2*b*(-I*Pi*csgn(I*f)*csgn(I*x^m)*csgn
(I*f*x^m)+I*Pi*csgn(I*f)*csgn(I*f*x^m)^2+I*Pi*csgn(I*x^m)*csgn(I*f*x^m)^2-I
*Pi*csgn(I*f*x^m)^3+2*ln(f)-2*m)*x)*ln((e*x+d)^n)+2*b*m*n*x-a*m*x-1/4*Pi^2*
x*b*csgn(I*f)*csgn(I*f*x^m)^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-n*ln(f)*b*x+l
n(f)*ln(c)*b*x-n*b*ln(x^m)*x+ln(c)*ln(x^m)*x*b+b*d*m*n/e+1/4*Pi^2*x*b*csgn(
I*f)*csgn(I*x^m)*csgn(I*f*x^m)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/4*
Pi^2*x*b*csgn(I*f)*csgn(I*f*x^m)^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*
x+d)^n)+1/4*Pi^2*x*b*csgn(I*x^m)*csgn(I*f*x^m)^2*csgn(I*c)*csgn(I*(e*x+d)^n
)*csgn(I*c*(e*x+d)^n)-1/4*Pi^2*x*b*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)*csgn
(I*c*(e*x+d)^n)^3-1/2*I*Pi*a*x*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/2*I*ln
(f)*Pi*b*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/2*I*Pi*a*x*csgn(I*f*x^
m)^3-1/4*Pi^2*x*b*csgn(I*x^m)*csgn(I*f*x^m)^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)
^2-1/4*Pi^2*x*b*csgn(I*f)*csgn(I*f*x^m)^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d
)^n)^2-1/4*Pi^2*x*b*csgn(I*x^m)*csgn(I*f*x^m)^2*csgn(I*(e*x+d)^n)*csgn(I*c*
(e*x+d)^n)^2-1/2*I*Pi*ln(x^m)*x*b*csgn(I*c*(e*x+d)^n)^3-1/2*I*ln(f)*Pi*b*x*
csgn(I*c*(e*x+d)^n)^3-1/2*I*Pi*ln(c)*b*x*csgn(I*f*x^m)^3+1/2*I*b*d*n/e*ln(e
*x+d)*Pi*csgn(I*f)*csgn(I*f*x^m)^2+1/2*I*b*d*n/e*ln(e*x+d)*Pi*csgn(I*x^m)*c
sgn(I*f*x^m)^2+1/2*I*n*Pi*b*x*csgn(I*f*x^m)^3+1/4*Pi^2*x*b*csgn(I*f)*csgn(I
*f*x^m)^2*csgn(I*c*(e*x+d)^n)^3+1/4*Pi^2*x*b*csgn(I*x^m)*csgn(I*f*x^m)^2*cs
gn(I*c*(e*x+d)^n)^3+1/4*Pi^2*x*b*csgn(I*f*x^m)^3*csgn(I*c)*csgn(I*c*(e*x+d)
^n)^2-b*d*m*n*ln(e*x+d)/e-1/4*Pi^2*x*b*csgn(I*f*x^m)^3*csgn(I*c*(e*x+d)^n)^
3-1/4*Pi^2*x*b*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)*csgn(I*c)*csgn(I*(e*x+d)
^n)*csgn(I*c*(e*x+d)^n)+1/2*I*Pi*ln(c)*b*x*csgn(I*f)*csgn(I*f*x^m)^2+b*d*n/
e*ln(e*x+d)*ln(f)+1/2*I*Pi*ln(c)*b*x*csgn(I*x^m)*csgn(I*f*x^m)^2+1/2*I*Pi*l
n(x^m)*x*b*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/2*I*Pi*ln(x^m)*x*b*csgn(I*(e*x
+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/4*Pi^2*x*b*csgn(I*f*x^m)^3*csgn(I*c)*csgn(I*
(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/4*Pi^2*x*b*csgn(I*f*x^m)^3*csgn(I*(e*x+d)^
n)*csgn(I*c*(e*x+d)^n)^2+1/2*I*m*Pi*b*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*
c*(e*x+d)^n)-1/2*I*Pi*ln(x^m)*x*b*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x
+d)^n)+1/e*n*b*ln(x^m)*d*ln(e*x+d)+1/2*I*ln(f)*Pi*b*x*csgn(I*c)*csgn(I*c*(e
*x+d)^n)^2-1/2*I*n*Pi*b*x*csgn(I*f)*csgn(I*f*x^m)^2-1/2*I*n*Pi*b*x*csgn(I*x
^m)*csgn(I*f*x^m)^2-1/2*I*m*Pi*b*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/2*I*m*
Pi*b*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/2*I*b*d*n/e*ln(e*x+d)*Pi*c
sgn(I*f*x^m)^3+1/2*I*Pi*a*x*csgn(I*f)*csgn(I*f*x^m)^2+1/2*I*Pi*a*x*csgn(I*x
^m)*csgn(I*f*x^m)^2+1/2*I*m*Pi*b*x*csgn(I*c*(e*x+d)^n)^3+1/4*Pi^2*x*b*csgn(
I*f)*csgn(I*x^m)*csgn(I*f*x^m)*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/2*I*Pi*ln(
c)*b*x*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/2*I*n*Pi*b*x*csgn(I*f)*csgn(I*
x^m)*csgn(I*f*x^m)-1/2*I*ln(f)*Pi*b*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*
(e*x+d)^n)-m*b*d*n/e*ln(e*x+d)*ln(-1/d*e*x)-m*b*d*n/e*dilog(-1/d*e*x)
```

maxima [A] time = 0.66, size = 139, normalized size = 1.40

$$-\left(\frac{\left(\log\left(ex+d\right)\log\left(-\frac{ex+d}{d}+1\right)+\mathrm{Li}_2\left(\frac{ex+d}{d}\right)\right)bdn}{e}+\frac{bdn\log\left(ex+d\right)+bex\log\left(\left(ex+d\right)^n\right)-\left(\left(2\,en-e\log(c)\right)b-\right.}{e}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
```

```
[Out] -((log(e*x + d)*log(-(e*x + d)/d + 1) + dilog((e*x + d)/d))*b*d*n/e + (b*d*
n*log(e*x + d) + b*e*x*log((e*x + d)^n) - ((2*e*n - e*log(c))*b - a*e)*x)/e
)*m - (b*e*n*(x/e - d*log(e*x + d)/e^2) - b*x*log((e*x + d)^n*c) - a*x)*log
(f*x^m)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \ln\left(f\,x^m\right)\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(f*x^m)*(a + b*log(c*(d + e*x)^n)),x)
[Out] int(log(f*x^m)*(a + b*log(c*(d + e*x)^n)), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(f*x**m)*(a+b*ln(c*(e*x+d)**n)),x)
[Out] Timed out
```

3.362 $\int \frac{\log(fx^m)(a+b\log(c(d+ex)^n))}{x}\,dx$

Optimal. Leaf size=88

$$\frac{\log^2(fx^m)(a+b\log(c(d+ex)^n))}{2m}-bn\mathrm{Li}_2\left(-\frac{ex}{d}\right)\log(fx^m)-\frac{bn\log\left(\frac{ex}{d}+1\right)\log^2(fx^m)}{2m}+bmn\mathrm{Li}_3\left(-\frac{ex}{d}\right)$$

```
[Out] 1/2*ln(f*x^m)^2*(a+b*ln(c*(e*x+d)^n))/m-1/2*b*n*ln(f*x^m)^2*ln(1+e*x/d)/m-b
*n*ln(f*x^m)*polylog(2,-e*x/d)+b*m*n*polylog(3,-e*x/d)
```

Rubi [A] time = 0.07, antiderivative size = 88, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {2425, 2317, 2374, 6589}

$$-bn\log(fx^m)\,\mathrm{PolyLog}\left(2,-\frac{ex}{d}\right)+bmn\mathrm{PolyLog}\left(3,-\frac{ex}{d}\right)+\frac{\log^2(fx^m)(a+b\log(c(d+ex)^n))}{2m}-\frac{bn\log\left(\frac{ex}{d}+1\right)\mathrm{lo}}{2m}$$

Antiderivative was successfully verified.

```
[In] Int[(Log[f*x^m]*(a + b*Log[c*(d + e*x)^n]))/x,x]
```

```
[Out] (Log[f*x^m]^2*(a + b*Log[c*(d + e*x)^n]))/(2*m) - (b*n*Log[f*x^m]^2*Log[1 +
 (e*x)/d])/(2*m) - b*n*Log[f*x^m]*PolyLog[2, -((e*x)/d)] + b*m*n*PolyLog[3,
 -((e*x)/d)]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2425

```
Int[(Log[(f_.)*(x_)^(m_.)]*((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b
_.)))/(x_), x_Symbol] :> Simp[(Log[f*x^m]^2*(a + b*Log[c*(d + e*x)^n]))/(2*
m), x] - Dist[(b*e*n)/(2*m), Int[Log[f*x^m]^2/(d + e*x), x], x] /; FreeQ[{a
, b, c, d, e, f, m, n}, x]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\log\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{x}\,dx = \frac{\log^2\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{2m} - \frac{(ben)\int \frac{\log^2\left(fx^m\right)}{d+ex}\,dx}{2m}$$
$$= \frac{\log^2\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{2m} - \frac{bn\log^2\left(fx^m\right)\log\left(1+\frac{ex}{d}\right)}{2m} +$$
$$= \frac{\log^2\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{2m} - \frac{bn\log^2\left(fx^m\right)\log\left(1+\frac{ex}{d}\right)}{2m} -$$
$$= \frac{\log^2\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{2m} - \frac{bn\log^2\left(fx^m\right)\log\left(1+\frac{ex}{d}\right)}{2m} -$$

Mathematica [A] time = 0.07, size = 128, normalized size = 1.45

$$\frac{1}{2}\left(\frac{a\log^2\left(fx^m\right)}{m} + 2b\log(x)\log\left(fx^m\right)\log\left(c(d+ex)^n\right) - bm\log^2(x)\log\left(c(d+ex)^n\right) - 2bn\mathrm{Li}_2\left(-\frac{ex}{d}\right)\log\left(fx^n\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(Log[f*x^m]*(a + b*Log[c*(d + e*x)^n]))/x,x]
```

```
[Out] ((a*Log[f*x^m]^2)/m - b*m*Log[x]^2*Log[c*(d + e*x)^n] + 2*b*Log[x]*Log[f*x^
m]*Log[c*(d + e*x)^n] + b*m*n*Log[x]^2*Log[1 + (e*x)/d] - 2*b*n*Log[x]*Log[
f*x^m]*Log[1 + (e*x)/d] - 2*b*n*Log[f*x^m]*PolyLog[2, -((e*x)/d)] + 2*b*m*n
*PolyLog[3, -((e*x)/d)])/2
```

fricas [F] time = 0.46, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{b\log\left((ex+d)^n c\right)\log\left(fx^m\right) + a\log\left(fx^m\right)}{x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))/x,x, algorithm="fricas")
```

```
[Out] integral((b*log((e*x + d)^n*c)*log(f*x^m) + a*log(f*x^m))/x, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\log\left((ex+d)^n c\right) + a\right)\log\left(fx^m\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))/x,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*log(f*x^m)/x, x)
```

maple [C] time = 0.58, size = 1749, normalized size = 19.88

Expression too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(f*x^m)*(b*ln(c*(e*x+d)^n)+a)/x,x)
```

```
[Out] 1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*ln(f)*ln(x)+1/4*I*b*Pi*c
sgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/m*ln(x^m)^2+1/2*a/m*ln(x^m)^2+a*ln(f
)*ln(x)-n*b*dilog((e*x+d)/d)*ln(x^m)+1/2*b*ln(c)/m*ln(x^m)^2-1/4*b*Pi^2*csg
```

```
n(I*c)*csgn(I*c*(e*x+d)^n)^2*csgn(I*f)*csgn(I*f*x^m)^2*ln(x)-1/4*b*Pi^2*csg
n(I*c)*csgn(I*c*(e*x+d)^n)^2*csgn(I*x^m)*csgn(I*f*x^m)^2*ln(x)+b*ln(c)*ln(f
)*ln(x)-n*b*dilog((e*x+d)/d)*ln(f)+1/2*I*n*b*ln(x)*ln((e*x+d)/d)*Pi*csgn(I*
f)*csgn(I*x^m)*csgn(I*f*x^m)+(b*ln(x)*ln(x^m)-1/2*b*m*ln(x)^2-1/2*I*ln(x)*P
i*b*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/2*I*ln(x)*Pi*b*csgn(I*f)*csgn(I*f
*x^m)^2+1/2*I*ln(x)*Pi*b*csgn(I*x^m)*csgn(I*f*x^m)^2-1/2*I*ln(x)*Pi*b*csgn(
I*f*x^m)^3+ln(x)*ln(f)*b)*ln((e*x+d)^n)+1/2*I*b*ln(c)*Pi*csgn(I*f)*csgn(I*f
*x^m)^2*ln(x)-1/4*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*csgn(I*x^m
)*csgn(I*f*x^m)^2*ln(x)-1/4*b*Pi^2*csgn(I*c*(e*x+d)^n)^3*csgn(I*f)*csgn(I*x
^m)*csgn(I*f*x^m)*ln(x)-1/4*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*
x+d)^n)*csgn(I*f*x^m)^3*ln(x)+1/4*b*Pi^2*csgn(I*c*(e*x+d)^n)^3*csgn(I*x^m)*
csgn(I*f*x^m)^2*ln(x)-1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*ln(f)*ln(x)-1/4*I*b*
Pi*csgn(I*c*(e*x+d)^n)^3/m*ln(x^m)^2-1/2*I*b*ln(c)*Pi*csgn(I*f*x^m)^3*ln(x)
-n*b*ln(x)*ln((e*x+d)/d)*ln(x^m)-1/4*b*Pi^2*csgn(I*c*(e*x+d)^n)^3*csgn(I*f*
x^m)^3*ln(x)-1/2*I*a*Pi*csgn(I*f*x^m)^3*ln(x)+b*m*n*polylog(3,-1/d*e*x)-1/4
*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*csgn(I*f)*csgn(I*x^
m)*csgn(I*f*x^m)*ln(x)+1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*ln(f)*ln(
x)+1/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/m*ln(x^m)^2+1/4*b*Pi^2*csgn(I
*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*csgn(I*f)*csgn(I*f*x^m)^2*ln(x)+1
/4*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*csgn(I*x^m)*csgn(
I*f*x^m)^2*ln(x)+1/4*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*csgn(I*f)*csgn(
I*x^m)*csgn(I*f*x^m)*ln(x)-1/2*n*b*m*ln(x)^2*ln(1/d*e*x+1)+1/2*I*a*Pi*csgn(
I*f)*csgn(I*f*x^m)^2*ln(x)+1/2*I*a*Pi*csgn(I*x^m)*csgn(I*f*x^m)^2*ln(x)+1/2
*I*n*b*dilog((e*x+d)/d)*Pi*csgn(I*f*x^m)^3+n*b*ln(x)^2*ln((e*x+d)/d)*m-n*b*
m*ln(x)*polylog(2,-1/d*e*x)+n*b*dilog((e*x+d)/d)*ln(x)*m-n*b*ln(x)*ln((e*x+
d)/d)*ln(f)+1/2*I*b*ln(c)*Pi*csgn(I*x^m)*csgn(I*f*x^m)^2*ln(x)-1/2*I*a*Pi*c
sgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)*ln(x)+1/4*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(
I*c*(e*x+d)^n)^2*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)*ln(x)-1/2*I*n*b*ln(x)*
ln((e*x+d)/d)*Pi*csgn(I*x^m)*csgn(I*f*x^m)^2+1/2*I*n*b*dilog((e*x+d)/d)*Pi*
csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/2*I*n*b*ln(x)*ln((e*x+d)/d)*Pi*csgn(I
*f)*csgn(I*f*x^m)^2-1/2*I*b*ln(c)*Pi*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)*ln
(x)-1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*ln(f)*ln(x)-
1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/m*ln(x^m)^2+1/2*
I*n*b*ln(x)*ln((e*x+d)/d)*Pi*csgn(I*f*x^m)^3-1/2*I*n*b*dilog((e*x+d)/d)*Pi*
csgn(I*f)*csgn(I*f*x^m)^2-1/4*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^
2*csgn(I*f)*csgn(I*f*x^m)^2*ln(x)-1/2*I*n*b*dilog((e*x+d)/d)*Pi*csgn(I*x^m)
*csgn(I*f*x^m)^2+1/4*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*csgn(I*f*x^m)^3
*ln(x)+1/4*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*csgn(I*f*x^m)^3*l
n(x)+1/4*b*Pi^2*csgn(I*c*(e*x+d)^n)^3*csgn(I*f)*csgn(I*f*x^m)^2*ln(x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{2}\left(bm\log(x)^2-2\,b\log(f)\log(x)-2\,b\log(x)\log\left(x^m\right)\right)\log\left((ex+d)^n\right)-\int -\frac{bemnx\log(x)^2-2\,benx\log(f)\log$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))/x,x, algorithm="maxima")
```

```
[Out] -1/2*(b*m*log(x)^2 - 2*b*log(f)*log(x) - 2*b*log(x)*log(x^m))*log((e*x + d)
^n) - integrate(-1/2*(b*e*m*n*x*log(x)^2 - 2*b*e*n*x*log(f)*log(x) + 2*b*d*
log(c)*log(f) + 2*a*d*log(f) + 2*(b*e*log(c)*log(f) + a*e*log(f))*x - 2*(b*
e*n*x*log(x) - b*d*log(c) - a*d - (b*e*log(c) + a*e)*x)*log(x^m))/(e*x^2 +
d*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\ln\left(f\,x^m\right)\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}{x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((log(f*x^m)*(a + b*log(c*(d + e*x)^n)))/x,x)
```

```
[Out] int((log(f*x^m)*(a + b*log(c*(d + e*x)^n)))/x, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(f*x**m)*(a+b*ln(c*(e*x+d)**n))/x,x)
```

```
[Out] Timed out
```

3.363 $\int \frac{\log(fx^m)(a+b\log(c(d+ex)^n))}{x^2}\,dx$

Optimal. Leaf size=102

$$-\left(\frac{\log\left(fx^m\right)}{x}+\frac{m}{x}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)-\frac{ben\log\left(\frac{d}{ex}+1\right)\log\left(fx^m\right)}{d}+\frac{bemn\text{Li}_2\left(-\frac{d}{ex}\right)}{d}+\frac{bemn\log(x)}{d}-\frac{bemn\,\mathrm{lo}}{}$$

```
[Out] b*e*m*n*ln(x)/d-b*e*n*ln(1+d/e/x)*ln(f*x^m)/d-b*e*m*n*ln(e*x+d)/d-(m/x+ln(f
*x^m)/x)*(a+b*ln(c*(e*x+d)^n))+b*e*m*n*polylog(2,-d/e/x)/d
```

Rubi [A] time = 0.10, antiderivative size = 120, normalized size of antiderivative = 1.18, number of steps used = 8, number of rules used = 8, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {2426, 2344, 2301, 2317, 2391, 36, 29, 31}

$$-\frac{bemn\text{PolyLog}\left(2,-\frac{ex}{d}\right)}{d}-\left(\frac{\log\left(fx^m\right)}{x}+\frac{m}{x}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)+\frac{ben\log^2\left(fx^m\right)}{2dm}-\frac{ben\log\left(\frac{ex}{d}+1\right)\log\left(fx^m\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Int[(Log[f*x^m]*(a + b*Log[c*(d + e*x)^n]))/x^2,x]
```

```
[Out] (b*e*m*n*Log[x])/d + (b*e*n*Log[f*x^m]^2)/(2*d*m) - (b*e*m*n*Log[d + e*x])/
d - (m/x + Log[f*x^m]/x)*(a + b*Log[c*(d + e*x)^n]) - (b*e*n*Log[f*x^m]*Log
[1 + (e*x)/d])/d - (b*e*m*n*PolyLog[2, -((e*x)/d)])/d
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2426

```
Int[Log[(f_.)*(x_)^(m_.)]*((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_
.))*((g_.)*(x_))^(q_.), x_Symbol] :> -Simp[(((m*(g*x)^(q + 1))/(q + 1) - (g
*x)^(q + 1)*Log[f*x^m])*(a + b*Log[c*(d + e*x)^n]))/(g*(q + 1)), x] + (-Dis
t[(b*e*n)/(g*(q + 1)), Int[((g*x)^(q + 1)*Log[f*x^m])/(d + e*x), x], x] + D
ist[(b*e*m*n)/(g*(q + 1)^2), Int[(g*x)^(q + 1)/(d + e*x), x], x]) /; FreeQ[
{a, b, c, d, e, f, g, m, n, q}, x] && NeQ[q, -1]
```

Rubi steps

$$\int \frac{\log\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{x^2}\,dx = -\left(\frac{m}{x}+\frac{\log\left(fx^m\right)}{x}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)+(ben)\int \frac{\log\left(fx^m\right)}{x(d+ex)}\,d$$

$$= -\left(\frac{m}{x}+\frac{\log\left(fx^m\right)}{x}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)+\frac{(ben)\int \frac{\log\left(fx^m\right)}{x}\,dx}{d}-$$

$$= \frac{bemn\log(x)}{d}+\frac{ben\log^2\left(fx^m\right)}{2dm}-\frac{bemn\log(d+ex)}{d}-\left(\frac{m}{x}+\frac{\log\left(f\right.}{x}\right.$$

$$= \frac{bemn\log(x)}{d}+\frac{ben\log^2\left(fx^m\right)}{2dm}-\frac{bemn\log(d+ex)}{d}-\left(\frac{m}{x}+\frac{\log\left(f\right.}{x}\right.$$

Mathematica [A] time = 0.12, size = 111, normalized size = 1.09

$$-\frac{2\left(\log\left(fx^m\right)+m\right)\left(ad+bd\log\left(c(d+ex)^n\right)+benx\log(d+ex)\right)-2benx\log(x)\left(m\log(d+ex)-m\log\left(\frac{ex}{d}+\right.\right.}{2dx}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Log[f*x^m]*(a + b*Log[c*(d + e*x)^n]))/x^2,x]
```

```
[Out] -1/2*(b*e*m*n*x*Log[x]^2 + 2*(m + Log[f*x^m])*(a*d + b*e*n*x*Log[d + e*x] +
 b*d*Log[c*(d + e*x)^n]) - 2*b*e*n*x*Log[x]*(m + Log[f*x^m] + m*Log[d + e*x
] - m*Log[1 + (e*x)/d]) + 2*b*e*m*n*x*PolyLog[2, -((e*x)/d)])/(d*x)
```

fricas [F] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b\log\left((ex+d)^n c\right)\log\left(fx^m\right)+a\log\left(fx^m\right)}{x^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))/x^2,x, algorithm="fricas")
```

```
[Out] integral((b*log((e*x + d)^n*c)*log(f*x^m) + a*log(f*x^m))/x^2, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)\log\left(fx^m\right)}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))/x^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*log(f*x^m)/x^2, x)
```

maple [C] time = 0.71, size = 1859, normalized size = 18.23

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(f*x^m)*(b*ln(c*(e*x+d)^n)+a)/x^2,x)
```

```
[Out] 1/2*I/x*Pi*a*csgn(I*f*x^m)^3+1/2*I/x*ln(f)*Pi*b*csgn(I*c*(e*x+d)^n)^3+1/2*I
/x*Pi*ln(c)*b*csgn(I*f*x^m)^3+1/2*I/x*Pi*b*m*csgn(I*c*(e*x+d)^n)^3-1/2*I/x*
Pi*a*csgn(I*f)*csgn(I*f*x^m)^2-1/2*I/x*Pi*a*csgn(I*x^m)*csgn(I*f*x^m)^2+1/4
*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/x*csgn(I*f)*csgn(I*
x^m)*csgn(I*f*x^m)+1/2*I*e*b*n/d*ln(x)*Pi*csgn(I*f)*csgn(I*f*x^m)^2+1/2*I*e
*b*n/d*ln(x)*Pi*csgn(I*x^m)*csgn(I*f*x^m)^2-1/x*a*m-1/x*ln(f)*a-a/x*ln(x^m)
-b*ln(c)/x*ln(x^m)+1/2*I/x*Pi*a*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/2*I*e
*b*n/d*ln(e*x+d)*Pi*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/x*ln(f)*ln(c)*b-1
/x*ln(c)*b*m-1/2*I*e*b*n/d*ln(e*x+d)*Pi*csgn(I*f)*csgn(I*f*x^m)^2-1/2*I*e*b
*n/d*ln(e*x+d)*Pi*csgn(I*x^m)*csgn(I*f*x^m)^2+1/4*b*Pi^2*csgn(I*c)*csgn(I*(
e*x+d)^n)*csgn(I*c*(e*x+d)^n)/x*csgn(I*f*x^m)^3+1/4*b*Pi^2*csgn(I*c)*csgn(I
*c*(e*x+d)^n)^2/x*csgn(I*f)*csgn(I*f*x^m)^2+(-b/x*ln(x^m)-1/2*(-I*Pi*b*csgn
(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+I*Pi*b*csgn(I*f)*csgn(I*f*x^m)^2+I*Pi*b*csg
n(I*x^m)*csgn(I*f*x^m)^2-I*Pi*b*csgn(I*f*x^m)^3+2*b*ln(f)+2*b*m)/x)*ln((e*x
+d)^n)+1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/x*ln(x^m)
-1/4*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/x*csgn(I*x^m)*c
sgn(I*f*x^m)^2-1/4*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/x*csgn(I*f)*csgn(
I*x^m)*csgn(I*f*x^m)-1/4*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/x*c
sgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/4*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*c
sgn(I*c*(e*x+d)^n)/x*csgn(I*f)*csgn(I*f*x^m)^2+b*e*m*n*ln(x)/d-b*e*m*n*ln(e
*x+d)/d-1/2*I/x*ln(f)*Pi*b*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/2*I/x*ln(f)*Pi
*b*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/2*I/x*Pi*ln(c)*b*csgn(I*f)*csg
n(I*f*x^m)^2-e*b*n/d*ln(e*x+d)*ln(f)+e*b*n/d*ln(x)*ln(f)-1/2*I/x*Pi*b*m*csg
n(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^
n)^2/x*ln(x^m)-1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/x*ln(x^m)
+1/4*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/x*csgn(I*x^m)*csgn(I*f*x^m)^2+1
/4*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/x*csgn(I*f)*csgn(I*f*x^m)
^2+1/2*I/x*Pi*b*m*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/2*I*e*b
*n/d*ln(x)*Pi*csgn(I*f*x^m)^3+1/2*I*e*b*n/d*ln(e*x+d)*Pi*csgn(I*f*x^m)^3-1/
4*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/x*csgn(I*f*x^m)^3-1/4*b*Pi^2*csgn(
I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/x*csgn(I*f*x^m)^3-1/4*b*Pi^2*csgn(I*c*(e
*x+d)^n)^3/x*csgn(I*f)*csgn(I*f*x^m)^2-1/4*b*Pi^2*csgn(I*c*(e*x+d)^n)^3/x*c
sgn(I*x^m)*csgn(I*f*x^m)^2+1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/x*ln(x^m)+1/4*b
*Pi^2*csgn(I*c*(e*x+d)^n)^3/x*csgn(I*f*x^m)^3-1/2*I*e*b*n/d*ln(x)*Pi*csgn(I
*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/2*I/x*Pi*ln(c)*b*csgn(I*x^m)*csgn(I*f*x^m)^
2-1/2*I/x*Pi*b*m*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/4*b*Pi^2*csgn(I*(e*x+d)^
n)*csgn(I*c*(e*x+d)^n)^2/x*csgn(I*x^m)*csgn(I*f*x^m)^2+1/4*b*Pi^2*csgn(I*c*
(e*x+d)^n)^3/x*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/2*I/x*Pi*ln(c)*b*csgn(
I*f)*csgn(I*x^m)*csgn(I*f*x^m)+m*b*e*n/d*ln(e*x+d)*ln(-1/d*e*x)+m*b*e*n/d*d
ilog(-1/d*e*x)+1/2*I/x*ln(f)*Pi*b*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x
+d)^n)+e*n*b*ln(x^m)/d*ln(x)-e*n*b*ln(x^m)/d*ln(e*x+d)-1/2/d*b*e*m*n*ln(x)^
2
```

maxima [A] time = 0.71, size = 162, normalized size = 1.59

$$-\frac{1}{2}\left(\frac{2\left(\log\left(\frac{ex}{d}+1\right)\log(x)+\operatorname{Li}_2\left(-\frac{ex}{d}\right)\right)ben}{d}+\frac{2\,ben\log(ex+d)}{d}-\frac{2\,benx\log(ex+d)\log(x)-benx\log(x)^2+2\,b\cdots}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))/x^2,x, algorithm="maxima")
```

```
[Out] -1/2*(2*(log(e*x/d + 1)*log(x) + dilog(-e*x/d))*b*e*n/d + 2*b*e*n*log(e*x +
 d)/d - (2*b*e*n*x*log(e*x + d)*log(x) - b*e*n*x*log(x)^2 + 2*b*e*n*x*log(x
) - 2*b*d*log((e*x + d)^n) - 2*b*d*log(c) - 2*a*d)/(d*x))*m - (b*e*n*(log(e
*x + d)/d - log(x)/d) + b*log((e*x + d)^n*c)/x + a/x)*log(f*x^m)
```

mupad [F]   time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\ln\left(f\,x^m\right)\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}{x^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((log(f*x^m)*(a + b*log(c*(d + e*x)^n)))/x^2,x)
```

```
[Out] int((log(f*x^m)*(a + b*log(c*(d + e*x)^n)))/x^2, x)
```

sympy [F(-1)]   time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(f*x**m)*(a+b*ln(c*(e*x+d)**n))/x**2,x)
```

```
[Out] Timed out
```

3.364 $\int \frac{\log(fx^m)(a+b\log(c(d+ex)^n))}{x^3}\,dx$

Optimal. Leaf size=156

$$-\frac{1}{4}\left(\frac{2\log\left(fx^m\right)}{x^2}+\frac{m}{x^2}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)+\frac{be^2n\log\left(\frac{d}{ex}+1\right)\log\left(fx^m\right)}{2d^2}-\frac{be^2mn\text{Li}_2\left(-\frac{d}{ex}\right)}{2d^2}-\frac{be^2mn\log(x)}{4d^2}+-$$

```
[Out] -3/4*b*e*m*n/d/x-1/4*b*e^2*m*n*ln(x)/d^2-1/2*b*e*n*ln(f*x^m)/d/x+1/2*b*e^2*
n*ln(1+d/e/x)*ln(f*x^m)/d^2+1/4*b*e^2*m*n*ln(e*x+d)/d^2-1/4*(m/x^2+2*ln(f*x
^m)/x^2)*(a+b*ln(c*(e*x+d)^n))-1/2*b*e^2*m*n*polylog(2,-d/e/x)/d^2
```

Rubi [A] time = 0.15, antiderivative size = 175, normalized size of antiderivative = 1.12, number of steps used = 9, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.292, Rules used = {2426, 44, 2351, 2304, 2301, 2317, 2391}

$$\frac{be^2mn\text{PolyLog}\left(2,-\frac{ex}{d}\right)}{2d^2}-\frac{1}{4}\left(\frac{2\log\left(fx^m\right)}{x^2}+\frac{m}{x^2}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)-\frac{be^2n\log^2\left(fx^m\right)}{4d^2m}+\frac{be^2n\log\left(\frac{ex}{d}+1\right)\log}{2d^2}$$

Antiderivative was successfully verified.

```
[In] Int[(Log[f*x^m]*(a + b*Log[c*(d + e*x)^n]))/x^3,x]
```

```
[Out] (-3*b*e*m*n)/(4*d*x) - (b*e^2*m*n*Log[x])/(4*d^2) - (b*e*n*Log[f*x^m])/(2*d
*x) - (b*e^2*n*Log[f*x^m]^2)/(4*d^2*m) + (b*e^2*m*n*Log[d + e*x])/(4*d^2) -
 ((m/x^2 + (2*Log[f*x^m])/x^2)*(a + b*Log[c*(d + e*x)^n]))/4 + (b*e^2*n*Log
[f*x^m]*Log[1 + (e*x)/d])/(2*d^2) + (b*e^2*m*n*PolyLog[2, -((e*x)/d)])/(2*d
^2)
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2351

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((f_.)*(x_))^(m_.)*((d_) + (e_.)*
(x_)^(r_.))^(q_.), x_Symbol] :> With[{u = ExpandIntegrand[a + b*Log[c*x^n],
 (f*x)^m*(d + e*x^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e,
```

```
 f, m, n, q, r}, x] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[m] && Integer
Q[r]))
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2426

```
Int[Log[(f_.)*(x_)^(m_.)]*((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_
.))*((g_.)*(x_))^(q_.), x_Symbol] :> -Simp[(((m*(g*x)^(q + 1))/(q + 1) - (g
*x)^(q + 1)*Log[f*x^m])*(a + b*Log[c*(d + e*x)^n]))/(g*(q + 1)), x] + (-Dis
t[(b*e*n)/(g*(q + 1)), Int[((g*x)^(q + 1)*Log[f*x^m])/(d + e*x), x], x] + D
ist[(b*e*m*n)/(g*(q + 1)^2), Int[(g*x)^(q + 1)/(d + e*x), x], x]) /; FreeQ[
{a, b, c, d, e, f, g, m, n, q}, x] && NeQ[q, -1]
```

Rubi steps

$$\int \frac{\log\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{x^3}\,dx = -\frac{1}{4}\left(\frac{m}{x^2}+\frac{2\log\left(fx^m\right)}{x^2}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)+\frac{1}{2}(ben)\int \frac{\log\left(f\right.}{x^2(d+}$$

$$= -\frac{1}{4}\left(\frac{m}{x^2}+\frac{2\log\left(fx^m\right)}{x^2}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)+\frac{1}{2}(ben)\int\left(\frac{\log\left(\right.}{dx}\right.$$

$$= -\frac{bemn}{4dx}-\frac{be^2mn\log(x)}{4d^2}+\frac{be^2mn\log(d+ex)}{4d^2}-\frac{1}{4}\left(\frac{m}{x^2}+\frac{2\log\left(fx^m\right.}{x^2}\right.$$

$$= -\frac{3bemn}{4dx}-\frac{be^2mn\log(x)}{4d^2}-\frac{ben\log\left(fx^m\right)}{2dx}-\frac{be^2n\log^2\left(fx^m\right)}{4d^2m}+\frac{be^2}{}$$

$$= -\frac{3bemn}{4dx}-\frac{be^2mn\log(x)}{4d^2}-\frac{ben\log\left(fx^m\right)}{2dx}-\frac{be^2n\log^2\left(fx^m\right)}{4d^2m}+\frac{be^2}{}$$

Mathematica [A] time = 0.13, size = 204, normalized size = 1.31

$$-\frac{2ad^2\log\left(fx^m\right)+ad^2m+2bd^2\log\left(fx^m\right)\log\left(c(d+ex)^n\right)+bd^2m\log\left(c(d+ex)^n\right)-2be^2nx^2\log(d+ex)\log}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Log[f*x^m]*(a + b*Log[c*(d + e*x)^n]))/x^3,x]
```

```
[Out] -1/4*(a*d^2*m + 3*b*d*e*m*n*x - b*e^2*m*n*x^2*Log[x]^2 + 2*a*d^2*Log[f*x^m]
 + 2*b*d*e*n*x*Log[f*x^m] - b*e^2*m*n*x^2*Log[d + e*x] - 2*b*e^2*n*x^2*Log[
f*x^m]*Log[d + e*x] + b*d^2*m*Log[c*(d + e*x)^n] + 2*b*d^2*Log[f*x^m]*Log[c
*(d + e*x)^n] + b*e^2*n*x^2*Log[x]*(m + 2*Log[f*x^m] + 2*m*Log[d + e*x] - 2
*m*Log[1 + (e*x)/d]) - 2*b*e^2*m*n*x^2*PolyLog[2, -((e*x)/d)])/(d^2*x^2)
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b\log\left((ex+d)^n c\right)\log\left(fx^m\right)+a\log\left(fx^m\right)}{x^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))/x^3,x, algorithm="fricas")
[Out] integral((b*log((e*x + d)^n*c)*log(f*x^m) + a*log(f*x^m))/x^3, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b \log \left((ex+d)^n c\right) + a\right) \log \left(f x^m\right)}{x^3} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))/x^3,x, algorithm="giac")
[Out] integrate((b*log((e*x + d)^n*c) + a)*log(f*x^m)/x^3, x)
```

maple [C] time = 0.77, size = 2051, normalized size = 13.15

Expression too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(f*x^m)*(b*ln(c*(e*x+d)^n)+a)/x^3,x)
[Out] -1/4/x^2*a*m+1/8*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/x^2*csgn(I*
x^m)*csgn(I*f*x^m)^2-1/4*I/d^2*b*e^2*n*ln(e*x+d)*Pi*csgn(I*f*x^m)^3-1/4*I/d
^2*b*e^2*n*ln(e*x+d)*Pi*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/2/x^2*ln(f)*a
-1/2*m*b*e^2*n/d^2*ln(e*x+d)*ln(-1/d*e*x)+1/4/d^2*b*e^2*m*n*ln(x)^2-1/2*a/x
^2*ln(x^m)+(-1/2*b/x^2*ln(x^m)-1/4*(-I*Pi*b*csgn(I*f)*csgn(I*x^m)*csgn(I*f*
x^m)+I*Pi*b*csgn(I*f)*csgn(I*f*x^m)^2+I*Pi*b*csgn(I*x^m)*csgn(I*f*x^m)^2-I*
Pi*b*csgn(I*f*x^m)^3+2*b*ln(f)+b*m)/x^2)*ln((e*x+d)^n)-1/2/x^2*ln(f)*ln(c)*
b-1/4/x^2*ln(c)*b*m+1/8*b*Pi^2*csgn(I*c*(e*x+d)^n)^3/x^2*csgn(I*f)*csgn(I*x
^m)*csgn(I*f*x^m)+1/8*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n
)/x^2*csgn(I*f*x^m)^3-1/2/d*e*b*n/x*ln(f)+1/2/d^2*b*e^2*n*ln(e*x+d)*ln(f)-1
/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/x^2*ln(x^m)-1/4*I*b*Pi*csgn(I*(e*
x+d)^n)*csgn(I*c*(e*x+d)^n)^2/x^2*ln(x^m)-1/4*I/x^2*ln(f)*Pi*b*csgn(I*c)*cs
gn(I*c*(e*x+d)^n)^2-1/4*I/x^2*ln(f)*Pi*b*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)
^n)^2+1/4*I/d^2*b*e^2*n*ln(x)*Pi*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/4*b*
e^2*m*n*ln(x)/d^2+1/4*b*e^2*m*n*ln(e*x+d)/d^2-1/2*m*b*e^2*n/d^2*dilog(-1/d*
e*x)+1/4*I/d*e*b*n/x*Pi*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/4*I/x^2*ln(f)
*Pi*b*csgn(I*c*(e*x+d)^n)^3+1/8*I/x^2*Pi*b*m*csgn(I*c*(e*x+d)^n)^3+1/4*I*b*
Pi*csgn(I*c*(e*x+d)^n)^3/x^2*ln(x^m)-1/4*I/x^2*Pi*a*csgn(I*f)*csgn(I*f*x^m)
^2-1/4*I/x^2*Pi*a*csgn(I*x^m)*csgn(I*f*x^m)^2+1/4*I/x^2*Pi*ln(c)*b*csgn(I*f
*x^m)^3-1/8*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/x^2*csgn(I*f*x^m)^3-1/8*
b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/x^2*csgn(I*f*x^m)^3-1/8*b*Pi
^2*csgn(I*c*(e*x+d)^n)^3/x^2*csgn(I*f)*csgn(I*f*x^m)^2-1/8*b*Pi^2*csgn(I*c*
(e*x+d)^n)^3/x^2*csgn(I*x^m)*csgn(I*f*x^m)^2-1/4*I/x^2*Pi*ln(c)*b*csgn(I*f)
*csgn(I*f*x^m)^2-1/2/d^2*b*e^2*n*ln(x)*ln(f)-1/2*e^2*n*b*ln(x^m)/d^2*ln(x)+
1/2*e^2*n*b*ln(x^m)/d^2*ln(e*x+d)-1/2*e*n*b*ln(x^m)/d/x+1/8*b*Pi^2*csgn(I*c
)*csgn(I*c*(e*x+d)^n)^2/x^2*csgn(I*f)*csgn(I*f*x^m)^2+1/8*b*Pi^2*csgn(I*c)*
csgn(I*c*(e*x+d)^n)^2/x^2*csgn(I*x^m)*csgn(I*f*x^m)^2+1/8*b*Pi^2*csgn(I*(e*
x+d)^n)*csgn(I*c*(e*x+d)^n)^2/x^2*csgn(I*f)*csgn(I*f*x^m)^2-3/4*b*e*m*n/d/x
+1/4*I/d*e*b*n/x*Pi*csgn(I*f*x^m)^3+1/4*I/x^2*ln(f)*Pi*b*csgn(I*c)*csgn(I*(
e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/8*b*Pi^2*csgn(I*c*(e*x+d)^n)^3/x^2*csgn(I*f
*x^m)^3+1/4*I/x^2*Pi*a*csgn(I*f*x^m)^3-1/4*I/d^2*b*e^2*n*ln(x)*Pi*csgn(I*f)
*csgn(I*f*x^m)^2+1/8*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)
/x^2*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/4*I/d*e*b*n/x*Pi*csgn(I*f)*csgn(
I*f*x^m)^2-1/4*I/d*e*b*n/x*Pi*csgn(I*x^m)*csgn(I*f*x^m)^2+1/4*I/d^2*b*e^2*n
*ln(e*x+d)*Pi*csgn(I*x^m)*csgn(I*f*x^m)^2-1/4*I/d^2*b*e^2*n*ln(x)*Pi*csgn(I
*x^m)*csgn(I*f*x^m)^2+1/4*I/d^2*b*e^2*n*ln(e*x+d)*Pi*csgn(I*f)*csgn(I*f*x^m
)^2-1/8*I/x^2*Pi*b*m*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/4*I/x^2*Pi*a
*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/8*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*
(e*x+d)^n)^2/x^2*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/4*I*b*Pi*csgn(I*c)*c
```

```
sgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/x^2*ln(x^m)-1/8*b*Pi^2*csgn(I*c)*csgn(
I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/x^2*csgn(I*f)*csgn(I*f*x^m)^2+1/4*I/x^2*Pi
*ln(c)*b*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/8*I/x^2*Pi*b*m*csgn(I*c)*csg
n(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/4*I/d^2*b*e^2*n*ln(x)*Pi*csgn(I*f*x^m)
^3-1/8*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/x^2*csgn(I*x^
m)*csgn(I*f*x^m)^2-1/8*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/x^2*csgn(I*f)
*csgn(I*x^m)*csgn(I*f*x^m)-1/4*I/x^2*Pi*ln(c)*b*csgn(I*x^m)*csgn(I*f*x^m)^2
-1/8*I/x^2*Pi*b*m*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/2*b*ln(c)/x^2*ln(x^m)
```

maxima [A] time = 0.68, size = 198, normalized size = 1.27

$$\frac{1}{4}\left(\frac{2\left(\log\left(\frac{ex}{d}+1\right)\log(x)+\mathrm{Li}_2\left(-\frac{ex}{d}\right)\right)be^2n}{d^2}+\frac{be^2n\log(ex+d)}{d^2}-\frac{2\,be^2nx^2\log(ex+d)\log(x)-be^2nx^2\log(x)^2}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))/x^3,x, algorithm="maxima")
```

```
[Out] 1/4*(2*(log(e*x/d + 1)*log(x) + dilog(-e*x/d))*b*e^2*n/d^2 + b*e^2*n*log(e*
x + d)/d^2 - (2*b*e^2*n*x^2*log(e*x + d)*log(x) - b*e^2*n*x^2*log(x)^2 + b*
e^2*n*x^2*log(x) + 3*b*d*e*n*x + b*d^2*log((e*x + d)^n) + b*d^2*log(c) + a*
d^2)/(d^2*x^2))*m + 1/2*(b*e*n*(e*log(e*x + d)/d^2 - e*log(x)/d^2 - 1/(d*x)
) - b*log((e*x + d)^n*c)/x^2 - a/x^2)*log(f*x^m)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\ln\left(f\,x^m\right)\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((log(f*x^m)*(a + b*log(c*(d + e*x)^n)))/x^3,x)
```

```
[Out] int((log(f*x^m)*(a + b*log(c*(d + e*x)^n)))/x^3, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(f*x**m)*(a+b*ln(c*(e*x+d)**n))/x**3,x)
```

```
[Out] Timed out
```

3.365 $\int \frac{\log(fx^m)(a+b\log(c(d+ex)^n))}{x^4}\,dx$

Optimal. Leaf size=193

$$-\frac{1}{9}\left(\frac{3\log\left(fx^m\right)}{x^3}+\frac{m}{x^3}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)-\frac{be^3n\log\left(\frac{d}{ex}+1\right)\log\left(fx^m\right)}{3d^3}+\frac{be^3mn\text{Li}_2\left(-\frac{d}{ex}\right)}{3d^3}+\frac{be^3mn\log(x)}{9d^3}-\cdots$$

```
[Out] -5/36*b*e*m*n/d/x^2+4/9*b*e^2*m*n/d^2/x+1/9*b*e^3*m*n*ln(x)/d^3-1/6*b*e*n*l
n(f*x^m)/d/x^2+1/3*b*e^2*n*ln(f*x^m)/d^2/x-1/3*b*e^3*n*ln(1+d/e/x)*ln(f*x^m
)/d^3-1/9*b*e^3*m*n*ln(e*x+d)/d^3-1/9*(m/x^3+3*ln(f*x^m)/x^3)*(a+b*ln(c*(e*
x+d)^n))+1/3*b*e^3*m*n*polylog(2,-d/e/x)/d^3
```

Rubi [A] time = 0.18, antiderivative size = 212, normalized size of antiderivative = 1.10, number of steps used = 10, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.292$, Rules used = {2426, 44, 2351, 2304, 2301, 2317, 2391}

$$-\frac{be^3mn\text{PolyLog}\left(2,-\frac{ex}{d}\right)}{3d^3}-\frac{1}{9}\left(\frac{3\log\left(fx^m\right)}{x^3}+\frac{m}{x^3}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)+\frac{be^3n\log^2\left(fx^m\right)}{6d^3m}-\frac{be^3n\log\left(\frac{ex}{d}+1\right)\log\cdots}{3d^3}$$

Antiderivative was successfully verified.

```
[In] Int[(Log[f*x^m]*(a + b*Log[c*(d + e*x)^n]))/x^4,x]
```

```
[Out] (-5*b*e*m*n)/(36*d*x^2) + (4*b*e^2*m*n)/(9*d^2*x) + (b*e^3*m*n*Log[x])/(9*d
^3) - (b*e*n*Log[f*x^m])/(6*d*x^2) + (b*e^2*n*Log[f*x^m])/(3*d^2*x) + (b*e^
3*n*Log[f*x^m]^2)/(6*d^3*m) - (b*e^3*m*n*Log[d + e*x])/(9*d^3) - ((m/x^3 +
(3*Log[f*x^m])/x^3)*(a + b*Log[c*(d + e*x)^n]))/9 - (b*e^3*n*Log[f*x^m]*Log
[1 + (e*x)/d])/(3*d^3) - (b*e^3*m*n*PolyLog[2, -((e*x)/d)])/(3*d^3)
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2351

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((f_.)*(x_))^(m_.)*((d_) + (e_.)*
(x_)^(r_.))^(q_.), x_Symbol] :> With[{u = ExpandIntegrand[a + b*Log[c*x^n],
```

```
(f*x)^m*(d + e*x^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e,
 f, m, n, q, r}, x] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[m] && Integer
Q[r]))
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2426

```
Int[Log[(f_.)*(x_)^(m_.)]*((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_
.))*((g_.)*(x_))^(q_.), x_Symbol] :> -Simp[(((m*(g*x)^(q + 1))/(q + 1) - (g
*x)^(q + 1)*Log[f*x^m])*(a + b*Log[c*(d + e*x)^n]))/(g*(q + 1)), x] + (-Dis
t[(b*e*n)/(g*(q + 1)), Int[((g*x)^(q + 1)*Log[f*x^m])/(d + e*x), x], x] + D
ist[(b*e*m*n)/(g*(q + 1)^2), Int[(g*x)^(q + 1)/(d + e*x), x], x]) /; FreeQ[
{a, b, c, d, e, f, g, m, n, q}, x] && NeQ[q, -1]
```

Rubi steps

$$\int \frac{\log\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{x^4}\,dx = -\frac{1}{9}\left(\frac{m}{x^3}+\frac{3\log\left(fx^m\right)}{x^3}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)+\frac{1}{3}(ben)\int\frac{\log\left(f\right.}{x^3(d+}$$

$$= -\frac{1}{9}\left(\frac{m}{x^3}+\frac{3\log\left(fx^m\right)}{x^3}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)+\frac{1}{3}(ben)\int\left(\frac{\log\left(\right.}{dx}\right.$$

$$= -\frac{bemn}{18dx^2}+\frac{be^2mn}{9d^2x}+\frac{be^3mn\log(x)}{9d^3}-\frac{be^3mn\log(d+ex)}{9d^3}-\frac{1}{9}\left(\frac{m}{x^3}+\right.$$

$$= -\frac{5bemn}{36dx^2}+\frac{4be^2mn}{9d^2x}+\frac{be^3mn\log(x)}{9d^3}-\frac{ben\log\left(fx^m\right)}{6dx^2}+\frac{be^2n\log\left(\right.}{3d^2x}$$

$$= -\frac{5bemn}{36dx^2}+\frac{4be^2mn}{9d^2x}+\frac{be^3mn\log(x)}{9d^3}-\frac{ben\log\left(fx^m\right)}{6dx^2}+\frac{be^2n\log\left(\right.}{3d^2x}$$

Mathematica [A] time = 0.14, size = 240, normalized size = 1.24

$$-\frac{12ad^3\log\left(fx^m\right)+4ad^3m+12bd^3\log\left(fx^m\right)\log\left(c(d+ex)^n\right)+4bd^3m\log\left(c(d+ex)^n\right)+6bd^2enx\log\left(fx^m\right)}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Log[f*x^m]*(a + b*Log[c*(d + e*x)^n]))/x^4,x]
```

```
[Out] -1/36*(4*a*d^3*m + 5*b*d^2*e*m*n*x - 16*b*d*e^2*m*n*x^2 + 6*b*e^3*m*n*x^3*L
og[x]^2 + 12*a*d^3*Log[f*x^m] + 6*b*d^2*e*n*x*Log[f*x^m] - 12*b*d*e^2*n*x^2
*Log[f*x^m] + 4*b*e^3*m*n*x^3*Log[d + e*x] + 12*b*e^3*n*x^3*Log[f*x^m]*Log[
d + e*x] + 4*b*d^3*m*Log[c*(d + e*x)^n] + 12*b*d^3*Log[f*x^m]*Log[c*(d + e*
x)^n] - 4*b*e^3*n*x^3*Log[x]*(m + 3*Log[f*x^m] + 3*m*Log[d + e*x] - 3*m*Log
[1 + (e*x)/d]) + 12*b*e^3*m*n*x^3*PolyLog[2, -((e*x)/d)])/(d^3*x^3)
```

fricas [F] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b\log\left((ex+d)^n c\right)\log\left(fx^m\right)+a\log\left(fx^m\right)}{x^4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))/x^4,x, algorithm="fricas")
```

```
[Out] integral((b*log((e*x + d)^n*c)*log(f*x^m) + a*log(f*x^m))/x^4, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\log\left((ex+d)^{n}c\right)+a\right)\log\left(fx^{m}\right)}{x^{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))/x^4,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*log(f*x^m)/x^4, x)
```

maple [C] time = 0.90, size = 2220, normalized size = 11.50

Expression too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(f*x^m)*(b*ln(c*(e*x+d)^n)+a)/x^4,x)
```

```
[Out] 1/12*I/d*e*b*n/x^2*Pi*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/9/x^3*a*m-1/6*I
/d^3*b*e^3*n*ln(x)*Pi*csgn(I*f*x^m)^3+1/12*I/d*e*b*n/x^2*Pi*csgn(I*f*x^m)^3
+1/6*I/d^3*b*e^3*n*ln(e*x+d)*Pi*csgn(I*f*x^m)^3+1/6*I/x^3*ln(f)*Pi*b*csgn(I
*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/12*I/d*e*b*n/x^2*Pi*csgn(I*f)*c
sgn(I*f*x^m)^2-1/3*a/x^3*ln(x^m)+1/3*m*b*e^3*n/d^3*ln(e*x+d)*ln(-1/d*e*x)-1
/6/d^3*b*e^3*m*n*ln(x)^2-1/3/x^3*ln(f)*a-1/6*I/d^3*b*e^3*n*ln(e*x+d)*Pi*csg
n(I*x^m)*csgn(I*f*x^m)^2+1/6*I/d^3*b*e^3*n*ln(x)*Pi*csgn(I*f)*csgn(I*f*x^m)
^2+1/6*I/d^3*b*e^3*n*ln(x)*Pi*csgn(I*x^m)*csgn(I*f*x^m)^2-1/3*b*ln(c)/x^3*l
n(x^m)+1/3/d^2*b*e^2*n/x*ln(f)-1/6/d*e*b*n/x^2*ln(f)-1/3/d^3*b*e^3*n*ln(e*x
+d)*ln(f)+1/3/d^3*b*e^3*n*ln(x)*ln(f)+1/6*I/x^3*ln(f)*Pi*b*csgn(I*c*(e*x+d)
^n)^3+1/6*I/x^3*Pi*ln(c)*b*csgn(I*f*x^m)^3+1/12*b*Pi^2*csgn(I*(e*x+d)^n)*cs
gn(I*c*(e*x+d)^n)^2/x^3*csgn(I*x^m)*csgn(I*f*x^m)^2+1/12*b*Pi^2*csgn(I*c*(e
*x+d)^n)^3/x^3*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/18*I/x^3*Pi*b*m*csgn(I
*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/9*b*e^3*m*n*ln(x)/d^3-1/9*b*e^3*m*n*ln(
e*x+d)/d^3-1/12*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/x^3*csgn(I*f)*csgn(I
*x^m)*csgn(I*f*x^m)-1/12*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/x^3
*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/12*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n
)*csgn(I*c*(e*x+d)^n)/x^3*csgn(I*f)*csgn(I*f*x^m)^2-1/12*b*Pi^2*csgn(I*c)*c
sgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/x^3*csgn(I*x^m)*csgn(I*f*x^m)^2-1/6*I/
d^2*b*e^2*n/x*Pi*csgn(I*f*x^m)^3+1/12*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*cs
gn(I*c*(e*x+d)^n)/x^3*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/12*b*Pi^2*csgn(
I*c*(e*x+d)^n)^3/x^3*csgn(I*f*x^m)^3+1/3*m*b*e^3*n/d^3*dilog(-1/d*e*x)+(-1/
3*b/x^3*ln(x^m)-1/18*(-3*I*Pi*b*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+3*I*Pi*
b*csgn(I*f)*csgn(I*f*x^m)^2+3*I*Pi*b*csgn(I*x^m)*csgn(I*f*x^m)^2-3*I*Pi*b*c
sgn(I*f*x^m)^3+6*b*ln(f)+2*b*m)/x^3)*ln((e*x+d)^n)-1/6*I*b*Pi*csgn(I*c)*csg
n(I*c*(e*x+d)^n)^2/x^3*ln(x^m)-1/6*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d
)^n)^2/x^3*ln(x^m)-1/6*I/x^3*Pi*ln(c)*b*csgn(I*x^m)*csgn(I*f*x^m)^2-5/36*b*
e*m*n/d/x^2+4/9*b*e^2*m*n/d^2/x+1/6*I/d^3*b*e^3*n*ln(e*x+d)*Pi*csgn(I*f)*cs
gn(I*x^m)*csgn(I*f*x^m)-1/6*I/d^3*b*e^3*n*ln(x)*Pi*csgn(I*f)*csgn(I*x^m)*cs
gn(I*f*x^m)-1/6*I/d^2*b*e^2*n/x*Pi*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/6*
I/d^2*b*e^2*n/x*Pi*csgn(I*f)*csgn(I*f*x^m)^2+1/6*I/d^2*b*e^2*n/x*Pi*csgn(I*
x^m)*csgn(I*f*x^m)^2-1/12*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/x^
3*csgn(I*f*x^m)^3-1/12*b*Pi^2*csgn(I*c*(e*x+d)^n)^3/x^3*csgn(I*f)*csgn(I*f*
x^m)^2-1/12*b*Pi^2*csgn(I*c*(e*x+d)^n)^3/x^3*csgn(I*x^m)*csgn(I*f*x^m)^2-1/
6*I/d^3*b*e^3*n*ln(e*x+d)*Pi*csgn(I*f)*csgn(I*f*x^m)^2+1/6*I/x^3*Pi*ln(c)*b
*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/18*I/x^3*Pi*b*m*csgn(I*c)*csgn(I*(e*
x+d)^n)*csgn(I*c*(e*x+d)^n)+1/18*I/x^3*Pi*b*m*csgn(I*c*(e*x+d)^n)^3-1/6*I/x
```

```
^3*Pi*a*csgn(I*f)*csgn(I*f*x^m)^2-1/6*I/x^3*Pi*a*csgn(I*x^m)*csgn(I*f*x^m)^
2+1/6*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/x^3*ln(x^m)-1/12*b*Pi^2*csgn(I*c)*csgn(I
*c*(e*x+d)^n)^2/x^3*csgn(I*f*x^m)^3+1/6*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*
csgn(I*c*(e*x+d)^n)/x^3*ln(x^m)-1/18*I/x^3*Pi*b*m*csgn(I*c)*csgn(I*c*(e*x+d
)^n)^2+1/6*I/x^3*Pi*a*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/6*I/x^3*ln(f)*P
i*b*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/12*I/d*e*b*n/x^2*Pi*csgn(I*x^m)*csgn(
I*f*x^m)^2-1/6*I/x^3*ln(f)*Pi*b*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/6
*I/x^3*Pi*ln(c)*b*csgn(I*f)*csgn(I*f*x^m)^2+1/12*b*Pi^2*csgn(I*c)*csgn(I*c*
(e*x+d)^n)^2/x^3*csgn(I*f)*csgn(I*f*x^m)^2+1/12*b*Pi^2*csgn(I*c)*csgn(I*c*(
e*x+d)^n)^2/x^3*csgn(I*x^m)*csgn(I*f*x^m)^2+1/12*b*Pi^2*csgn(I*(e*x+d)^n)*c
sgn(I*c*(e*x+d)^n)^2/x^3*csgn(I*f)*csgn(I*f*x^m)^2-1/6*e*n*b*ln(x^m)/d/x^2+
1/3*e^3*n*b*ln(x^m)/d^3*ln(x)+1/3*e^2*n*b*ln(x^m)/d^2/x-1/3*e^3*n*b*ln(x^m)
/d^3*ln(e*x+d)+1/6*I/x^3*Pi*a*csgn(I*f*x^m)^3+1/12*b*Pi^2*csgn(I*c)*csgn(I*
(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/x^3*csgn(I*f*x^m)^3-1/9/x^3*ln(c)*b*m-1/3/x^
3*ln(f)*ln(c)*b
```

maxima [A] time = 0.71, size = 229, normalized size = 1.19

$$-\frac{1}{36}\left(\frac{12\left(\log\left(\frac{ex}{d}+1\right)\log(x)+\mathrm{Li}_2\left(-\frac{ex}{d}\right)\right)be^3n}{d^3}+\frac{4\,be^3n\log(ex+d)}{d^3}-\frac{12\,be^3nx^3\log(ex+d)\log(x)-6\,be^3nx^3\cdots}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))/x^4,x, algorithm="maxima")
```

```
[Out] -1/36*(12*(log(e*x/d + 1)*log(x) + dilog(-e*x/d))*b*e^3*n/d^3 + 4*b*e^3*n*l
og(e*x + d)/d^3 - (12*b*e^3*n*x^3*log(e*x + d)*log(x) - 6*b*e^3*n*x^3*log(x
)^2 + 4*b*e^3*n*x^3*log(x) + 16*b*d*e^2*n*x^2 - 5*b*d^2*e*n*x - 4*b*d^3*log
((e*x + d)^n) - 4*b*d^3*log(c) - 4*a*d^3)/(d^3*x^3))*m - 1/6*(b*e*n*(2*e^2*
log(e*x + d)/d^3 - 2*e^2*log(x)/d^3 - (2*e*x - d)/(d^2*x^2)) + 2*b*log((e*x
 + d)^n*c)/x^3 + 2*a/x^3)*log(f*x^m)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\ln\left(f\,x^m\right)\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((log(f*x^m)*(a + b*log(c*(d + e*x)^n)))/x^4,x)
```

```
[Out] int((log(f*x^m)*(a + b*log(c*(d + e*x)^n)))/x^4, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(f*x**m)*(a+b*ln(c*(e*x+d)**n))/x**4,x)
```

```
[Out] Timed out
```

3.366 $\int \frac{\log(fx^m)(a+b\log(c(d+ex)^n))}{x^5}\,dx$

Optimal. Leaf size=230

$$-\frac{1}{16}\left(\frac{4\log\left(fx^m\right)}{x^4}+\frac{m}{x^4}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)+\frac{be^4n\log\left(\frac{d}{ex}+1\right)\log\left(fx^m\right)}{4d^4}-\frac{be^4mn\text{Li}_2\left(-\frac{d}{ex}\right)}{4d^4}-\frac{be^4mn\log(x)}{16d^4}+$$

```
[Out] -7/144*b*e*m*n/d/x^3+3/32*b*e^2*m*n/d^2/x^2-5/16*b*e^3*m*n/d^3/x-1/16*b*e^4
*m*n*ln(x)/d^4-1/12*b*e*n*ln(f*x^m)/d/x^3+1/8*b*e^2*n*ln(f*x^m)/d^2/x^2-1/4
*b*e^3*n*ln(f*x^m)/d^3/x+1/4*b*e^4*n*ln(1+d/e/x)*ln(f*x^m)/d^4+1/16*b*e^4*m
*n*ln(e*x+d)/d^4-1/16*(m/x^4+4*ln(f*x^m)/x^4)*(a+b*ln(c*(e*x+d)^n))-1/4*b*e
^4*m*n*polylog(2,-d/e/x)/d^4
```

Rubi [A] time = 0.22, antiderivative size = 249, normalized size of antiderivative = 1.08, number of steps used = 11, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.292, Rules used = {2426, 44, 2351, 2304, 2301, 2317, 2391}

$$\frac{be^4mn\text{PolyLog}\left(2,-\frac{ex}{d}\right)}{4d^4}-\frac{1}{16}\left(\frac{4\log\left(fx^m\right)}{x^4}+\frac{m}{x^4}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)-\frac{be^4n\log^2\left(fx^m\right)}{8d^4m}+\frac{be^4n\log\left(\frac{ex}{d}+1\right)\log}{4d^4}$$

Antiderivative was successfully verified.

```
[In] Int[(Log[f*x^m]*(a + b*Log[c*(d + e*x)^n]))/x^5,x]
```

```
[Out] (-7*b*e*m*n)/(144*d*x^3) + (3*b*e^2*m*n)/(32*d^2*x^2) - (5*b*e^3*m*n)/(16*d
^3*x) - (b*e^4*m*n*Log[x])/(16*d^4) - (b*e*n*Log[f*x^m])/(12*d*x^3) + (b*e^
2*n*Log[f*x^m])/(8*d^2*x^2) - (b*e^3*n*Log[f*x^m])/(4*d^3*x) - (b*e^4*n*Log
[f*x^m]^2)/(8*d^4*m) + (b*e^4*m*n*Log[d + e*x])/(16*d^4) - ((m/x^4 + (4*Log
[f*x^m])/x^4)*(a + b*Log[c*(d + e*x)^n]))/16 + (b*e^4*n*Log[f*x^m]*Log[1 +
(e*x)/d])/(4*d^4) + (b*e^4*m*n*PolyLog[2, -((e*x)/d)])/(4*d^4)
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2351

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((f_.)*(x_))^(m_.)*((d_) + (e_.)*
(x_)^(r_.))^(q_.), x_Symbol] :> With[{u = ExpandIntegrand[a + b*Log[c*x^n],
 (f*x)^m*(d + e*x^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e,
 f, m, n, q, r}, x] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[m] && Integer
Q[r]))
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2426

```
Int[Log[(f_.)*(x_)^(m_.)]*((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_
.))*((g_.)*(x_))^(q_.), x_Symbol] :> -Simp[(((m*(g*x)^(q + 1))/(q + 1) - (g
*x)^(q + 1)*Log[f*x^m])*(a + b*Log[c*(d + e*x)^n]))/(g*(q + 1)), x] + (-Dis
t[(b*e*n)/(g*(q + 1)), Int[((g*x)^(q + 1)*Log[f*x^m])/(d + e*x), x], x] + D
ist[(b*e*m*n)/(g*(q + 1)^2), Int[(g*x)^(q + 1)/(d + e*x), x], x]) /; FreeQ[
{a, b, c, d, e, f, g, m, n, q}, x] && NeQ[q, -1]
```

Rubi steps

$$\int \frac{\log\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{x^5}\,dx = -\frac{1}{16}\left(\frac{m}{x^4}+\frac{4\log\left(fx^m\right)}{x^4}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)+\frac{1}{4}(ben)\int\frac{\log(\ldots}{x^4(d\ldots}$$

$$= -\frac{1}{16}\left(\frac{m}{x^4}+\frac{4\log\left(fx^m\right)}{x^4}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)+\frac{1}{4}(ben)\int\Bigg(\frac{\log\ldots}{d\ldots}$$

$$= -\frac{bemn}{48dx^3}+\frac{be^2mn}{32d^2x^2}-\frac{be^3mn}{16d^3x}-\frac{be^4mn\log(x)}{16d^4}+\frac{be^4mn\log(d+ex)}{16d^4}\ldots$$

$$= -\frac{7bemn}{144dx^3}+\frac{3be^2mn}{32d^2x^2}-\frac{5be^3mn}{16d^3x}-\frac{be^4mn\log(x)}{16d^4}-\frac{ben\log\left(fx^m\right)}{12dx^3}+\ldots$$

$$= -\frac{7bemn}{144dx^3}+\frac{3be^2mn}{32d^2x^2}-\frac{5be^3mn}{16d^3x}-\frac{be^4mn\log(x)}{16d^4}-\frac{ben\log\left(fx^m\right)}{12dx^3}+\ldots$$

Mathematica [A] time = 0.15, size = 273, normalized size = 1.19

$$-\frac{72ad^4\log\left(fx^m\right)+18ad^4m+72bd^4\log\left(fx^m\right)\log\left(c(d+ex)^n\right)+18bd^4m\log\left(c(d+ex)^n\right)+24bd^3enx\log\left(f\ldots\right.}{\ldots}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Log[f*x^m]*(a + b*Log[c*(d + e*x)^n]))/x^5,x]
```

```
[Out] -1/288*(18*a*d^4*m + 14*b*d^3*e*m*n*x - 27*b*d^2*e^2*m*n*x^2 + 90*b*d*e^3*m
*n*x^3 - 36*b*e^4*m*n*x^4*Log[x]^2 + 72*a*d^4*Log[f*x^m] + 24*b*d^3*e*n*x*L
og[f*x^m] - 36*b*d^2*e^2*n*x^2*Log[f*x^m] + 72*b*d*e^3*n*x^3*Log[f*x^m] - 1
8*b*e^4*m*n*x^4*Log[d + e*x] - 72*b*e^4*n*x^4*Log[f*x^m]*Log[d + e*x] + 18*
b*d^4*m*Log[c*(d + e*x)^n] + 72*b*d^4*Log[f*x^m]*Log[c*(d + e*x)^n] + 18*b*
e^4*n*x^4*Log[x]*(m + 4*Log[f*x^m] + 4*m*Log[d + e*x] - 4*m*Log[1 + (e*x)/d
]) - 72*b*e^4*m*n*x^4*PolyLog[2, -((e*x)/d)])/(d^4*x^4)
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b\log\left((ex+d)^nc\right)\log\left(fx^m\right)+a\log\left(fx^m\right)}{x^5},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))/x^5,x, algorithm="fricas")
```

```
[Out] integral((b*log((e*x + d)^n*c)*log(f*x^m) + a*log(f*x^m))/x^5, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b \log \left((ex+d)^n c\right)+a\right) \log \left(fx^m\right)}{x^5}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))/x^5,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*log(f*x^m)/x^5, x)
```

maple [C] time = 0.94, size = 2387, normalized size = 10.38

Expression too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(f*x^m)*(b*ln(c*(e*x+d)^n)+a)/x^5,x)
```

```
[Out] 1/8*I/d^3*b*e^3*n/x*Pi*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/16*b*Pi^2*csgn
(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/x^4*csgn(I*x^m)*csgn(I*f*x^m)^2+1/16*b*
Pi^2*csgn(I*c*(e*x+d)^n)^3/x^4*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/16*b*P
i^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/x^4*csgn(I*f)*csgn(I*f*x^m)^2+1/16*b*Pi
^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/x^4*csgn(I*x^m)*csgn(I*f*x^m)^2-1/4/x^4*
ln(f)*a-1/4*a/x^4*ln(x^m)-1/16/x^4*a*m-1/8*I/x^4*Pi*ln(c)*b*csgn(I*x^m)*csg
n(I*f*x^m)^2-1/32*I/x^4*Pi*b*m*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/8*I/x^4*ln
(f)*Pi*b*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/8*I/x^4*Pi*ln(c)*b*csgn(
I*f)*csgn(I*f*x^m)^2-1/4*e^3*n*b*ln(x^m)/d^3/x+1/8*e^2*n*b*ln(x^m)/d^2/x^2-
1/4*e^4*n*b*ln(x^m)/d^4*ln(x)+1/4*e^4*n*b*ln(x^m)/d^4*ln(e*x+d)-1/4/x^4*ln(
f)*ln(c)*b-1/16/x^4*ln(c)*b*m-1/12*e*n*b*ln(x^m)/d/x^3-1/16*b*e^4*m*n*ln(x)
/d^4+1/16*b*e^4*m*n*ln(e*x+d)/d^4+1/8*I/d^4*e^4*b*n*ln(x)*Pi*csgn(I*f)*csgn
(I*x^m)*csgn(I*f*x^m)-1/16*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/x^4*csgn(
I*f*x^m)^3-1/16*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/x^4*csgn(I*f
*x^m)^3-1/16*b*Pi^2*csgn(I*c*(e*x+d)^n)^3/x^4*csgn(I*f)*csgn(I*f*x^m)^2-1/1
6*b*Pi^2*csgn(I*c*(e*x+d)^n)^3/x^4*csgn(I*x^m)*csgn(I*f*x^m)^2+1/8*I/x^4*ln
(f)*Pi*b*csgn(I*c*(e*x+d)^n)^3+1/16*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+
d)^n)^2/x^4*csgn(I*f)*csgn(I*f*x^m)^2+(-1/4*b/x^4*ln(x^m)-1/16*(-2*I*Pi*b*c
sgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+2*I*Pi*b*csgn(I*f)*csgn(I*f*x^m)^2+2*I*P
i*b*csgn(I*x^m)*csgn(I*f*x^m)^2-2*I*Pi*b*csgn(I*f*x^m)^3+4*b*ln(f)+b*m)/x^4
)*ln((e*x+d)^n)+1/8/d^4*n*e^4*b*m*ln(x)^2-1/24*I/d*e*b*n/x^3*Pi*csgn(I*x^m)
*csgn(I*f*x^m)^2-1/8*I/d^4*e^4*b*n*ln(x)*Pi*csgn(I*f)*csgn(I*f*x^m)^2-1/8*I
/d^4*e^4*b*n*ln(x)*Pi*csgn(I*x^m)*csgn(I*f*x^m)^2-1/4*m*e^4*b*n/d^4*ln(e*x+
d)*ln(-1/d*e*x)-1/8*I/d^3*b*e^3*n/x*Pi*csgn(I*f)*csgn(I*f*x^m)^2+1/8*I*b*Pi
*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/x^4*ln(x^m)+1/16*b*Pi^2*cs
gn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/x^4*csgn(I*f*x^m)^3-1/8*I*b*P
i*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/x^4*ln(x^m)-1/8*I*b*Pi*csgn(I*(e*x+d)^n)*
csgn(I*c*(e*x+d)^n)^2/x^4*ln(x^m)-7/144*b*e*m*n/d/x^3+3/32*b*e^2*m*n/d^2/x^
2-5/16*b*e^3*m*n/d^3/x-1/4*m*e^4*b*n/d^4*dilog(-1/d*e*x)-1/16*b*Pi^2*csgn(I
*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/x^4*csgn(I*x^m)*csgn(I*f*x^m)^2-1
/8*I/d^4*e^4*b*n*ln(e*x+d)*Pi*csgn(I*f*x^m)^3-1/16*b*Pi^2*csgn(I*c)*csgn(I*
(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/x^4*csgn(I*f)*csgn(I*f*x^m)^2-1/8*I/d^3*b*e^
3*n/x*Pi*csgn(I*x^m)*csgn(I*f*x^m)^2-1/24*I/d*e*b*n/x^3*Pi*csgn(I*f)*csgn(I
*f*x^m)^2+1/8*I/d^4*e^4*b*n*ln(e*x+d)*Pi*csgn(I*f)*csgn(I*f*x^m)^2+1/8*I/d^
4*e^4*b*n*ln(e*x+d)*Pi*csgn(I*x^m)*csgn(I*f*x^m)^2+1/8/d^2*b*e^2*n/x^2*ln(f
)-1/12/d*e*b*n/x^3*ln(f)-1/4/d^3*b*e^3*n/x*ln(f)+1/4/d^4*e^4*b*n*ln(e*x+d)*
ln(f)-1/4/d^4*e^4*b*n*ln(x)*ln(f)+1/16*I/d^2*b*e^2*n/x^2*Pi*csgn(I*f)*csgn(
```

```
I*f*x^m)^2+1/16*I/d^2*b*e^2*n/x^2*Pi*csgn(I*x^m)*csgn(I*f*x^m)^2+1/8*I/x^4*
Pi*a*csgn(I*f*x^m)^3+1/16*b*Pi^2*csgn(I*c*(e*x+d)^n)^3/x^4*csgn(I*f*x^m)^3+
1/8*I/x^4*ln(f)*Pi*b*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/8*I/
x^4*Pi*ln(c)*b*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/32*I/x^4*Pi*b*m*csgn(I
*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/8*I/d^4*e^4*b*n*ln(e*x+d)*Pi*cs
gn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/16*I/d^2*b*e^2*n/x^2*Pi*csgn(I*f)*csgn(
I*x^m)*csgn(I*f*x^m)+1/24*I/d*e*b*n/x^3*Pi*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x
^m)+1/8*I/d^3*b*e^3*n/x*Pi*csgn(I*f*x^m)^3-1/16*I/d^2*b*e^2*n/x^2*Pi*csgn(I
*f*x^m)^3+1/24*I/d*e*b*n/x^3*Pi*csgn(I*f*x^m)^3+1/8*I/d^4*e^4*b*n*ln(x)*Pi*
csgn(I*f*x^m)^3-1/32*I/x^4*Pi*b*m*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1
/8*I/x^4*Pi*a*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/8*I/x^4*ln(f)*Pi*b*csgn
(I*c)*csgn(I*c*(e*x+d)^n)^2-1/16*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/x^4
*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/4*b*ln(c)/x^4*ln(x^m)+1/8*I/x^4*Pi*l
n(c)*b*csgn(I*f*x^m)^3+1/32*I/x^4*Pi*b*m*csgn(I*c*(e*x+d)^n)^3-1/8*I/x^4*Pi
*a*csgn(I*f)*csgn(I*f*x^m)^2-1/8*I/x^4*Pi*a*csgn(I*x^m)*csgn(I*f*x^m)^2+1/8
*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/x^4*ln(x^m)-1/16*b*Pi^2*csgn(I*(e*x+d)^n)*csg
n(I*c*(e*x+d)^n)^2/x^4*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/16*b*Pi^2*csgn
(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/x^4*csgn(I*f)*csgn(I*x^m)*csgn(
I*f*x^m)
```

maxima [A] time = 0.71, size = 253, normalized size = 1.10

$$\frac{1}{288}\left(\frac{72\left(\log\left(\frac{ex}{d}+1\right)\log(x)+\mathrm{Li}_2\left(-\frac{ex}{d}\right)\right)be^4n}{d^4}+\frac{18\,be^4n\log(ex+d)}{d^4}-\frac{72\,be^4nx^4\log(ex+d)\log(x)-36\,be^4n}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))/x^5,x, algorithm="maxima")
```

```
[Out] 1/288*(72*(log(e*x/d + 1)*log(x) + dilog(-e*x/d))*b*e^4*n/d^4 + 18*b*e^4*n*
log(e*x + d)/d^4 - (72*b*e^4*n*x^4*log(e*x + d)*log(x) - 36*b*e^4*n*x^4*log
(x)^2 + 18*b*e^4*n*x^4*log(x) + 90*b*d*e^3*n*x^3 - 27*b*d^2*e^2*n*x^2 + 14*
b*d^3*e*n*x + 18*b*d^4*log((e*x + d)^n) + 18*b*d^4*log(c) + 18*a*d^4)/(d^4*
x^4))*m + 1/24*(b*e*n*(6*e^3*log(e*x + d)/d^4 - 6*e^3*log(x)/d^4 - (6*e^2*x
^2 - 3*d*e*x + 2*d^2)/(d^3*x^3)) - 6*b*log((e*x + d)^n*c)/x^4 - 6*a/x^4)*lo
g(f*x^m)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln\left(f\,x^m\right)\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}{x^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((log(f*x^m)*(a + b*log(c*(d + e*x)^n)))/x^5,x)
```

```
[Out] int((log(f*x^m)*(a + b*log(c*(d + e*x)^n)))/x^5, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(f*x**m)*(a+b*ln(c*(e*x+d)**n))/x**5,x)
```

```
[Out] Timed out
```

3.367 $\int x^2 \log\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2 dx$

Optimal. Leaf size=705

$$\frac{d^3\log\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{3e^3}-\frac{2bd^3mn\text{Li}_2\left(\frac{ex}{d}+1\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{3e^3}-\frac{d^3m\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{9e^3}$$

```
[Out] 4/27*b*m*n*x^3*(a+b*ln(c*(e*x+d)^n))-2/9*b*n*x^3*ln(f*x^m)*(a+b*ln(c*(e*x+d
)^n))-1/3*d^3*m*ln(-e*x/d)*(a+b*ln(c*(e*x+d)^n))^2/e^3+1/3*x^3*ln(f*x^m)*(a
+b*ln(c*(e*x+d)^n))^2-1/9*m*x^3*(a+b*ln(c*(e*x+d)^n))^2+2/27*b^2*n^2*x^3*ln
(f*x^m)-1/9*d^3*m*(a+b*ln(c*(e*x+d)^n))^2/e^3+1/3*d^3*ln(f*x^m)*(a+b*ln(c*(
e*x+d)^n))^2/e^3-2/27*b^2*m*n^2*x^3+11/9*b^2*d^2*n^2*x*ln(f*x^m)/e^2-5/18*b
^2*d*n^2*x^2*ln(f*x^m)/e+23/54*b^2*d^3*m*n^2*ln(e*x+d)/e^3-5/9*b^2*d^3*n^2*
ln(f*x^m)*ln(e*x+d)/e^3-71/54*b^2*d^2*m*n^2*x/e^2+19/54*b^2*d*m*n^2*x^2/e+1
1/9*b^2*d^3*m*n^2*polylog(2,1+e*x/d)/e^3+2/3*b^2*d^3*m*n^2*polylog(3,1+e*x/
d)/e^3-2/3*a*b*d^2*n*x*ln(f*x^m)/e^2+5/9*b^2*d^3*m*n^2*ln(-e*x/d)*ln(e*x+d)
/e^3+8/9*b^2*d^2*m*n*(e*x+d)*ln(c*(e*x+d)^n)/e^3+2/3*b^2*d^3*m*n*ln(-e*x/d)
*ln(c*(e*x+d)^n)/e^3-2/3*b^2*d^2*n*(e*x+d)*ln(f*x^m)*ln(c*(e*x+d)^n)/e^3-5/
18*b*d*m*n*x^2*(a+b*ln(c*(e*x+d)^n))/e+1/3*b*d*n*x^2*ln(f*x^m)*(a+b*ln(c*(e
*x+d)^n))/e-2/3*b*d^3*m*n*(a+b*ln(c*(e*x+d)^n))*polylog(2,1+e*x/d)/e^3+2/9*
a*b*d^2*m*n*x/e^2+1/9*b*d^2*m*n*(-11*b*n+6*a)*x/e^2
```

Rubi [A] time = 2.19, antiderivative size = 902, normalized size of antiderivative = 1.28, number of steps used = 50, number of rules used = 22, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.846, Rules used = {2398, 2411, 43, 2334, 12, 14, 2301, 2428, 2396, 2433, 2374, 6589, 6741, 6742, 2394, 2315, 2389, 2295, 2395, 2434, 2375, 2317}

$$\frac{b^2mn^2\log^2(d+ex)d^3}{9e^3}+\frac{b^2mn^2\log(x)\log^2(d+ex)d^3}{3e^3}-\frac{b^2n^2\log\left(fx^m\right)\log^2(d+ex)d^3}{3e^3}+\frac{b^2m\log(x)\log^2\left(c(d+ex)\right.}{3e^3}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^2,x]
```

```
[Out] (2*a*b*d^2*m*n*x)/(3*e^2) - (151*b^2*d^2*m*n^2*x)/(54*e^2) - (a*b*d*m*n*x^2
)/(6*e) + (7*b^2*d*m*n^2*x^2)/(27*e) + (2*a*b*m*n*x^3)/27 - (4*b^2*m*n^2*x^
3)/81 + (b^2*d*m*n^2*(d + e*x)^2)/(6*e^3) - (2*b^2*m*n^2*(d + e*x)^3)/(81*e
^3) + (11*a*b*d^3*m*n*Log[x])/(9*e^3) + (23*b^2*d^3*m*n^2*Log[x])/(54*e^3)
+ (2*b^2*d^2*n^2*x*Log[f*x^m])/e^2 - (b^2*d*n^2*(d + e*x)^2*Log[f*x^m])/(2*
e^3) + (2*b^2*n^2*(d + e*x)^3*Log[f*x^m])/(27*e^3) + (13*b^2*d^3*m*n^2*Log[
d + e*x])/(54*e^3) - (2*a*b*d^3*m*n*Log[-((e*x)/d)]*Log[d + e*x])/(3*e^3) +
 (b^2*d^3*m*n^2*Log[d + e*x]^2)/(9*e^3) + (b^2*d^3*m*n^2*Log[x]*Log[d + e*x
]^2)/(3*e^3) - (b^2*d^3*n^2*Log[f*x^m]*Log[d + e*x]^2)/(3*e^3) - (b^2*d*m*n
*x^2*Log[c*(d + e*x)^n])/(6*e) + (2*b^2*m*n*x^3*Log[c*(d + e*x)^n])/27 + (2
*b^2*d^2*m*n*(d + e*x)*Log[c*(d + e*x)^n])/(3*e^3) + (11*b^2*d^3*m*n*Log[-(
(e*x)/d)]*Log[c*(d + e*x)^n])/(9*e^3) - (2*b^2*d^3*m*n*Log[x]*Log[d + e*x]*
Log[c*(d + e*x)^n])/(3*e^3) + (b^2*d^3*m*Log[x]*Log[c*(d + e*x)^n]^2)/(3*e^
3) - (b^2*d^3*m*Log[-((e*x)/d)]*Log[c*(d + e*x)^n]^2)/(3*e^3) + (b*m*n*((18
*d^2*(d + e*x))/e^3 - (9*d*(d + e*x)^2)/e^3 + (2*(d + e*x)^3)/e^3 - (6*d^3*
Log[d + e*x])/e^3)*(a + b*Log[c*(d + e*x)^n]))/27 - (b*n*Log[f*x^m]*((18*d^
2*(d + e*x))/e^3 - (9*d*(d + e*x)^2)/e^3 + (2*(d + e*x)^3)/e^3 - (6*d^3*Log
[d + e*x])/e^3)*(a + b*Log[c*(d + e*x)^n]))/9 - (m*x^3*(a + b*Log[c*(d + e*
x)^n])^2)/9 + (x^3*Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^2)/3 - (2*a*b*d^3*
m*n*PolyLog[2, 1 + (e*x)/d])/(3*e^3) + (11*b^2*d^3*m*n^2*PolyLog[2, 1 + (e*
x)/d])/(9*e^3) - (2*b^2*d^3*m*n*Log[c*(d + e*x)^n]*PolyLog[2, 1 + (e*x)/d])
/(3*e^3) + (2*b^2*d^3*m*n^2*PolyLog[3, 1 + (e*x)/d])/(3*e^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2334

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*(x_)^(m_.)*((d_) + (e_.)*(x_)^(r_
.))^(q_.), x_Symbol] :> With[{u = IntHide[x^m*(d + e*x^r)^q, x]}, Simp[u*(a
 + b*Log[c*x^n]), x] - Dist[b*n, Int[SimplifyIntegrand[u/x, x], x], x]] /;
FreeQ[{a, b, c, d, e, n, r}, x] && IGtQ[q, 0] && IntegerQ[m] &&  !(EqQ[q, 1
] && EqQ[m, -1])
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2375

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m
```

```
- 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2428

```
Int[Log[(f_.)*(x_)^(m_.)]*((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_
.))^(p_)*((g_.)*(x_))^(q_.), x_Symbol] :> With[{u = IntHide[(g*x)^q*(a + b*
Log[c*(d + e*x)^n])^p, x]}, Dist[Log[f*x^m], u, x] - Dist[m, Int[Dist[1/x,
u, x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, m, n, q}, x] && IGtQ[p, 1] &&
 IGtQ[q, 0]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] :> Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m]))/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int x^2 \log\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2\,dx = \frac{2b^2d^2n^2x\log\left(fx^m\right)}{e^2} - \frac{b^2dn^2(d+ex)^2\log\left(fx^m\right)}{2e^3} + \frac{2b^2n^2(d+ex)^3}{27e^3}$$

$$= -\frac{2b^2d^2mn^2x}{e^2} + \frac{2b^2d^2n^2x\log\left(fx^m\right)}{e^2} - \frac{b^2dn^2(d+ex)^2\log\left(fx^m\right)}{2e^3} +$$

$$= -\frac{2b^2d^2mn^2x}{e^2} + \frac{2b^2d^2n^2x\log\left(fx^m\right)}{e^2} - \frac{b^2dn^2(d+ex)^2\log\left(fx^m\right)}{2e^3} +$$

$$= -\frac{11b^2d^2mn^2x}{9e^2} + \frac{5b^2dmn^2x^2}{36e} - \frac{2}{81}b^2mn^2x^3 + \frac{23b^2d^3mn^2\log(x)}{54e^3} +$$

$$= -\frac{11b^2d^2mn^2x}{9e^2} + \frac{5b^2dmn^2x^2}{36e} - \frac{2}{81}b^2mn^2x^3 + \frac{23b^2d^3mn^2\log(x)}{54e^3} +$$

$$= -\frac{11b^2d^2mn^2x}{9e^2} + \frac{5b^2dmn^2x^2}{36e} - \frac{2}{81}b^2mn^2x^3 + \frac{23b^2d^3mn^2\log(x)}{54e^3} +$$

$$= -\frac{11b^2d^2mn^2x}{9e^2} + \frac{5b^2dmn^2x^2}{36e} - \frac{2}{81}b^2mn^2x^3 + \frac{23b^2d^3mn^2\log(x)}{54e^3} +$$

$$= -\frac{17b^2d^2mn^2x}{9e^2} + \frac{5b^2dmn^2x^2}{36e} - \frac{2}{81}b^2mn^2x^3 + \frac{b^2dmn^2(d+ex)^2}{6e^3} -$$

$$= -\frac{17b^2d^2mn^2x}{9e^2} + \frac{5b^2dmn^2x^2}{36e} - \frac{2}{81}b^2mn^2x^3 + \frac{b^2dmn^2(d+ex)^2}{6e^3} -$$

$$= \frac{2abd^2mnx}{3e^2} - \frac{23b^2d^2mn^2x}{9e^2} - \frac{abdmnx^2}{6e} + \frac{5b^2dmn^2x^2}{36e} + \frac{2}{27}abmnx$$

$$= \frac{2abd^2mnx}{3e^2} - \frac{151b^2d^2mn^2x}{54e^2} - \frac{abdmnx^2}{6e} + \frac{7b^2dmn^2x^2}{27e} + \frac{2}{27}abmn$$

$$= \frac{2abd^2mnx}{3e^2} - \frac{151b^2d^2mn^2x}{54e^2} - \frac{abdmnx^2}{6e} + \frac{7b^2dmn^2x^2}{27e} + \frac{2}{27}abmn$$

$$= \frac{2abd^2mnx}{3e^2} - \frac{151b^2d^2mn^2x}{54e^2} - \frac{abdmnx^2}{6e} + \frac{7b^2dmn^2x^2}{27e} + \frac{2}{27}abmn$$

$$= \frac{2abd^2mnx}{3e^2} - \frac{151b^2d^2mn^2x}{54e^2} - \frac{abdmnx^2}{6e} + \frac{7b^2dmn^2x^2}{27e} + \frac{2}{27}abmn$$

Mathematica [A] time = 1.80, size = 735, normalized size = 1.04

$$\frac{6bn\left(ex\left(6d^2-3dex+2e^2x^2\right)-6\left(d^3+e^3x^3\right)\log(d+ex)\right)\left(m\log(x)-\log\left(fx^m\right)\right)\left(a+b\log\left(c(d+ex)^n\right)-bn\log\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^2,x]
```

```
[Out] (6*b*n*(m*Log[x] - Log[f*x^m])*(e*x*(6*d^2 - 3*d*e*x + 2*e^2*x^2) - 6*(d^3
+ e^3*x^3)*Log[d + e*x])*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n]) + 18
*e^3*m*x^3*Log[x]*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 - 6*e^3*x
^3*(m + 3*m*Log[x] - 3*Log[f*x^m])*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x
)^n])^2 + b*m*n*(-a + b*n*Log[d + e*x] - b*Log[c*(d + e*x)^n])*(-48*d^2*e*x
 + 15*d*e^2*x^2 - 8*e^3*x^3 + 12*d^3*Log[d + e*x] + 12*e^3*x^3*Log[d + e*x]
 - 6*Log[x]*(e*x*(-6*d^2 + 3*d*e*x - 2*e^2*x^2) + 6*e^3*x^3*Log[d + e*x] +
6*d^3*Log[1 + (e*x)/d]) - 36*d^3*PolyLog[2, -((e*x)/d)]) - b^2*n^2*(137*d^2
*e*m*x - 19*d*e^2*m*x^2 + 4*e^3*m*x^3 + 36*d^3*m*Log[x] - 36*d^3*Log[f*x^m]
 - 66*d^2*e*x*Log[f*x^m] + 15*d*e^2*x^2*Log[f*x^m] - 4*e^3*x^3*Log[f*x^m] -
 71*d^3*m*Log[d + e*x] - 48*d^2*e*m*x*Log[d + e*x] + 15*d*e^2*m*x^2*Log[d +
 e*x] - 8*e^3*m*x^3*Log[d + e*x] - 66*d^3*m*Log[x]*Log[d + e*x] + 66*d^3*Lo
g[f*x^m]*Log[d + e*x] + 36*d^2*e*x*Log[f*x^m]*Log[d + e*x] - 18*d*e^2*x^2*L
og[f*x^m]*Log[d + e*x] + 12*e^3*x^3*Log[f*x^m]*Log[d + e*x] + 6*d^3*m*Log[d
 + e*x]^2 + 6*e^3*m*x^3*Log[d + e*x]^2 + 18*d^3*m*Log[-((e*x)/d)]*Log[d + e
*x]^2 - 18*d^3*Log[f*x^m]*Log[d + e*x]^2 - 18*e^3*x^3*Log[f*x^m]*Log[d + e*
x]^2 + 66*d^3*m*Log[x]*Log[1 + (e*x)/d] + 66*d^3*m*PolyLog[2, -((e*x)/d)] +
 36*d^3*m*Log[d + e*x]*PolyLog[2, 1 + (e*x)/d] - 36*d^3*m*PolyLog[3, 1 + (e
*x)/d]))/(54*e^3)
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(b^2x^2\log\left(\left(ex+d\right)^n c\right)^2\log\left(fx^m\right)+2\,abx^2\log\left(\left(ex+d\right)^n c\right)\log\left(fx^m\right)+a^2x^2\log\left(fx^m\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(f*x^m)*(a+b*log(c*(e*x+d)^n))^2,x, algorithm="fricas")
```

```
[Out] integral(b^2*x^2*log((e*x + d)^n*c)^2*log(f*x^m) + 2*a*b*x^2*log((e*x + d)^
n*c)*log(f*x^m) + a^2*x^2*log(f*x^m), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(b\log\left(\left(ex+d\right)^n c\right)+a\right)^2x^2\log\left(fx^m\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(f*x^m)*(a+b*log(c*(e*x+d)^n))^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2*x^2*log(f*x^m), x)
```

maple [F] time = 1.88, size = 0, normalized size = 0.00

$$\int\left(b\ln\left(c\left(ex+d\right)^n\right)+a\right)^2x^2\ln\left(f\,x^m\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*ln(f*x^m)*(b*ln(c*(e*x+d)^n)+a)^2,x)
```

```
[Out] int(x^2*ln(f*x^m)*(b*ln(c*(e*x+d)^n)+a)^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{9}\left(b^2\left(m-3\,\log(f)\right)x^3-3\,b^2x^3\log\left(x^m\right)\right)\log\left(\left(ex+d\right)^n\right)^2+\int\frac{9\left(b^2e\log(c)^2\log(f)+2\,abe\log(c)\log(f)+a\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(f*x^m)*(a+b*log(c*(e*x+d)^n))^2,x, algorithm="maxima")
```

```
[Out] -1/9*(b^2*(m - 3*log(f))*x^3 - 3*b^2*x^3*log(x^m))*log((e*x + d)^n)^2 + int
egrate(1/9*(9*(b^2*e*log(c)^2*log(f) + 2*a*b*e*log(c)*log(f) + a^2*e*log(f)
)*x^3 + 9*(b^2*d*log(c)^2*log(f) + 2*a*b*d*log(c)*log(f) + a^2*d*log(f))*x^
2 + 2*((9*a*b*e*log(f) + (9*e*log(c)*log(f) + (m*n - 3*n*log(f))*e)*b^2)*x^
3 + 9*(b^2*d*log(c)*log(f) + a*b*d*log(f))*x^2 - 3*(((e*n - 3*e*log(c))*b^2
 - 3*a*b*e)*x^3 - 3*(b^2*d*log(c) + a*b*d)*x^2)*log(x^m))*log((e*x + d)^n)
+ 9*((b^2*e*log(c)^2 + 2*a*b*e*log(c) + a^2*e)*x^3 + (b^2*d*log(c)^2 + 2*a*
b*d*log(c) + a^2*d)*x^2)*log(x^m))/(e*x + d), x)
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int x^2 \ln\left(f x^m\right) \left(a + b \ln\left(c (d + e x)^n\right)\right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*log(f*x^m)*(a + b*log(c*(d + e*x)^n))^2,x)
```

```
[Out] int(x^2*log(f*x^m)*(a + b*log(c*(d + e*x)^n))^2, x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*ln(f*x**m)*(a+b*ln(c*(e*x+d)**n))**2,x)
```

```
[Out] Timed out
```

3.368 $\int x \log(fx^m) (a + b \log(c(d + ex)^n))^2 \, dx$

Optimal. Leaf size=602

$$\frac{bd^2mn\text{Li}_2\left(\frac{ex}{d}+1\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{e^2}+\frac{bd^2mn\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{2e^2}+\frac{d^2m\log\left(-\frac{ex}{d}\right)\left(a+b\,\text{lo}\right.}{2e^2}$$

```
[Out] -1/2*a*b*d*m*n*x/e+2*b^2*d*m*n^2*x/e-2*b*d*m*n*(-b*n+a)*x/e-1/8*b^2*m*n^2*x
^2-1/4*b^2*m*n^2*(e*x+d)^2/e^2-1/4*b^2*d^2*m*n^2*ln(x)/e^2+2*a*b*d*n*x*ln(f
*x^m)/e-2*b^2*d*n^2*x*ln(f*x^m)/e+1/4*b^2*n^2*(e*x+d)^2*ln(f*x^m)/e^2-5/2*b
^2*d*m*n*(e*x+d)*ln(c*(e*x+d)^n)/e^2-2*b^2*d^2*m*n*ln(-e*x/d)*ln(c*(e*x+d)^
n)/e^2+2*b^2*d*n*(e*x+d)*ln(f*x^m)*ln(c*(e*x+d)^n)/e^2+1/2*b*m*n*(e*x+d)^2*
(a+b*ln(c*(e*x+d)^n))/e^2+1/2*b*d^2*m*n*ln(-e*x/d)*(a+b*ln(c*(e*x+d)^n))/e^
2-1/2*b*n*(e*x+d)^2*ln(f*x^m)*(a+b*ln(c*(e*x+d)^n))/e^2+1/2*d*m*(e*x+d)*(a+
b*ln(c*(e*x+d)^n))^2/e^2-1/4*m*(e*x+d)^2*(a+b*ln(c*(e*x+d)^n))^2/e^2+1/2*d^
2*m*ln(-e*x/d)*(a+b*ln(c*(e*x+d)^n))^2/e^2-d*(e*x+d)*ln(f*x^m)*(a+b*ln(c*(e
*x+d)^n))^2/e^2+1/2*(e*x+d)^2*ln(f*x^m)*(a+b*ln(c*(e*x+d)^n))^2/e^2-3/2*b^2
*d^2*m*n^2*polylog(2,1+e*x/d)/e^2+b*d^2*m*n*(a+b*ln(c*(e*x+d)^n))*polylog(2
,1+e*x/d)/e^2-b^2*d^2*m*n^2*polylog(3,1+e*x/d)/e^2
```

Rubi [A] time = 1.29, antiderivative size = 602, normalized size of antiderivative = 1.00, number of steps used = 38, number of rules used = 16, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.667$, Rules used = {2401, 2389, 2296, 2295, 2390, 2305, 2304, 2428, 43, 2411, 2351, 2317, 2391, 2353, 2374, 6589}

$$\frac{bd^2mn\text{PolyLog}\left(2,\frac{ex}{d}+1\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{e^2}-\frac{3b^2d^2mn^2\text{PolyLog}\left(2,\frac{ex}{d}+1\right)}{2e^2}-\frac{b^2d^2mn^2\text{PolyLog}\left(3,\frac{ex}{d}+\right.}{e^2}$$

Antiderivative was successfully verified.

```
[In] Int[x*Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^2,x]
```

```
[Out] -(a*b*d*m*n*x)/(2*e) + (2*b^2*d*m*n^2*x)/e - (2*b*d*m*n*(a - b*n)*x)/e - (b
^2*m*n^2*x^2)/8 - (b^2*m*n^2*(d + e*x)^2)/(4*e^2) - (b^2*d^2*m*n^2*Log[x])/
(4*e^2) + (2*a*b*d*n*x*Log[f*x^m])/e - (2*b^2*d*n^2*x*Log[f*x^m])/e + (b^2*
n^2*(d + e*x)^2*Log[f*x^m])/(4*e^2) - (5*b^2*d*m*n*(d + e*x)*Log[c*(d + e*x
)^n])/(2*e^2) - (2*b^2*d^2*m*n*Log[-((e*x)/d)]*Log[c*(d + e*x)^n])/e^2 + (2
*b^2*d*n*(d + e*x)*Log[f*x^m]*Log[c*(d + e*x)^n])/e^2 + (b*m*n*(d + e*x)^2*
(a + b*Log[c*(d + e*x)^n]))/(2*e^2) + (b*d^2*m*n*Log[-((e*x)/d)]*(a + b*Log
[c*(d + e*x)^n]))/(2*e^2) - (b*n*(d + e*x)^2*Log[f*x^m]*(a + b*Log[c*(d + e
*x)^n]))/(2*e^2) + (d*m*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(2*e^2) - (
m*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n])^2)/(4*e^2) + (d^2*m*Log[-((e*x)/d)
]*(a + b*Log[c*(d + e*x)^n])^2)/(2*e^2) - (d*(d + e*x)*Log[f*x^m]*(a + b*Lo
g[c*(d + e*x)^n])^2)/e^2 + ((d + e*x)^2*Log[f*x^m]*(a + b*Log[c*(d + e*x)^n
])^2)/(2*e^2) - (3*b^2*d^2*m*n^2*PolyLog[2, 1 + (e*x)/d])/(2*e^2) + (b*d^2*
m*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, 1 + (e*x)/d])/e^2 - (b^2*d^2*m*n^
2*PolyLog[3, 1 + (e*x)/d])/e^2
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2351

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((f_.)*(x_))^(m_.)*((d_) + (e_.)*
(x_)^(r_.))^(q_.), x_Symbol] :> With[{u = ExpandIntegrand[a + b*Log[c*x^n],
 (f*x)^m*(d + e*x^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e,
 f, m, n, q, r}, x] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[m] && Integer
Q[r]))
```

Rule 2353

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((f_.)*(x_))^(m_.)*((d_) +
(e_.)*(x_)^(r_.))^(q_.), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[
c*x^n])^p, (f*x)^m*(d + e*x^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b
, c, d, e, f, m, n, p, q, r}, x] && IntegerQ[q] && (GtQ[q, 0] || (IGtQ[p, 0
] && IntegerQ[m] && IntegerQ[r]))
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
```

```
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2428

```
Int[Log[(f_.)*(x_)^(m_.)]*((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_
.))^(p_)*((g_.)*(x_))^(q_.), x_Symbol] :> With[{u = IntHide[(g*x)^q*(a + b*
Log[c*(d + e*x)^n])^p, x]}, Dist[Log[f*x^m], u, x] - Dist[m, Int[Dist[1/x,
u, x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, m, n, q}, x] && IGtQ[p, 1] &&
 IGtQ[q, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int x\log\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2\,dx=\frac{2abdnx\log\left(fx^m\right)}{e}-\frac{2b^2dn^2x\log\left(fx^m\right)}{e}+\frac{b^2n^2(d+ex)^2\log\left(fx^m\right)}{4e^2}$$

$$=-\frac{2bdmn(a-bn)x}{e}+\frac{2abdnx\log\left(fx^m\right)}{e}-\frac{2b^2dn^2x\log\left(fx^m\right)}{e}+\frac{b^2n}{}$$

$$=-\frac{2bdmn(a-bn)x}{e}+\frac{2abdnx\log\left(fx^m\right)}{e}-\frac{2b^2dn^2x\log\left(fx^m\right)}{e}+\frac{b^2n}{}$$

$$=-\frac{b^2dmn^2x}{2e}-\frac{2bdmn(a-bn)x}{e}-\frac{1}{8}b^2mn^2x^2-\frac{b^2d^2mn^2\log(x)}{4e^2}+\frac{2a}{}$$

$$=-\frac{b^2dmn^2x}{2e}-\frac{2bdmn(a-bn)x}{e}-\frac{1}{8}b^2mn^2x^2-\frac{b^2d^2mn^2\log(x)}{4e^2}+\frac{2a}{}$$

$$=\frac{abdmnx}{2e}+\frac{3b^2dmn^2x}{2e}-\frac{2bdmn(a-bn)x}{e}-\frac{1}{8}b^2mn^2x^2-\frac{b^2mn^2(d}{8e^2}$$

$$=-\frac{abdmnx}{2e}+\frac{b^2dmn^2x}{e}-\frac{2bdmn(a-bn)x}{e}-\frac{1}{8}b^2mn^2x^2-\frac{b^2mn^2(d}{4e^2}$$

$$=-\frac{abdmnx}{2e}+\frac{2b^2dmn^2x}{e}-\frac{2bdmn(a-bn)x}{e}-\frac{1}{8}b^2mn^2x^2-\frac{b^2mn^2(d}{4e}$$

Mathematica [F] time = 0.41, size = 0, normalized size = 0.00

$$\int x\log\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[x*Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^2,x]
[Out] Integrate[x*Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^2, x]
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(b^2x\log\left((ex+d)^nc\right)^2\log\left(fx^m\right)+2\,abx\log\left((ex+d)^nc\right)\log\left(fx^m\right)+a^2x\log\left(fx^m\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*log(f*x^m)*(a+b*log(c*(e*x+d)^n))^2,x, algorithm="fricas")
[Out] integral(b^2*x*log((e*x + d)^n*c)^2*log(f*x^m) + 2*a*b*x*log((e*x + d)^n*c)
*log(f*x^m) + a^2*x*log(f*x^m), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(b\log\left((ex+d)^nc\right)+a\right)^2x\log\left(fx^m\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*log(f*x^m)*(a+b*log(c*(e*x+d)^n))^2,x, algorithm="giac")
[Out] integrate((b*log((e*x + d)^n*c) + a)^2*x*log(f*x^m), x)
```

maple [F] time = 4.08, size = 0, normalized size = 0.00

$$\int \left(b\ln\left(c\left(ex+d\right)^{n}\right)+a\right)^{2} x\ln\left(f\,x^{m}\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*ln(f*x^m)*(b*ln(c*(e*x+d)^n)+a)^2,x)
```

```
[Out] int(x*ln(f*x^m)*(b*ln(c*(e*x+d)^n)+a)^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{4}\left(b^{2}\left(m-2\,\log(f)\right)x^{2}-2\,b^{2}x^{2}\log\left(x^{m}\right)\right)\log\left(\left(ex+d\right)^{n}\right)^{2}+\int\frac{2\left(b^{2}e\log(c)^{2}\log(f)+2\,abe\log(c)\log(f)+a^{2}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*log(f*x^m)*(a+b*log(c*(e*x+d)^n))^2,x, algorithm="maxima")
```

```
[Out] -1/4*(b^2*(m - 2*log(f))*x^2 - 2*b^2*x^2*log(x^m))*log((e*x + d)^n)^2 + int
egrate(1/2*(2*(b^2*e*log(c)^2*log(f) + 2*a*b*e*log(c)*log(f) + a^2*e*log(f)
)*x^2 + 2*(b^2*d*log(c)^2*log(f) + 2*a*b*d*log(c)*log(f) + a^2*d*log(f))*x
+ ((4*a*b*e*log(f) + (4*e*log(c)*log(f) + (m*n - 2*n*log(f))*e)*b^2)*x^2 +
4*(b^2*d*log(c)*log(f) + a*b*d*log(f))*x - 2*(((e*n - 2*e*log(c))*b^2 - 2*a
*b*e)*x^2 - 2*(b^2*d*log(c) + a*b*d)*x)*log(x^m))*log((e*x + d)^n) + 2*((b^
2*e*log(c)^2 + 2*a*b*e*log(c) + a^2*e)*x^2 + (b^2*d*log(c)^2 + 2*a*b*d*log(
c) + a^2*d)*x)*log(x^m))/(e*x + d), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x\,\ln\left(f\,x^{m}\right)\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^{n}\right)\right)^{2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*log(f*x^m)*(a + b*log(c*(d + e*x)^n))^2,x)
```

```
[Out] int(x*log(f*x^m)*(a + b*log(c*(d + e*x)^n))^2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*ln(f*x**m)*(a+b*ln(c*(e*x+d)**n))**2,x)
```

```
[Out] Timed out
```

3.369 $\int \log(fx^m)(a+b\log(c(d+ex)^n))^2\,dx$

Optimal. Leaf size=309

$$\frac{(d+ex)\log(fx^m)(a+b\log(c(d+ex)^n))^2}{e}-\frac{2bdmn\mathrm{Li}_2\left(\frac{ex}{d}+1\right)(a+b\log(c(d+ex)^n))}{e}-\frac{m(d+ex)(a+b\log(c($$

```
[Out] 2*a*b*m*n*x-4*b^2*m*n^2*x+2*b*m*n*(-b*n+a)*x-2*a*b*n*x*ln(f*x^m)+2*b^2*n^2*
x*ln(f*x^m)+4*b^2*m*n*(e*x+d)*ln(c*(e*x+d)^n)/e+2*b^2*d*m*n*ln(-e*x/d)*ln(c
*(e*x+d)^n)/e-2*b^2*n*(e*x+d)*ln(f*x^m)*ln(c*(e*x+d)^n)/e-m*(e*x+d)*(a+b*ln
(c*(e*x+d)^n))^2/e-d*m*ln(-e*x/d)*(a+b*ln(c*(e*x+d)^n))^2/e+(e*x+d)*ln(f*x^
m)*(a+b*ln(c*(e*x+d)^n))^2/e+2*b^2*d*m*n^2*polylog(2,1+e*x/d)/e-2*b*d*m*n*(
a+b*ln(c*(e*x+d)^n))*polylog(2,1+e*x/d)/e+2*b^2*d*m*n^2*polylog(3,1+e*x/d)/
e
```

Rubi [A] time = 0.45, antiderivative size = 309, normalized size of antiderivative = 1.00, number of steps used = 17, number of rules used = 12, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.522, Rules used = {2389, 2296, 2295, 2423, 2411, 43, 2351, 2317, 2391, 2353, 2374, 6589}

$$-\frac{2bdmn\text{PolyLog}\left(2,\frac{ex}{d}+1\right)(a+b\log(c(d+ex)^n))}{e}+\frac{2b^2dmn^2\text{PolyLog}\left(2,\frac{ex}{d}+1\right)}{e}+\frac{2b^2dmn^2\text{PolyLog}\left(3,\frac{ex}{d}+1\right.}{e}$$

Antiderivative was successfully verified.

```
[In] Int[Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^2,x]
```

```
[Out] 2*a*b*m*n*x - 4*b^2*m*n^2*x + 2*b*m*n*(a - b*n)*x - 2*a*b*n*x*Log[f*x^m] +
2*b^2*n^2*x*Log[f*x^m] + (4*b^2*m*n*(d + e*x)*Log[c*(d + e*x)^n])/e + (2*b^
2*d*m*n*Log[-((e*x)/d)]*Log[c*(d + e*x)^n])/e - (2*b^2*n*(d + e*x)*Log[f*x^
m]*Log[c*(d + e*x)^n])/e - (m*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/e - (
d*m*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n])^2)/e + ((d + e*x)*Log[f*x^m]
*(a + b*Log[c*(d + e*x)^n])^2)/e + (2*b^2*d*m*n^2*PolyLog[2, 1 + (e*x)/d])/
e - (2*b*d*m*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, 1 + (e*x)/d])/e + (2*b
^2*d*m*n^2*PolyLog[3, 1 + (e*x)/d])/e
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
```

```
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2351

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((f_.)*(x_))^(m_.)*((d_) + (e_.)*
(x_)^(r_.))^(q_.), x_Symbol] :> With[{u = ExpandIntegrand[a + b*Log[c*x^n],
 (f*x)^m*(d + e*x^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e,
 f, m, n, q, r}, x] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[m] && Integer
Q[r]))
```

Rule 2353

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((f_.)*(x_))^(m_.)*((d_) +
(e_.)*(x_)^(r_.))^(q_.), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[
c*x^n])^p, (f*x)^m*(d + e*x^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b
, c, d, e, f, m, n, p, q, r}, x] && IntegerQ[q] && (GtQ[q, 0] || (IGtQ[p, 0
] && IntegerQ[m] && IntegerQ[r]))
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2423

```
Int[Log[(f_.)*(x_)^(m_.)]*((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_
.))^(p_), x_Symbol] :> With[{u = IntHide[(a + b*Log[c*(d + e*x)^n])^p, x]},
 Dist[Log[f*x^m], u, x] - Dist[m, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a,
 b, c, d, e, f, m, n}, x] && IGtQ[p, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \log\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2 dx = -2abnx\log\left(fx^m\right)+2b^2n^2x\log\left(fx^m\right)-\frac{2b^2n(d+ex)\log\left(fx^m\right)\log}{e}$$

$$= 2bmn(a-bn)x-2abnx\log\left(fx^m\right)+2b^2n^2x\log\left(fx^m\right)-\frac{2b^2n(d+ex}{}$$

$$= 2bmn(a-bn)x-2abnx\log\left(fx^m\right)+2b^2n^2x\log\left(fx^m\right)-\frac{2b^2n(d+ex}{}$$

$$= 2bmn(a-bn)x-2abnx\log\left(fx^m\right)+2b^2n^2x\log\left(fx^m\right)-\frac{2b^2n(d+ex}{}$$

$$= 2bmn(a-bn)x-2abnx\log\left(fx^m\right)+2b^2n^2x\log\left(fx^m\right)-\frac{2b^2n(d+ex}{}$$

$$= -2b^2mn^2x+2bmn(a-bn)x-2abnx\log\left(fx^m\right)+2b^2n^2x\log\left(fx^m\right)$$

$$= 2abmnx-2b^2mn^2x+2bmn(a-bn)x-2abnx\log\left(fx^m\right)+2b^2n^2x\,\mathrm{lc}$$

$$= 2abmnx-4b^2mn^2x+2bmn(a-bn)x-2abnx\log\left(fx^m\right)+2b^2n^2x\,\mathrm{lc}$$

Mathematica [A] time = 0.49, size = 549, normalized size = 1.78

$$-2bnx\left(\log\left(fx^m\right)+m(-\log(x))-m\right)\left(a+b\left(\log\left(c(d+ex)^n\right)-n\log(d+ex)\right)\right)+2bnx\log(d+ex)\left(\log\left(fx^m\right)-m\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^2,x]
```

```
[Out] b^2*n^2*(-(m*Log[x]) + Log[f*x^m])*(x*Log[d + e*x]^2 - 2*e*(-(x/e) + (d*Log
[d + e*x])/e^2 + (x*Log[d + e*x])/e - (d*Log[d + e*x]^2)/(2*e^2))) - x*(m -
 Log[f*x^m])*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 - 2*b*n*x*(-m
- m*Log[x] + Log[f*x^m])*(a + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n])) +
 2*b*n*x*(-m + Log[f*x^m])*Log[d + e*x]*(a + b*(-(n*Log[d + e*x]) + Log[c*(
d + e*x)^n])) + (2*b*d*n*(-m - m*Log[x] + Log[f*x^m])*Log[d + e*x]*(a + b*(
-(n*Log[d + e*x]) + Log[c*(d + e*x)^n])))/e - 2*b*e*m*n*(a + b*(-(n*Log[d +
 e*x]) + Log[c*(d + e*x)^n]))*((x*(-1 + Log[x]))/e - (d*((Log[x]*Log[(d + e
*x)/d])/e + PolyLog[2, -((e*x)/d)]/e))/e) + b^2*m*n^2*(-(x*Log[d + e*x]^2)
+ x*Log[x]*Log[d + e*x]^2 + 2*e*(-(x/e) + (d*Log[d + e*x])/e^2 + (x*Log[d +
 e*x])/e - (d*Log[d + e*x]^2)/(2*e^2)) - 2*e*((2*e*x - d*Log[d + e*x] - e*x
*Log[d + e*x] + Log[x]*(-(e*x) + e*x*Log[d + e*x] + d*Log[1 + (e*x)/d]) + d
*PolyLog[2, -((e*x)/d)])/e^2 - (d*(((Log[x] - Log[-((e*x)/d)])*Log[d + e*x]
^2)/2 - Log[d + e*x]*PolyLog[2, (d + e*x)/d] + PolyLog[3, (d + e*x)/d]))/e^
2))
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(b^2\log\left((ex+d)^nc\right)^2\log\left(fx^m\right)+2\,ab\log\left((ex+d)^nc\right)\log\left(fx^m\right)+a^2\log\left(fx^m\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))^2,x, algorithm="fricas")
```

```
[Out] integral(b^2*log((e*x + d)^n*c)^2*log(f*x^m) + 2*a*b*log((e*x + d)^n*c)*log
(f*x^m) + a^2*log(f*x^m), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b \log \left((ex+d)^n c\right)+a\right)^2 \log \left(f x^m\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2*log(f*x^m), x)
```

maple [F] time = 2.64, size = 0, normalized size = 0.00

$$\int \left(b \ln \left(c (ex+d)^n\right)+a\right)^2 \ln \left(f x^m\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(f*x^m)*(b*ln(c*(e*x+d)^n)+a)^2,x)
```

```
[Out] int(ln(f*x^m)*(b*ln(c*(e*x+d)^n)+a)^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\left(b^2\left(m-\log(f)\right)x-b^2x\log\left(x^m\right)\right)\log\left((ex+d)^n\right)^2+\int \frac{b^2d\log(c)^2\log(f)+2\,abd\log(c)\log(f)+a^2d\log(f)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))^2,x, algorithm="maxima")
```

```
[Out] -(b^2*(m - log(f))*x - b^2*x*log(x^m))*log((e*x + d)^n)^2 + integrate((b^2*
d*log(c)^2*log(f) + 2*a*b*d*log(c)*log(f) + a^2*d*log(f) + (b^2*e*log(c)^2*
log(f) + 2*a*b*e*log(c)*log(f) + a^2*e*log(f))*x + 2*(b^2*d*log(c)*log(f) +
 a*b*d*log(f) + (a*b*e*log(f) + (e*log(c)*log(f) + (m*n - n*log(f))*e)*b^2)
*x + (b^2*d*log(c) + a*b*d - ((e*n - e*log(c))*b^2 - a*b*e)*x)*log(x^m))*lo
g((e*x + d)^n) + (b^2*d*log(c)^2 + 2*a*b*d*log(c) + a^2*d + (b^2*e*log(c)^2
 + 2*a*b*e*log(c) + a^2*e)*x)*log(x^m))/(e*x + d), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \ln\left(f\,x^m\right)\,{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^2 \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(f*x^m)*(a + b*log(c*(d + e*x)^n))^2,x)
```

```
[Out] int(log(f*x^m)*(a + b*log(c*(d + e*x)^n))^2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(f*x**m)*(a+b*ln(c*(e*x+d)**n))**2,x)
```

```
[Out] Timed out
```

3.370 $\int \frac{\log(fx^m)(a+b\log(c(d+ex)^n))^2}{x}\,dx$

Optimal. Leaf size=823

$$-b^2\left(m\log(x)-\log\left(fx^m\right)\right)\left(\log\left(-\frac{ex}{d}\right)\log^2(d+ex)+2\text{Li}_2\left(\frac{ex}{d}+1\right)\log(d+ex)-2\text{Li}_3\left(\frac{ex}{d}+1\right)\right)n^2+\frac{1}{12}b^2m\left(\log\right.$$

```
[Out] 1/2*m*ln(x)^2*(a-b*n*ln(e*x+d)+b*ln(c*(e*x+d)^n))^2+ln(x)*(-m*ln(x)+ln(f*x^
m))*(a-b*n*ln(e*x+d)+b*ln(c*(e*x+d)^n))^2+2*b*n*(-m*ln(x)+ln(f*x^m))*(a-b*n
*ln(e*x+d)+b*ln(c*(e*x+d)^n))*(ln(x)*(ln(e*x+d)-ln(1+e*x/d))-polylog(2,-e*x
/d))+2*b*m*n*(a-b*n*ln(e*x+d)+b*ln(c*(e*x+d)^n))*(1/2*ln(x)^2*(ln(e*x+d)-ln
(1+e*x/d))-ln(x)*polylog(2,-e*x/d)+polylog(3,-e*x/d))-b^2*n^2*(m*ln(x)-ln(f
*x^m))*(ln(-e*x/d)*ln(e*x+d)^2+2*ln(e*x+d)*polylog(2,1+e*x/d)-2*polylog(3,1
+e*x/d))+1/12*b^2*m*n^2*(ln(-e*x/d)^4+6*ln(-e*x/d)^2*ln(-e*x/(e*x+d))^2-4*(
ln(-e*x/d)+ln(d/(e*x+d)))*ln(-e*x/(e*x+d))^3+ln(-e*x/(e*x+d))^4+6*ln(x)^2*l
n(e*x+d)^2+4*(2*ln(-e*x/d)^3-3*ln(x)^2*ln(e*x+d))*ln(1+e*x/d)+6*(ln(x)-ln(-
e*x/d))*(ln(x)+3*ln(-e*x/d))*ln(1+e*x/d)^2-4*ln(-e*x/d)^2*ln(-e*x/(e*x+d))*
(ln(-e*x/d)+3*ln(1+e*x/d))+12*(ln(-e*x/d)^2-2*ln(-e*x/d)*(ln(-e*x/(e*x+d))+
ln(1+e*x/d))+2*ln(x)*(-ln(e*x+d)+ln(1+e*x/d)))*polylog(2,-e*x/d)-12*ln(-e*x
/(e*x+d))^2*polylog(2,e*x/(e*x+d))+12*(ln(-e*x/d)-ln(-e*x/(e*x+d)))^2*polyl
og(2,1+e*x/d)+24*(ln(x)-ln(-e*x/d))*ln(1+e*x/d)*polylog(2,1+e*x/d)+24*(ln(-
e*x/(e*x+d))+ln(e*x+d))*polylog(3,-e*x/d)+24*ln(-e*x/(e*x+d))*polylog(3,e*x
/(e*x+d))+24*(-ln(x)+ln(-e*x/(e*x+d)))*polylog(3,1+e*x/d)-24*polylog(4,-e*x
/d)-24*polylog(4,e*x/(e*x+d))+24*polylog(4,1+e*x/d))
```

Rubi [F] time = 0.07, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\log\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{x}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^2)/x,x]
```

```
[Out] (Log[f*x^m]^2*(a + b*Log[c*(d + e*x)^n])^2)/(2*m) - (b*e*n*Defer[Int][(Log[
f*x^m]^2*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x])/m
```

Rubi steps

$$\int \frac{\log\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{x}\,dx=\frac{\log^2\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2m}-\frac{(ben)\int \frac{\log^2\left(fx^m\right)\left(a+b\log(c(d+ex)^n\right.}{d+ex}}{m}$$

Mathematica [A] time = 0.40, size = 823, normalized size = 1.00

$$-b^2\left(m\log(x)-\log\left(fx^m\right)\right)\left(\log\left(-\frac{ex}{d}\right)\log^2(d+ex)+2\text{Li}_2\left(\frac{ex}{d}+1\right)\log(d+ex)-2\text{Li}_3\left(\frac{ex}{d}+1\right)\right)n^2+\frac{1}{12}b^2m\left(\log\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^2)/x,x]
```

```
[Out] (m*Log[x]^2*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2)/2 + Log[x]*(-(
m*Log[x]) + Log[f*x^m])*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 + 2
*b*n*(-(m*Log[x]) + Log[f*x^m])*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n
```

```
])*(Log[x]*(Log[d + e*x] - Log[1 + (e*x)/d]) - PolyLog[2, -((e*x)/d)]) + 2*
b*m*n*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*((Log[x]^2*(Log[d + e*x
] - Log[1 + (e*x)/d]))/2 - Log[x]*PolyLog[2, -((e*x)/d)] + PolyLog[3, -((e*
x)/d)]) - b^2*n^2*(m*Log[x] - Log[f*x^m])*(Log[-((e*x)/d)]*Log[d + e*x]^2 +
 2*Log[d + e*x]*PolyLog[2, 1 + (e*x)/d] - 2*PolyLog[3, 1 + (e*x)/d]) + (b^2
*m*n^2*(Log[-((e*x)/d)]^4 + 6*Log[-((e*x)/d)]^2*Log[-((e*x)/(d + e*x))]^2 -
 4*(Log[-((e*x)/d)] + Log[d/(d + e*x)])*Log[-((e*x)/(d + e*x))]^3 + Log[-((
e*x)/(d + e*x))]^4 + 6*Log[x]^2*Log[d + e*x]^2 + 4*(2*Log[-((e*x)/d)]^3 - 3
*Log[x]^2*Log[d + e*x])*Log[1 + (e*x)/d] + 6*(Log[x] - Log[-((e*x)/d)])*(Lo
g[x] + 3*Log[-((e*x)/d)])*Log[1 + (e*x)/d]^2 - 4*Log[-((e*x)/d)]^2*Log[-((e
*x)/(d + e*x))]*(Log[-((e*x)/d)] + 3*Log[1 + (e*x)/d]) + 12*(Log[-((e*x)/d)
]^2 - 2*Log[-((e*x)/d)]*(Log[-((e*x)/(d + e*x))] + Log[1 + (e*x)/d]) + 2*Lo
g[x]*(-Log[d + e*x] + Log[1 + (e*x)/d]))*PolyLog[2, -((e*x)/d)] - 12*Log[-(
(e*x)/(d + e*x))]^2*PolyLog[2, (e*x)/(d + e*x)] + 12*(Log[-((e*x)/d)] - Log
[-((e*x)/(d + e*x))])^2*PolyLog[2, 1 + (e*x)/d] + 24*(Log[x] - Log[-((e*x)/
d)])*Log[1 + (e*x)/d]*PolyLog[2, 1 + (e*x)/d] + 24*(Log[-((e*x)/(d + e*x))]
 + Log[d + e*x])*PolyLog[3, -((e*x)/d)] + 24*Log[-((e*x)/(d + e*x))]*PolyLo
g[3, (e*x)/(d + e*x)] + 24*(-Log[x] + Log[-((e*x)/(d + e*x))])*PolyLog[3, 1
 + (e*x)/d] - 24*(PolyLog[4, -((e*x)/d)] + PolyLog[4, (e*x)/(d + e*x)] - Po
lyLog[4, 1 + (e*x)/d])))/12
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b^2\log\left((ex+d)^n c\right)^2\log\left(fx^m\right)+2\,ab\log\left((ex+d)^n c\right)\log\left(fx^m\right)+a^2\log\left(fx^m\right)}{x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))^2/x,x, algorithm="fricas")
```

```
[Out] integral((b^2*log((e*x + d)^n*c)^2*log(f*x^m) + 2*a*b*log((e*x + d)^n*c)*lo
g(f*x^m) + a^2*log(f*x^m))/x, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(b\log\left((ex+d)^n c\right)+a\right)^2\log\left(fx^m\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))^2/x,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2*log(f*x^m)/x, x)
```

maple [F] time = 2.64, size = 0, normalized size = 0.00

$$\int\frac{\left(b\ln\left(c\,(ex+d)^n\right)+a\right)^2\ln\left(f\,x^m\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(f*x^m)*(b*ln(c*(e*x+d)^n)+a)^2/x,x)
```

```
[Out] int(ln(f*x^m)*(b*ln(c*(e*x+d)^n)+a)^2/x,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{2}\left(b^2m\log(x)^2-2\,b^2\log(f)\log(x)-2\,b^2\log(x)\log\left(x^m\right)\right)\log\left((ex+d)^n\right)^2-\int-\frac{b^2d\log(c)^2\log(f)+2\,abd\,\mathrm{l}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))^2/x,x, algorithm="maxima")
```

```
[Out] -1/2*(b^2*m*log(x)^2 - 2*b^2*log(f)*log(x) - 2*b^2*log(x)*log(x^m))*log((e*
x + d)^n)^2 - integrate(-(b^2*d*log(c)^2*log(f) + 2*a*b*d*log(c)*log(f) + a
^2*d*log(f) + (b^2*e*log(c)^2*log(f) + 2*a*b*e*log(c)*log(f) + a^2*e*log(f)
)*x + (b^2*e*m*n*x*log(x)^2 - 2*b^2*e*n*x*log(f)*log(x) + 2*b^2*d*log(c)*lo
g(f) + 2*a*b*d*log(f) + 2*(b^2*e*log(c)*log(f) + a*b*e*log(f))*x - 2*(b^2*e
*n*x*log(x) - b^2*d*log(c) - a*b*d - (b^2*e*log(c) + a*b*e)*x)*log(x^m))*lo
g((e*x + d)^n) + (b^2*d*log(c)^2 + 2*a*b*d*log(c) + a^2*d + (b^2*e*log(c)^2
 + 2*a*b*e*log(c) + a^2*e)*x)*log(x^m))/(e*x^2 + d*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln\left(f\,x^m\right)\,{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^2}{x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((log(f*x^m)*(a + b*log(c*(d + e*x)^n))^2)/x,x)
```

```
[Out] int((log(f*x^m)*(a + b*log(c*(d + e*x)^n))^2)/x, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(f*x**m)*(a+b*ln(c*(e*x+d)**n))**2/x,x)
```

```
[Out] Timed out
```

3.371 $\int \frac{\log(fx^m)\left(a+b\log(c(d+ex)^n)\right)^2}{x^2}\,dx$

Optimal. Leaf size=607

$$-\frac{2bn\left(ex\log\left(-\frac{ex}{d}\right)-(d+ex)\log(d+ex)\right)\left(m\log(x)-\log\left(fx^m\right)\right)\left(a+b\log\left(c(d+ex)^n\right)-bn\log(d+ex)\right)}{dx}-\frac{(}{}$$

```
[Out] -b^2*e*m*n^2*ln(x)^2*ln(e*x+d)/d+2*b^2*e*m*n^2*ln(-e*x/d)*ln(e*x+d)/d+2*b^2
*e*n^2*ln(x)*ln(f*x^m)*ln(e*x+d)/d-b^2*e*m*n^2*ln(e*x+d)^2/d-b^2*m*n^2*ln(e
*x+d)^2/x+b^2*e*m*n^2*ln(-e*x/d)*ln(e*x+d)^2/d-b^2*e*n^2*ln(f*x^m)*ln(e*x+d
)^2/d-b^2*n^2*ln(f*x^m)*ln(e*x+d)^2/x-2*b*n*(m*ln(x)-ln(f*x^m))*(e*x*ln(-e*
x/d)-(e*x+d)*ln(e*x+d))*(a-b*n*ln(e*x+d)+b*ln(c*(e*x+d)^n))/d/x-m*ln(x)*(a-
b*n*ln(e*x+d)+b*ln(c*(e*x+d)^n))^2/x-(m-m*ln(x)+ln(f*x^m))*(a-b*n*ln(e*x+d)
+b*ln(c*(e*x+d)^n))^2/x+b^2*e*m*n^2*ln(x)^2*ln(1+e*x/d)/d-2*b^2*e*n^2*ln(x)
*ln(f*x^m)*ln(1+e*x/d)/d-2*b^2*e*n^2*ln(f*x^m)*polylog(2,-e*x/d)/d+b*m*n*(a
-b*n*ln(e*x+d)+b*ln(c*(e*x+d)^n))*(2*e*x*ln(-e*x/d)-2*(e*x+d)*ln(e*x+d)-2*d
*ln(x)*ln(e*x+d)+e*x*(ln(x)^2-2*ln(x)*ln(1+e*x/d)-2*polylog(2,-e*x/d)))/d/x
+2*b^2*e*m*n^2*(1+ln(e*x+d))*polylog(2,1+e*x/d)/d+2*b^2*e*m*n^2*polylog(3,-
e*x/d)/d-2*b^2*e*m*n^2*polylog(3,1+e*x/d)/d
```

Rubi [F] time = 0.03, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\log\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{x^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^2)/x^2,x]
```

```
[Out] Defer[Int][(Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^2)/x^2, x]
```

Rubi steps

$$\int \frac{\log\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{x^2}\,dx=\int \frac{\log\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{x^2}\,dx$$

Mathematica [A] time = 0.71, size = 513, normalized size = 0.85

$$\frac{2bn\left((d+ex)\log(d+ex)-ex\log\left(-\frac{ex}{d}\right)\right)\left(m\log(x)-\log\left(fx^m\right)\right)\left(a+b\log\left(c(d+ex)^n\right)-bn\log(d+ex)\right)+d}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^2)/x^2,x]
```

```
[Out] (2*b*n*(m*Log[x] - Log[f*x^m])*(-(e*x*Log[-((e*x)/d)]) + (d + e*x)*Log[d +
e*x])*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n]) - d*m*Log[x]*(a - b*n*L
og[d + e*x] + b*Log[c*(d + e*x)^n])^2 + d*(-m + m*Log[x] - Log[f*x^m])*(a -
 b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 - b*m*n*(a - b*n*Log[d + e*x] +
 b*Log[c*(d + e*x)^n])*(-2*e*x*Log[-((e*x)/d)] + 2*(d + e*x)*Log[d + e*x] +
 2*d*Log[x]*Log[d + e*x] - e*x*(Log[x]^2 - 2*(Log[x]*Log[1 + (e*x)/d] + Pol
yLog[2, -((e*x)/d)]))) + b^2*n^2*(e*m*x*Log[x]^2*Log[d + e*x] + 2*e*m*x*Log
[-((e*x)/d)]*Log[d + e*x] - 2*e*m*x*Log[x]*Log[-((e*x)/d)]*Log[d + e*x] + 2
```

```
*e*x*Log[-((e*x)/d)]*Log[f*x^m]*Log[d + e*x] - d*m*Log[d + e*x]^2 - e*m*x*L
og[d + e*x]^2 + e*m*x*Log[-((e*x)/d)]*Log[d + e*x]^2 - d*Log[f*x^m]*Log[d +
 e*x]^2 - e*x*Log[f*x^m]*Log[d + e*x]^2 - e*m*x*Log[x]^2*Log[1 + (e*x)/d] -
 2*e*m*x*Log[x]*PolyLog[2, -((e*x)/d)] + 2*e*x*(m - m*Log[x] + Log[f*x^m] +
 m*Log[d + e*x])*PolyLog[2, 1 + (e*x)/d] + 2*e*m*x*PolyLog[3, -((e*x)/d)] -
 2*e*m*x*PolyLog[3, 1 + (e*x)/d]))/(d*x)
```

fricas [F] time = 0.47, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b^2\log\left((ex+d)^nc\right)^2\log\left(fx^m\right)+2\,ab\log\left((ex+d)^nc\right)\log\left(fx^m\right)+a^2\log\left(fx^m\right)}{x^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))^2/x^2,x, algorithm="fricas")
```

```
[Out] integral((b^2*log((e*x + d)^n*c)^2*log(f*x^m) + 2*a*b*log((e*x + d)^n*c)*lo
g(f*x^m) + a^2*log(f*x^m))/x^2, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(b\log\left((ex+d)^nc\right)+a\right)^2\log\left(fx^m\right)}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))^2/x^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2*log(f*x^m)/x^2, x)
```

maple [F] time = 1.73, size = 0, normalized size = 0.00

$$\int\frac{\left(b\ln\left(c\,(ex+d)^n\right)+a\right)^2\ln\left(f\,x^m\right)}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(f*x^m)*(b*ln(c*(e*x+d)^n)+a)^2/x^2,x)
```

```
[Out] int(ln(f*x^m)*(b*ln(c*(e*x+d)^n)+a)^2/x^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{\left(b^2\left(m+\log(f)\right)+b^2\log\left(x^m\right)\right)\log\left((ex+d)^n\right)^2}{x}+\int\frac{b^2d\log(c)^2\log(f)+2\,abd\log(c)\log(f)+a^2d\log(f)+\left(b^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))^2/x^2,x, algorithm="maxima")
```

```
[Out] -(b^2*(m + log(f)) + b^2*log(x^m))*log((e*x + d)^n)^2/x + integrate((b^2*d*
log(c)^2*log(f) + 2*a*b*d*log(c)*log(f) + a^2*d*log(f) + (b^2*e*log(c)^2*lo
g(f) + 2*a*b*e*log(c)*log(f) + a^2*e*log(f))*x + 2*(b^2*d*log(c)*log(f) + a
*b*d*log(f) + (a*b*e*log(f) + (e*log(c)*log(f) + (m*n + n*log(f))*e)*b^2)*x
 + (b^2*d*log(c) + a*b*d + ((e*n + e*log(c))*b^2 + a*b*e)*x)*log(x^m))*log(
(e*x + d)^n) + (b^2*d*log(c)^2 + 2*a*b*d*log(c) + a^2*d + (b^2*e*log(c)^2 +
 2*a*b*e*log(c) + a^2*e)*x)*log(x^m))/(e*x^3 + d*x^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{\ln\left(f\,x^m\right)\,\left(a+b\,\ln\left(c\,(d+e\,x)^n\right)\right)^2}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((log(f*x^m)*(a + b*log(c*(d + e*x)^n))^2)/x^2,x)
```

```
[Out] int((log(f*x^m)*(a + b*log(c*(d + e*x)^n))^2)/x^2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(f*x**m)*(a+b*ln(c*(e*x+d)**n))**2/x**2,x)
```

```
[Out] Timed out
```

3.372 $\int \frac{\log(fx^m)\left(a+b\log(c(d+ex)^n)\right)^2}{x^3}\,dx$

Optimal. Leaf size=939

$$-\frac{b^2e^2m\log^2(x)n^2}{2d^2}+\frac{b^2e^2m\log^2(d+ex)n^2}{4d^2}-\frac{b^2e^2m\log\left(-\frac{ex}{d}\right)\log^2(d+ex)n^2}{2d^2}+\frac{b^2e^2\log\left(fx^m\right)\log^2(d+ex)n^2}{2d^2}-\frac{b^2\text{lo}}{}$$

```
[Out] -b^2*e^2*m*n^2*polylog(3,-e*x/d)/d^2+b^2*e^2*m*n^2*polylog(3,1+e*x/d)/d^2-1
/4*(m-2*m*ln(x)+2*ln(f*x^m))*(a-b*n*ln(e*x+d)+b*ln(c*(e*x+d)^n))^2/x^2-1/2*
m*ln(x)*(a-b*n*ln(e*x+d)+b*ln(c*(e*x+d)^n))^2/x^2-1/4*b^2*m*n^2*ln(e*x+d)^2
/x^2-1/2*b^2*n^2*ln(f*x^m)*ln(e*x+d)^2/x^2+b^2*e^2*m*n^2*ln(x)*ln(e*x+d)/d^
2-b^2*e^2*n^2*ln(x)*ln(f*x^m)*ln(e*x+d)/d^2-b^2*e^2*m*n^2*ln(x)*ln(1+e*x/d)
/d^2+b^2*e^2*n^2*ln(x)*ln(f*x^m)*ln(1+e*x/d)/d^2-3/2*b^2*e*m*n^2*ln(e*x+d)/
d/x+1/2*b^2*e^2*m*n^2*ln(x)^2*ln(e*x+d)/d^2-1/2*b^2*e^2*m*n^2*ln(-e*x/d)*ln
(e*x+d)/d^2-b^2*e*n^2*ln(f*x^m)*ln(e*x+d)/d/x-1/2*b^2*e^2*m*n^2*ln(-e*x/d)*
ln(e*x+d)^2/d^2+b*n*(m*ln(x)-ln(f*x^m))*(e^2*x^2*ln(-e*x/d)+(e*x+d)*(e*x+(-
e*x+d)*ln(e*x+d)))*(a-b*n*ln(e*x+d)+b*ln(c*(e*x+d)^n))/d^2/x^2-1/2*b^2*e^2*
m*n^2*ln(x)^2*ln(1+e*x/d)/d^2-1/2*b*m*n*(a-b*n*ln(e*x+d)+b*ln(c*(e*x+d)^n))
*(e*x*(e*x+d)+e^2*x^2*ln(-e*x/d)+(-e^2*x^2+d^2)*ln(e*x+d)+2*d^2*ln(x)*ln(e*
x+d)+e*x*(e*x*ln(x)^2+2*d*(1+ln(x))-2*e*x*(ln(x)*ln(1+e*x/d)+polylog(2,-e*x
/d))))/d^2/x^2-1/2*b^2*e^2*m*n^2*(1+2*ln(e*x+d))*polylog(2,1+e*x/d)/d^2+b^2
*e^2*m*n^2*ln(x)/d^2+b^2*e^2*n^2*ln(x)*ln(f*x^m)/d^2-b^2*e^2*n^2*ln(f*x^m)*
ln(e*x+d)/d^2-b^2*e^2*n^2*(m-ln(f*x^m))*polylog(2,-e*x/d)/d^2-1/2*b^2*e^2*m
*n^2*ln(x)^2/d^2+1/2*b^2*e^2*m*n^2*ln(-e*x/d)/d^2-3/2*b^2*e^2*m*n^2*ln(e*x+
d)/d^2+1/4*b^2*e^2*m*n^2*ln(e*x+d)^2/d^2+1/2*b^2*e^2*n^2*ln(f*x^m)*ln(e*x+d
)^2/d^2
```

Rubi [F] time = 0.03, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\log\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{x^3}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^2)/x^3,x]
```

```
[Out] Defer[Int][(Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^2)/x^3, x]
```

Rubi steps

$$\int \frac{\log\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{x^3}\,dx=\int \frac{\log\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{x^3}\,dx$$

Mathematica [A] time = 1.01, size = 781, normalized size = 0.83

$$\frac{-2bmn\left(\left(d^2-e^2x^2\right)\log(d+ex)+2d^2\log(x)\log(d+ex)+e^2x^2\log\left(-\frac{ex}{d}\right)+ex\left(-2ex\left(\text{Li}_2\left(-\frac{ex}{d}\right)+\log(x)\log\left(\frac{ex}{d}\right.\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^2)/x^3,x]
```

```
[Out] (4*b*n*(m*Log[x] - Log[f*x^m])*(e^2*x^2*Log[-((e*x)/d)] + (d + e*x)*(e*x +
(d - e*x)*Log[d + e*x]))*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n]) - 2*
```

```
d^2*m*Log[x]*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 + d^2*(-m + 2*
m*Log[x] - 2*Log[f*x^m])*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 -
2*b*m*n*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*(e*x*(d + e*x) + e^2*
x^2*Log[-((e*x)/d)] + (d^2 - e^2*x^2)*Log[d + e*x] + 2*d^2*Log[x]*Log[d + e
*x] + e*x*(e*x*Log[x]^2 + 2*d*(1 + Log[x]) - 2*e*x*(Log[x]*Log[1 + (e*x)/d]
 + PolyLog[2, -((e*x)/d)]))) + b^2*n^2*(4*e^2*m*x^2*Log[x] - 2*e^2*m*x^2*Lo
g[x]^2 + 2*e^2*m*x^2*Log[-((e*x)/d)] + 4*e^2*x^2*Log[x]*Log[f*x^m] - 6*d*e*
m*x*Log[d + e*x] - 6*e^2*m*x^2*Log[d + e*x] + 4*e^2*m*x^2*Log[x]*Log[d + e*
x] - 2*e^2*m*x^2*Log[x]^2*Log[d + e*x] - 2*e^2*m*x^2*Log[-((e*x)/d)]*Log[d
+ e*x] + 4*e^2*m*x^2*Log[x]*Log[-((e*x)/d)]*Log[d + e*x] - 4*d*e*x*Log[f*x^
m]*Log[d + e*x] - 4*e^2*x^2*Log[f*x^m]*Log[d + e*x] - 4*e^2*x^2*Log[-((e*x)
/d)]*Log[f*x^m]*Log[d + e*x] - d^2*m*Log[d + e*x]^2 + e^2*m*x^2*Log[d + e*x
]^2 - 2*e^2*m*x^2*Log[-((e*x)/d)]*Log[d + e*x]^2 - 2*d^2*Log[f*x^m]*Log[d +
 e*x]^2 + 2*e^2*x^2*Log[f*x^m]*Log[d + e*x]^2 - 4*e^2*m*x^2*Log[x]*Log[1 +
(e*x)/d] + 2*e^2*m*x^2*Log[x]^2*Log[1 + (e*x)/d] + 4*e^2*m*x^2*(-1 + Log[x]
)*PolyLog[2, -((e*x)/d)] - 2*e^2*x^2*(m - 2*m*Log[x] + 2*Log[f*x^m] + 2*m*L
og[d + e*x])*PolyLog[2, 1 + (e*x)/d] - 4*e^2*m*x^2*PolyLog[3, -((e*x)/d)] +
 4*e^2*m*x^2*PolyLog[3, 1 + (e*x)/d]))/(4*d^2*x^2)
```

fricas [F] time = 0.49, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b^2 \log\left((ex+d)^n c\right)^2 \log\left(fx^m\right) + 2\,ab\log\left((ex+d)^n c\right)\log\left(fx^m\right) + a^2\log\left(fx^m\right)}{x^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))^2/x^3,x, algorithm="fricas")
```

```
[Out] integral((b^2*log((e*x + d)^n*c)^2*log(f*x^m) + 2*a*b*log((e*x + d)^n*c)*lo
g(f*x^m) + a^2*log(f*x^m))/x^3, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\log\left((ex+d)^n c\right) + a\right)^2 \log\left(fx^m\right)}{x^3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))^2/x^3,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2*log(f*x^m)/x^3, x)
```

maple [F] time = 1.88, size = 0, normalized size = 0.00

$$\int \frac{\left(b\ln\left(c\,(ex+d)^n\right) + a\right)^2 \ln\left(f\,x^m\right)}{x^3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(f*x^m)*(b*ln(c*(e*x+d)^n)+a)^2/x^3,x)
```

```
[Out] int(ln(f*x^m)*(b*ln(c*(e*x+d)^n)+a)^2/x^3,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{\left(b^2\left(m + 2\,\log(f)\right) + 2\,b^2\log\left(x^m\right)\right)\log\left((ex+d)^n\right)^2}{4\,x^2} + \int \frac{2\,b^2 d\log(c)^2\log(f) + 4\,abd\log(c)\log(f) + 2\,a^2 d\log}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))^2/x^3,x, algorithm="maxima")
```

```
[Out] -1/4*(b^2*(m + 2*log(f)) + 2*b^2*log(x^m))*log((e*x + d)^n)^2/x^2 + integra
te(1/2*(2*b^2*d*log(c)^2*log(f) + 4*a*b*d*log(c)*log(f) + 2*a^2*d*log(f) +
2*(b^2*e*log(c)^2*log(f) + 2*a*b*e*log(c)*log(f) + a^2*e*log(f))*x + (4*b^2
*d*log(c)*log(f) + 4*a*b*d*log(f) + (4*a*b*e*log(f) + (4*e*log(c)*log(f) +
(m*n + 2*n*log(f))*e)*b^2)*x + 2*(2*b^2*d*log(c) + 2*a*b*d + ((e*n + 2*e*lo
g(c))*b^2 + 2*a*b*e)*x)*log(x^m))*log((e*x + d)^n) + 2*(b^2*d*log(c)^2 + 2*
a*b*d*log(c) + a^2*d + (b^2*e*log(c)^2 + 2*a*b*e*log(c) + a^2*e)*x)*log(x^m
))/(e*x^4 + d*x^3), x)
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln\left(f\,x^m\right)\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)^2}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((log(f*x^m)*(a + b*log(c*(d + e*x)^n))^2)/x^3,x)
```

```
[Out] int((log(f*x^m)*(a + b*log(c*(d + e*x)^n))^2)/x^3, x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(f*x**m)*(a+b*ln(c*(e*x+d)**n))**2/x**3,x)
```

```
[Out] Timed out
```

3.373 $\int \log(fx^m)\left(a+b\log\left(c(d+ex)^n\right)\right)^3\,dx$

Optimal. Leaf size=522

$$\frac{6b^2dmn^2\text{Li}_2\left(\frac{ex}{d}+1\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{e}+\frac{6b^2dmn^2\text{Li}_3\left(\frac{ex}{d}+1\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{e}+6ab^2n^2x\log\left(fx^n\right.$$

```
[Out] -12*a*b^2*m*n^2*x+18*b^3*m*n^3*x-6*b^2*m*n^2*(-b*n+a)*x+6*a*b^2*n^2*x*ln(f*
x^m)-6*b^3*n^3*x*ln(f*x^m)-18*b^3*m*n^2*(e*x+d)*ln(c*(e*x+d)^n)/e-6*b^3*d*m
*n^2*ln(-e*x/d)*ln(c*(e*x+d)^n)/e+6*b^3*n^2*(e*x+d)*ln(f*x^m)*ln(c*(e*x+d)^
n)/e+6*b*m*n*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^2/e+3*b*d*m*n*ln(-e*x/d)*(a+b*ln
(c*(e*x+d)^n))^2/e-3*b*n*(e*x+d)*ln(f*x^m)*(a+b*ln(c*(e*x+d)^n))^2/e-m*(e*x
+d)*(a+b*ln(c*(e*x+d)^n))^3/e-d*m*ln(-e*x/d)*(a+b*ln(c*(e*x+d)^n))^3/e+(e*x
+d)*ln(f*x^m)*(a+b*ln(c*(e*x+d)^n))^3/e-6*b^3*d*m*n^3*polylog(2,1+e*x/d)/e+
6*b^2*d*m*n^2*(a+b*ln(c*(e*x+d)^n))*polylog(2,1+e*x/d)/e-3*b*d*m*n*(a+b*ln(
c*(e*x+d)^n))^2*polylog(2,1+e*x/d)/e-6*b^3*d*m*n^3*polylog(3,1+e*x/d)/e+6*b
^2*d*m*n^2*(a+b*ln(c*(e*x+d)^n))*polylog(3,1+e*x/d)/e-6*b^3*d*m*n^3*polylog
(4,1+e*x/d)/e
```

Rubi [A] time = 0.86, antiderivative size = 522, normalized size of antiderivative = 1.00, number of steps used = 28, number of rules used = 13, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.565, Rules used = {2389, 2296, 2295, 2423, 2411, 43, 2351, 2317, 2391, 2353, 2374, 6589, 2383}

$$\frac{6b^2dmn^2\text{PolyLog}\left(2,\frac{ex}{d}+1\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{e}+\frac{6b^2dmn^2\text{PolyLog}\left(3,\frac{ex}{d}+1\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{e}-\cdots$$

Antiderivative was successfully verified.

```
[In] Int[Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^3,x]
```

```
[Out] -12*a*b^2*m*n^2*x + 18*b^3*m*n^3*x - 6*b^2*m*n^2*(a - b*n)*x + 6*a*b^2*n^2*
x*Log[f*x^m] - 6*b^3*n^3*x*Log[f*x^m] - (18*b^3*m*n^2*(d + e*x)*Log[c*(d +
e*x)^n])/e - (6*b^3*d*m*n^2*Log[-((e*x)/d)]*Log[c*(d + e*x)^n])/e + (6*b^3*
n^2*(d + e*x)*Log[f*x^m]*Log[c*(d + e*x)^n])/e + (6*b*m*n*(d + e*x)*(a + b*
Log[c*(d + e*x)^n])^2)/e + (3*b*d*m*n*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x
)^n])^2)/e - (3*b*n*(d + e*x)*Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^2)/e -
(m*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^3)/e - (d*m*Log[-((e*x)/d)]*(a + b*
Log[c*(d + e*x)^n])^3)/e + ((d + e*x)*Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])
^3)/e - (6*b^3*d*m*n^3*PolyLog[2, 1 + (e*x)/d])/e + (6*b^2*d*m*n^2*(a + b*L
og[c*(d + e*x)^n])*PolyLog[2, 1 + (e*x)/d])/e - (3*b*d*m*n*(a + b*Log[c*(d
+ e*x)^n])^2*PolyLog[2, 1 + (e*x)/d])/e - (6*b^3*d*m*n^3*PolyLog[3, 1 + (e*
x)/d])/e + (6*b^2*d*m*n^2*(a + b*Log[c*(d + e*x)^n])*PolyLog[3, 1 + (e*x)/d
])/e - (6*b^3*d*m*n^3*PolyLog[4, 1 + (e*x)/d])/e
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2351

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((f_.)*(x_))^(m_.)*((d_) + (e_.)*
(x_)^(r_.))^(q_.), x_Symbol] :> With[{u = ExpandIntegrand[a + b*Log[c*x^n],
 (f*x)^m*(d + e*x^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e,
 f, m, n, q, r}, x] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[m] && Integer
Q[r]))
```

Rule 2353

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((f_.)*(x_))^(m_.)*((d_) +
(e_.)*(x_)^(r_.))^(q_.), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[
c*x^n])^p, (f*x)^m*(d + e*x^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b
, c, d, e, f, m, n, p, q, r}, x] && IntegerQ[q] && (GtQ[q, 0] || (IGtQ[p, 0
] && IntegerQ[m] && IntegerQ[r]))
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2383

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^p)/q
, x] - Dist[(b*n*p)/q, Int[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^(p - 1
))/x, x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
```

```
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2423

```
Int[Log[(f_.)*(x_)^(m_.)]*((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_
.))^(p_), x_Symbol] :> With[{u = IntHide[(a + b*Log[c*(d + e*x)^n])^p, x]},
 Dist[Log[f*x^m], u, x] - Dist[m, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a,
 b, c, d, e, f, m, n}, x] && IGtQ[p, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \log\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^3\,dx = 6ab^2n^2x\log\left(fx^m\right)-6b^3n^3x\log\left(fx^m\right)+\frac{6b^3n^2(d+ex)\log\left(fx^m\right)}{e}$$

$$= -6b^2mn^2(a-bn)x+6ab^2n^2x\log\left(fx^m\right)-6b^3n^3x\log\left(fx^m\right)+\frac{6b}{}$$

$$= -6b^2mn^2(a-bn)x+6ab^2n^2x\log\left(fx^m\right)-6b^3n^3x\log\left(fx^m\right)+\frac{6b}{}$$

$$= -6b^2mn^2(a-bn)x+6ab^2n^2x\log\left(fx^m\right)-6b^3n^3x\log\left(fx^m\right)+\frac{6b}{}$$

$$= -6b^2mn^2(a-bn)x+6ab^2n^2x\log\left(fx^m\right)-6b^3n^3x\log\left(fx^m\right)+\frac{6b}{}$$

$$= 6b^3mn^3x-6b^2mn^2(a-bn)x+6ab^2n^2x\log\left(fx^m\right)-6b^3n^3x\log\left(f\right.$$

$$= -6ab^2mn^2x+6b^3mn^3x-6b^2mn^2(a-bn)x+6ab^2n^2x\log\left(fx^m\right)-$$

$$= -12ab^2mn^2x+12b^3mn^3x-6b^2mn^2(a-bn)x+6ab^2n^2x\log\left(fx^m\right.$$

$$= -12ab^2mn^2x+18b^3mn^3x-6b^2mn^2(a-bn)x+6ab^2n^2x\log\left(fx^m\right.$$

Mathematica [F] time = 0.54, size = 0, normalized size = 0.00

$$\int \log\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^3\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^3,x]
[Out] Integrate[Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^3, x]
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(b^3\log\left((ex+d)^n c\right)^3\log\left(fx^m\right)+3\,ab^2\log\left((ex+d)^n c\right)^2\log\left(fx^m\right)+3\,a^2b\log\left((ex+d)^n c\right)\log\left(fx^m\right)+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))^3,x, algorithm="fricas")
```

```
[Out] integral(b^3*log((e*x + d)^n*c)^3*log(f*x^m) + 3*a*b^2*log((e*x + d)^n*c)^2
*log(f*x^m) + 3*a^2*b*log((e*x + d)^n*c)*log(f*x^m) + a^3*log(f*x^m), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(b\log\left((ex+d)^n c\right)+a\right)^3\log\left(fx^m\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))^3,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^3*log(f*x^m), x)
```

maple [F] time = 4.19, size = 0, normalized size = 0.00

$$\int\left(b\ln\left(c\,(ex+d)^n\right)+a\right)^3\ln\left(f\,x^m\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(f*x^m)*(b*ln(c*(e*x+d)^n)+a)^3,x)
```

```
[Out] int(ln(f*x^m)*(b*ln(c*(e*x+d)^n)+a)^3,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\left(b^3(m-\log(f))x-b^3x\log\left(x^m\right)\right)\log\left((ex+d)^n\right)^3+\int\frac{b^3d\log(c)^3\log(f)+3\,ab^2d\log(c)^2\log(f)+3\,a^2bd\log(c)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))^3,x, algorithm="maxima")
```

```
[Out] -(b^3*(m - log(f))*x - b^3*x*log(x^m))*log((e*x + d)^n)^3 + integrate((b^3*
d*log(c)^3*log(f) + 3*a*b^2*d*log(c)^2*log(f) + 3*a^2*b*d*log(c)*log(f) + a
^3*d*log(f) + 3*(b^3*d*log(c)*log(f) + a*b^2*d*log(f) + (a*b^2*e*log(f) + (
e*log(c)*log(f) + (m*n - n*log(f))*e)*b^3)*x + (b^3*d*log(c) + a*b^2*d - ((
e*n - e*log(c))*b^3 - a*b^2*e)*x)*log(x^m))*log((e*x + d)^n)^2 + (b^3*e*log
(c)^3*log(f) + 3*a*b^2*e*log(c)^2*log(f) + 3*a^2*b*e*log(c)*log(f) + a^3*e*
log(f))*x + 3*(b^3*d*log(c)^2*log(f) + 2*a*b^2*d*log(c)*log(f) + a^2*b*d*lo
g(f) + (b^3*e*log(c)^2*log(f) + 2*a*b^2*e*log(c)*log(f) + a^2*b*e*log(f))*x
 + (b^3*d*log(c)^2 + 2*a*b^2*d*log(c) + a^2*b*d + (b^3*e*log(c)^2 + 2*a*b^2
*e*log(c) + a^2*b*e)*x)*log(x^m))*log((e*x + d)^n) + (b^3*d*log(c)^3 + 3*a*
b^2*d*log(c)^2 + 3*a^2*b*d*log(c) + a^3*d + (b^3*e*log(c)^3 + 3*a*b^2*e*log
(c)^2 + 3*a^2*b*e*log(c) + a^3*e)*x)*log(x^m))/(e*x + d), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\ln\left(f\,x^m\right)\,{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(f*x^m)*(a + b*log(c*(d + e*x)^n))^3,x)
```

```
[Out] int(log(f*x^m)*(a + b*log(c*(d + e*x)^n))^3, x)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(f*x**m)*(a+b*ln(c*(e*x+d)**n))**3,x)
```

```
[Out] Timed out
```

3.374 $\int \frac{\log(x)\log^2(a+bx)}{x}\,dx$

Optimal. Leaf size=519

$$\frac{1}{12}\left(-24\left(\text{Li}_4\left(-\frac{bx}{a}\right)+\text{Li}_4\left(\frac{bx}{a+bx}\right)-\text{Li}_4\left(\frac{bx}{a}+1\right)\right)+12\text{Li}_2\left(-\frac{bx}{a}\right)\left(\log^2\left(-\frac{bx}{a}\right)-2\left(\log\left(-\frac{bx}{a+bx}\right)+\log\left(\frac{bx}{a}+\right.\right.\right.\right.$$

```
[Out] 1/12*ln(-b*x/a)^4+1/2*ln(-b*x/a)^2*ln(-b*x/(b*x+a))^2-1/3*(ln(-b*x/a)+ln(a/
(b*x+a)))*ln(-b*x/(b*x+a))^3+1/12*ln(-b*x/(b*x+a))^4+1/2*ln(x)^2*ln(b*x+a)^
2+1/3*(2*ln(-b*x/a)^3-3*ln(x)^2*ln(b*x+a))*ln(1+b*x/a)+1/2*(ln(x)-ln(-b*x/a
))*(ln(x)+3*ln(-b*x/a))*ln(1+b*x/a)^2-1/3*ln(-b*x/a)^2*ln(-b*x/(b*x+a))*(ln
(-b*x/a)+3*ln(1+b*x/a))+(ln(-b*x/a)^2-2*ln(-b*x/a)*(ln(-b*x/(b*x+a))+ln(1+b
*x/a))+2*ln(x)*(-ln(b*x+a)+ln(1+b*x/a)))*polylog(2,-b*x/a)-ln(-b*x/(b*x+a))
^2*polylog(2,b*x/(b*x+a))+(ln(-b*x/a)-ln(-b*x/(b*x+a)))^2*polylog(2,1+b*x/a
)+2*(ln(x)-ln(-b*x/a))*ln(1+b*x/a)*polylog(2,1+b*x/a)+2*(ln(-b*x/(b*x+a))+l
n(b*x+a))*polylog(3,-b*x/a)+2*ln(-b*x/(b*x+a))*polylog(3,b*x/(b*x+a))+2*(-l
n(x)+ln(-b*x/(b*x+a)))*polylog(3,1+b*x/a)-2*polylog(4,-b*x/a)-2*polylog(4,b
*x/(b*x+a))+2*polylog(4,1+b*x/a)
```

Rubi [F] time = 0.05, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\log(x)\log^2(a+bx)}{x}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(Log[x]*Log[a + b*x]^2)/x,x]
```

```
[Out] (Log[x]^2*Log[a + b*x]^2)/2 - b*Defer[Int][(Log[x]^2*Log[a + b*x])/(a + b*x
), x]
```

Rubi steps

$$\int \frac{\log(x)\log^2(a+bx)}{x}\,dx=\frac{1}{2}\log^2(x)\log^2(a+bx)-b\int \frac{\log^2(x)\log(a+bx)}{a+bx}\,dx$$

Mathematica [A] time = 0.10, size = 519, normalized size = 1.00

$$\frac{1}{12}\left(-24\left(\text{Li}_4\left(-\frac{bx}{a}\right)+\text{Li}_4\left(\frac{bx}{a+bx}\right)-\text{Li}_4\left(\frac{bx}{a}+1\right)\right)+12\text{Li}_2\left(-\frac{bx}{a}\right)\left(\log^2\left(-\frac{bx}{a}\right)-2\left(\log\left(-\frac{bx}{a+bx}\right)+\log\left(\frac{bx}{a}+\right.\right.\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(Log[x]*Log[a + b*x]^2)/x,x]
```

```
[Out] (Log[-((b*x)/a)]^4 + 6*Log[-((b*x)/a)]^2*Log[-((b*x)/(a + b*x))]^2 - 4*(Log
[-((b*x)/a)] + Log[a/(a + b*x)])*Log[-((b*x)/(a + b*x))]^3 + Log[-((b*x)/(a
 + b*x))]^4 + 6*Log[x]^2*Log[a + b*x]^2 + 4*(2*Log[-((b*x)/a)]^3 - 3*Log[x]
^2*Log[a + b*x])*Log[1 + (b*x)/a] + 6*(Log[x] - Log[-((b*x)/a)])*(Log[x] +
3*Log[-((b*x)/a)])*Log[1 + (b*x)/a]^2 - 4*Log[-((b*x)/a)]^2*Log[-((b*x)/(a
+ b*x))]*(Log[-((b*x)/a)] + 3*Log[1 + (b*x)/a]) + 12*(Log[-((b*x)/a)]^2 - 2
*Log[-((b*x)/a)]*(Log[-((b*x)/(a + b*x))] + Log[1 + (b*x)/a]) + 2*Log[x]*(-
Log[a + b*x] + Log[1 + (b*x)/a]))*PolyLog[2, -((b*x)/a)] - 12*Log[-((b*x)/(
a + b*x))]^2*PolyLog[2, (b*x)/(a + b*x)] + 12*(Log[-((b*x)/a)] - Log[-((b*x
)/(a + b*x))])^2*PolyLog[2, 1 + (b*x)/a] + 24*(Log[x] - Log[-((b*x)/a)])*Lo
```

```
g[1 + (b*x)/a]*PolyLog[2, 1 + (b*x)/a] + 24*(Log[-((b*x)/(a + b*x))] + Log[
a + b*x])*PolyLog[3, -((b*x)/a)] + 24*Log[-((b*x)/(a + b*x))]*PolyLog[3, (b
*x)/(a + b*x)] + 24*(-Log[x] + Log[-((b*x)/(a + b*x))])*PolyLog[3, 1 + (b*x
)/a] - 24*(PolyLog[4, -((b*x)/a)] + PolyLog[4, (b*x)/(a + b*x)] - PolyLog[4
, 1 + (b*x)/a]))/12
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\log(bx+a)^2\log(x)}{x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(x)*log(b*x+a)^2/x,x, algorithm="fricas")
[Out] integral(log(b*x + a)^2*log(x)/x, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log(bx+a)^2\log(x)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(x)*log(b*x+a)^2/x,x, algorithm="giac")
[Out] integrate(log(b*x + a)^2*log(x)/x, x)
```

maple [F] time = 0.09, size = 0, normalized size = 0.00

$$\int \frac{\ln(x)\ln(bx+a)^2}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(x)/x*ln(b*x+a)^2,x)
[Out] int(ln(x)/x*ln(b*x+a)^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{2}\log(bx+a)^2\log(x)^2 - b\int \frac{\log(bx+a)\log(x)^2}{bx+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(x)*log(b*x+a)^2/x,x, algorithm="maxima")
[Out] 1/2*log(b*x + a)^2*log(x)^2 - b*integrate(log(b*x + a)*log(x)^2/(b*x + a),
x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln(a+b\,x)^2\,\ln(x)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((log(a + b*x)^2*log(x))/x,x)
[Out] int((log(a + b*x)^2*log(x))/x, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-b\int \frac{\log(x)^2\log(a+bx)}{a+bx}\,dx + \frac{\log(x)^2\log(a+bx)^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(x)*ln(b*x+a)**2/x,x)
```

```
[Out] -b*Integral(log(x)**2*log(a + b*x)/(a + b*x), x) + log(x)**2*log(a + b*x)**
2/2
```

3.375 $\int \frac{\log(fx^m)}{a+b\log(c(d+ex)^n)}\,dx$

Optimal. Leaf size=26

$$\text{Int}\left(\frac{\log\left(fx^m\right)}{a+b\log\left(c(d+ex)^n\right)},x\right)$$

```
[Out] Unintegrable(ln(f*x^m)/(a+b*ln(c*(e*x+d)^n)),x)
```

Rubi [A] time = 0.01, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\log\left(fx^m\right)}{a+b\log\left(c(d+ex)^n\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Log[f*x^m]/(a + b*Log[c*(d + e*x)^n]),x]
[Out] Defer[Int][Log[f*x^m]/(a + b*Log[c*(d + e*x)^n]), x]
```

Rubi steps

$$\int \frac{\log\left(fx^m\right)}{a+b\log\left(c(d+ex)^n\right)}\,dx=\int \frac{\log\left(fx^m\right)}{a+b\log\left(c(d+ex)^n\right)}\,dx$$

Mathematica [A] time = 0.05, size = 0, normalized size = 0.00

$$\int \frac{\log\left(fx^m\right)}{a+b\log\left(c(d+ex)^n\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Log[f*x^m]/(a + b*Log[c*(d + e*x)^n]),x]
[Out] Integrate[Log[f*x^m]/(a + b*Log[c*(d + e*x)^n]), x]
```

fricas [A] time = 0.47, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\log\left(fx^m\right)}{b\log\left((ex+d)^n c\right)+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)/(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
[Out] integral(log(f*x^m)/(b*log((e*x + d)^n*c) + a), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log\left(fx^m\right)}{b\log\left((ex+d)^n c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)/(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
```

```
[Out] integrate(log(f*x^m)/(b*log((e*x + d)^n*c) + a), x)
```

maple [A] time = 7.40, size = 0, normalized size = 0.00

$$\int \frac{\ln\left(f\,x^{m}\right)}{b\ln\left(c\,(ex+d)^{n}\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(f*x^m)/(b*ln(c*(e*x+d)^n)+a),x)
[Out] int(ln(f*x^m)/(b*ln(c*(e*x+d)^n)+a),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log\left(fx^{m}\right)}{b\log\left((ex+d)^{n}c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)/(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
[Out] integrate(log(f*x^m)/(b*log((e*x + d)^n*c) + a), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{\ln\left(f\,x^{m}\right)}{a+b\,\ln\left(c\,(d+e\,x)^{n}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(f*x^m)/(a + b*log(c*(d + e*x)^n)),x)
[Out] int(log(f*x^m)/(a + b*log(c*(d + e*x)^n)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log\left(fx^{m}\right)}{a+b\log\left(c\,(d+ex)^{n}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(f*x**m)/(a+b*ln(c*(e*x+d)**n)),x)
[Out] Integral(log(f*x**m)/(a + b*log(c*(d + e*x)**n)), x)
```

3.376 $\int \frac{\log(fx^m)}{(a+b\log(c(d+ex)^n))^2}\,dx$

Optimal. Leaf size=26

$$\text{Int}\left(\frac{\log\left(fx^m\right)}{\left(a+b\log\left(c(d+ex)^n\right)\right)^2},x\right)$$

[Out] Unintegrable(ln(f*x^m)/(a+b*ln(c*(e*x+d)^n))^2,x)

Rubi [A] time = 0.01, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\log\left(fx^m\right)}{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}\,dx$$

Verification is Not applicable to the result.

[In] Int[Log[f*x^m]/(a + b*Log[c*(d + e*x)^n])^2,x]

[Out] Defer[Int][Log[f*x^m]/(a + b*Log[c*(d + e*x)^n])^2, x]

Rubi steps

$$\int \frac{\log\left(fx^m\right)}{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}\,dx=\int \frac{\log\left(fx^m\right)}{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}\,dx$$

Mathematica [A] time = 0.49, size = 0, normalized size = 0.00

$$\int \frac{\log\left(fx^m\right)}{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}\,dx$$

Verification is Not applicable to the result.

[In] Integrate[Log[f*x^m]/(a + b*Log[c*(d + e*x)^n])^2,x]

[Out] Integrate[Log[f*x^m]/(a + b*Log[c*(d + e*x)^n])^2, x]

fricas [A] time = 0.47, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\log\left(fx^m\right)}{b^2\log\left((ex+d)^nc\right)^2+2\,ab\log\left((ex+d)^nc\right)+a^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(log(f*x^m)/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="fricas")

[Out] integral(log(f*x^m)/(b^2*log((e*x + d)^n*c)^2 + 2*a*b*log((e*x + d)^n*c) + a^2), x)

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log\left(fx^m\right)}{\left(b\log\left((ex+d)^nc\right)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="giac")
```

```
[Out] integrate(log(f*x^m)/(b*log((e*x + d)^n*c) + a)^2, x)
```

maple [A] time = 13.30, size = 0, normalized size = 0.00

$$\int \frac{\ln \left(f\,x^{m}\right)}{\left(b\ln \left(c\,(ex+d)^{n}\right)+a\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(f*x^m)/(b*ln(c*(e*x+d)^n)+a)^2,x)
```

```
[Out] int(ln(f*x^m)/(b*ln(c*(e*x+d)^n)+a)^2,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{ex\log(f)+d\log(f)+(ex+d)\log\left(x^{m}\right)}{b^{2}en\log\left((ex+d)^{n}\right)+b^{2}en\log(c)+aben}+\int\frac{e\big(m+\log(f)\big)x+ex\log\left(x^{m}\right)+dm}{b^{2}enx\log\left((ex+d)^{n}\right)+\left(b^{2}en\log(c)+aben\right)x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="maxima")
```

```
[Out] -(e*x*log(f) + d*log(f) + (e*x + d)*log(x^m))/(b^2*e*n*log((e*x + d)^n) + b
^2*e*n*log(c) + a*b*e*n) + integrate((e*(m + log(f))*x + e*x*log(x^m) + d*m
)/(b^2*e*n*x*log((e*x + d)^n) + (b^2*e*n*log(c) + a*b*e*n)*x), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{\ln \left(f\,x^{m}\right)}{\left(a+b\,\ln \left(c\,(d+e\,x)^{n}\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(f*x^m)/(a + b*log(c*(d + e*x)^n))^2,x)
```

```
[Out] int(log(f*x^m)/(a + b*log(c*(d + e*x)^n))^2, x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log \left(fx^{m}\right)}{\left(a+b\log \left(c\,(d+ex)^{n}\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(f*x**m)/(a+b*ln(c*(e*x+d)**n))**2,x)
```

```
[Out] Integral(log(f*x**m)/(a + b*log(c*(d + e*x)**n))**2, x)
```

3.377 $\int \log\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^p\,dx$

Optimal. Leaf size=26

$$\text{Int}\left(\log\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^p,x\right)$$

```
[Out] Unintegrable(ln(f*x^m)*(a+b*ln(c*(e*x+d)^n))^p,x)
```

Rubi [A] time = 0.01, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \log\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^p\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^p,x]
[Out] Defer[Int][Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^p, x]
```

Rubi steps

$$\int \log\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^p\,dx=\int \log\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^p\,dx$$

Mathematica [A] time = 0.10, size = 0, normalized size = 0.00

$$\int \log\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^p\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^p,x]
[Out] Integrate[Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^p, x]
```

fricas [A] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(b\log\left((ex+d)^n c\right)+a\right)^p\log\left(fx^m\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))^p,x, algorithm="fricas")
[Out] integral((b*log((e*x + d)^n*c) + a)^p*log(f*x^m), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b\log\left((ex+d)^n c\right)+a\right)^p\log\left(fx^m\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))^p,x, algorithm="giac")
[Out] integrate((b*log((e*x + d)^n*c) + a)^p*log(f*x^m), x)
```

maple [A] time = 1.40, size = 0, normalized size = 0.00

$$\int \left(b\ln\left(c\,(ex+d)^n\right)+a\right)^p\ln\left(f\,x^m\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(f*x^m)*(b*ln(c*(e*x+d)^n)+a)^p,x)
```

```
[Out] int(ln(f*x^m)*(b*ln(c*(e*x+d)^n)+a)^p,x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))^p,x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: In function CAR, the value of t
he first argument is  0which is not of the expected type LIST
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \ln\left(f\,x^m\right)\,{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^p \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(f*x^m)*(a + b*log(c*(d + e*x)^n))^p,x)
```

```
[Out] int(log(f*x^m)*(a + b*log(c*(d + e*x)^n))^p, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(f*x**m)*(a+b*ln(c*(e*x+d)**n))**p,x)
```

```
[Out] Timed out
```

3.378 $\int \frac{\log(a+bx)\log(c+dx)}{x}\,dx$

Optimal. Leaf size=364

$$\text{Li}_3\left(\frac{c(a+bx)}{a(c+dx)}\right)-\text{Li}_3\left(\frac{d(a+bx)}{b(c+dx)}\right)+\text{Li}_2\left(\frac{c(a+bx)}{a(c+dx)}\right)\log\left(\frac{a(c+dx)}{c(a+bx)}\right)-\text{Li}_2\left(\frac{d(a+bx)}{b(c+dx)}\right)\log\left(\frac{a(c+dx)}{c(a+bx)}\right)+\text{Li}_2\left(\frac{bx}{a}\right.$$

```
[Out] ln(-b*x/a)*ln(b*x+a)*ln(d*x+c)+1/2*(ln(-b*x/a)+ln((-a*d+b*c)/b/(d*x+c))-ln(
-(-a*d+b*c)*x/a/(d*x+c)))*ln(a*(d*x+c)/c/(b*x+a))^2-1/2*(ln(-b*x/a)-ln(-d*x
/c))*(ln(b*x+a)+ln(a*(d*x+c)/c/(b*x+a)))^2+(ln(d*x+c)-ln(a*(d*x+c)/c/(b*x+a
)))*polylog(2,1+b*x/a)+ln(a*(d*x+c)/c/(b*x+a))*polylog(2,c*(b*x+a)/a/(d*x+c
))-ln(a*(d*x+c)/c/(b*x+a))*polylog(2,d*(b*x+a)/b/(d*x+c))+(ln(b*x+a)+ln(a*(
d*x+c)/c/(b*x+a)))*polylog(2,1+d*x/c)-polylog(3,1+b*x/a)+polylog(3,c*(b*x+a
)/a/(d*x+c))-polylog(3,d*(b*x+a)/b/(d*x+c))-polylog(3,1+d*x/c)
```

Rubi [A] time = 0.05, antiderivative size = 364, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.062, Rules used = {2435}

$$\text{PolyLog}\left(3,\frac{c(a+bx)}{a(c+dx)}\right)-\text{PolyLog}\left(3,\frac{d(a+bx)}{b(c+dx)}\right)+\log\left(\frac{a(c+dx)}{c(a+bx)}\right)\text{PolyLog}\left(2,\frac{c(a+bx)}{a(c+dx)}\right)-\log\left(\frac{a(c+dx)}{c(a+bx)}\right)\text{Po}$$

Antiderivative was successfully verified.

```
[In] Int[(Log[a + b*x]*Log[c + d*x])/x,x]
```

```
[Out] Log[-((b*x)/a)]*Log[a + b*x]*Log[c + d*x] + ((Log[-((b*x)/a)] + Log[(b*c -
a*d)/(b*(c + d*x))] - Log[-(((b*c - a*d)*x)/(a*(c + d*x)))])*Log[(a*(c + d*
x))/(c*(a + b*x))]^2)/2 - ((Log[-((b*x)/a)] - Log[-((d*x)/c)])*(Log[a + b*x
] + Log[(a*(c + d*x))/(c*(a + b*x))])^2)/2 + (Log[c + d*x] - Log[(a*(c + d*
x))/(c*(a + b*x))])*PolyLog[2, 1 + (b*x)/a] + Log[(a*(c + d*x))/(c*(a + b*x
))]*PolyLog[2, (c*(a + b*x))/(a*(c + d*x))] - Log[(a*(c + d*x))/(c*(a + b*x
))]*PolyLog[2, (d*(a + b*x))/(b*(c + d*x))] + (Log[a + b*x] + Log[(a*(c + d
*x))/(c*(a + b*x))])*PolyLog[2, 1 + (d*x)/c] - PolyLog[3, 1 + (b*x)/a] + Po
lyLog[3, (c*(a + b*x))/(a*(c + d*x))] - PolyLog[3, (d*(a + b*x))/(b*(c + d*
x))] - PolyLog[3, 1 + (d*x)/c]
```

Rule 2435

```
Int[(Log[(a_) + (b_.)*(x_)]*Log[(c_) + (d_.)*(x_)])/(x_), x_Symbol] :> Simp
[Log[-((b*x)/a)]*Log[a + b*x]*Log[c + d*x], x] + (Simp[(1*(Log[-((b*x)/a)]
- Log[-(((b*c - a*d)*x)/(a*(c + d*x)))] + Log[(b*c - a*d)/(b*(c + d*x))])*L
og[(a*(c + d*x))/(c*(a + b*x))]^2)/2, x] - Simp[(1*(Log[-((b*x)/a)] - Log[-
((d*x)/c)])*(Log[a + b*x] + Log[(a*(c + d*x))/(c*(a + b*x))])^2)/2, x] + Si
mp[(Log[c + d*x] - Log[(a*(c + d*x))/(c*(a + b*x))])*PolyLog[2, 1 + (b*x)/a
], x] + Simp[(Log[a + b*x] + Log[(a*(c + d*x))/(c*(a + b*x))])*PolyLog[2, 1
 + (d*x)/c], x] + Simp[Log[(a*(c + d*x))/(c*(a + b*x))]*PolyLog[2, (c*(a +
b*x))/(a*(c + d*x))], x] - Simp[Log[(a*(c + d*x))/(c*(a + b*x))]*PolyLog[2,
 (d*(a + b*x))/(b*(c + d*x))], x] - Simp[PolyLog[3, 1 + (b*x)/a], x] - Simp
[PolyLog[3, 1 + (d*x)/c], x] + Simp[PolyLog[3, (c*(a + b*x))/(a*(c + d*x))]
, x] - Simp[PolyLog[3, (d*(a + b*x))/(b*(c + d*x))], x]) /; FreeQ[{a, b, c,
 d}, x] && NeQ[b*c - a*d, 0]
```

Rubi steps

$$\int\frac{\log(a+bx)\log(c+dx)}{x}\,dx=\log\left(-\frac{bx}{a}\right)\log(a+bx)\log(c+dx)+\frac{1}{2}\left(\log\left(-\frac{bx}{a}\right)+\log\left(\frac{bc-ad}{b(c+dx)}\right)-\log\right.$$

Mathematica [A] time = 0.06, size = 394, normalized size = 1.08

$$\mathrm{Li}_3\left(\frac{a(c+dx)}{c(a+bx)}\right)-\mathrm{Li}_3\left(\frac{b(c+dx)}{d(a+bx)}\right)+\left(\mathrm{Li}_2\left(\frac{b(c+dx)}{d(a+bx)}\right)-\mathrm{Li}_2\left(\frac{a(c+dx)}{c(a+bx)}\right)\right)\log\left(\frac{a(c+dx)}{c(a+bx)}\right)+\mathrm{Li}_2\left(\frac{bx}{a}+1\right)\left(\log(c+dx\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(Log[a + b*x]*Log[c + d*x])/x,x]
```

```
[Out] Log[-((b*x)/a)]*Log[a + b*x]*Log[c + d*x] + (Log[(a*(c + d*x))/(c*(a + b*x)
)]^2*(Log[-((b*x)/a)] + Log[(-(b*c) + a*d)/(d*(a + b*x))] - Log[(b*c*x - a*
d*x)/(a*c + b*c*x)]))/2 + (-Log[-((b*x)/a)] + Log[-((d*x)/c)])*Log[(a*(c +
d*x))/(c*(a + b*x))]*Log[1 + (d*x)/c] + ((Log[-((b*x)/a)] - Log[-((d*x)/c)]
)*Log[1 + (d*x)/c]*(-2*Log[a + b*x] + Log[1 + (d*x)/c]))/2 + (Log[c + d*x]
- Log[(a*(c + d*x))/(c*(a + b*x))])*PolyLog[2, 1 + (b*x)/a] + Log[(a*(c + d
*x))/(c*(a + b*x))]*(-PolyLog[2, (a*(c + d*x))/(c*(a + b*x))] + PolyLog[2,
(b*(c + d*x))/(d*(a + b*x))]) + (Log[a + b*x] + Log[(a*(c + d*x))/(c*(a + b
*x))])*PolyLog[2, 1 + (d*x)/c] - PolyLog[3, 1 + (b*x)/a] + PolyLog[3, (a*(c
 + d*x))/(c*(a + b*x))] - PolyLog[3, (b*(c + d*x))/(d*(a + b*x))] - PolyLog
[3, 1 + (d*x)/c]
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\log(bx+a)\log(dx+c)}{x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)*log(d*x+c)/x,x, algorithm="fricas")
```

```
[Out] integral(log(b*x + a)*log(d*x + c)/x, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\log(bx+a)\log(dx+c)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)*log(d*x+c)/x,x, algorithm="giac")
```

```
[Out] integrate(log(b*x + a)*log(d*x + c)/x, x)
```

maple [F] time = 0.06, size = 0, normalized size = 0.00

$$\int\frac{\ln(bx+a)\ln(dx+c)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(b*x+a)*ln(d*x+c)/x,x)
```

```
[Out] int(ln(b*x+a)*ln(d*x+c)/x,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\log(bx+a)\log(dx+c)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)*log(d*x+c)/x,x, algorithm="maxima")
```

```
[Out] integrate(log(b*x + a)*log(d*x + c)/x, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\ln (a + b\,x)\,\ln (c + d\,x)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((log(a + b*x)*log(c + d*x))/x,x)
[Out] int((log(a + b*x)*log(c + d*x))/x, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(b*x+a)*ln(d*x+c)/x,x)
[Out] Timed out
```

3.379 $\int x^2 \left(a+b\log\left(c(d+ex)^n\right)\right)\left(f+g\log\left(c(d+ex)^n\right)\right)\,dx$

Optimal. Leaf size=258

$$\frac{d^3n\log(d+ex)\left(ag+2bg\log\left(c(d+ex)^n\right)+bf\right)}{3e^3}-\frac{d^2n(d+ex)\left(ag+2bg\log\left(c(d+ex)^n\right)+bf\right)}{e^3}+\frac{dn(d+ex)^2\left(ag\right.}{}$$

```
[Out] 2*b*d^2*g*n^2*x/e^2-1/2*b*d*g*n^2*(e*x+d)^2/e^3+2/27*b*g*n^2*(e*x+d)^3/e^3-
1/3*b*d^3*g*n^2*ln(e*x+d)^2/e^3+1/3*x^3*(a+b*ln(c*(e*x+d)^n))*(f+g*ln(c*(e*
x+d)^n))-d^2*n*(e*x+d)*(b*f+a*g+2*b*g*ln(c*(e*x+d)^n))/e^3+1/2*d*n*(e*x+d)^
2*(b*f+a*g+2*b*g*ln(c*(e*x+d)^n))/e^3-1/9*n*(e*x+d)^3*(b*f+a*g+2*b*g*ln(c*(
e*x+d)^n))/e^3+1/3*d^3*n*ln(e*x+d)*(b*f+a*g+2*b*g*ln(c*(e*x+d)^n))/e^3
```

Rubi [A] time = 0.44, antiderivative size = 258, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 7, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.219, Rules used = {2439, 2411, 43, 2334, 12, 14, 2301}

$$-\frac{1}{18}gn\left(\frac{18d^2(d+ex)}{e^3}-\frac{6d^3\log(d+ex)}{e^3}-\frac{9d(d+ex)^2}{e^3}+\frac{2(d+ex)^3}{e^3}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)+\frac{1}{3}x^3\left(a+b\log\left(c(d\right.\right.$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n]),x]
```

```
[Out] (2*b*d^2*g*n^2*x)/e^2 - (b*d*g*n^2*(d + e*x)^2)/(2*e^3) + (2*b*g*n^2*(d + e
*x)^3)/(27*e^3) - (b*d^3*g*n^2*Log[d + e*x]^2)/(3*e^3) - (g*n*((18*d^2*(d +
 e*x))/e^3 - (9*d*(d + e*x)^2)/e^3 + (2*(d + e*x)^3)/e^3 - (6*d^3*Log[d + e
*x])/e^3)*(a + b*Log[c*(d + e*x)^n]))/18 - (b*n*((18*d^2*(d + e*x))/e^3 - (
9*d*(d + e*x)^2)/e^3 + (2*(d + e*x)^3)/e^3 - (6*d^3*Log[d + e*x])/e^3)*(f +
 g*Log[c*(d + e*x)^n]))/18 + (x^3*(a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(
d + e*x)^n]))/3
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2334

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*(x_)^(m_.)*((d_) + (e_.)*(x_)^(r_
.))^(q_.), x_Symbol] :> With[{u = IntHide[x^m*(d + e*x^r)^q, x]}, Simp[u*(a
 + b*Log[c*x^n]), x] - Dist[b*n, Int[SimplifyIntegrand[u/x, x], x], x]] /;
```

```
FreeQ[{a, b, c, d, e, n, r}, x] && IGtQ[q, 0] && IntegerQ[m] &&  !(EqQ[q, 1
] && EqQ[m, -1])
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2439

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*(x_)^(r_.), x_Symbol] :> Simp[(x^
(r + 1)*(a + b*Log[c*(d + e*x)^n])^p*(f + g*Log[h*(i + j*x)^m]))/(r + 1), x
] + (-Dist[(g*j*m)/(r + 1), Int[(x^(r + 1)*(a + b*Log[c*(d + e*x)^n])^p)/(i
 + j*x), x], x] - Dist[(b*e*n*p)/(r + 1), Int[(x^(r + 1)*(a + b*Log[c*(d +
e*x)^n])^(p - 1)*(f + g*Log[h*(i + j*x)^m]))/(d + e*x), x], x]) /; FreeQ[{a
, b, c, d, e, f, g, h, i, j, m, n}, x] && IGtQ[p, 0] && IntegerQ[r] && (EqQ
[p, 1] || GtQ[r, 0]) && NeQ[r, -1]
```

Rubi steps

$$\int x^2 \left(a+b\log\left(c(d+ex)^n\right)\right)\left(f+g\log\left(c(d+ex)^n\right)\right)\,dx=\frac{1}{3}x^3\left(a+b\log\left(c(d+ex)^n\right)\right)\left(f+g\log\left(c(d+ex)^n\right)\right.$$

$$=\frac{1}{3}x^3\left(a+b\log\left(c(d+ex)^n\right)\right)\left(f+g\log\left(c(d+ex)^n\right)\right.$$

$$=-\frac{1}{18}gn\left(\frac{18d^2(d+ex)}{e^3}-\frac{9d(d+ex)^2}{e^3}+\frac{2(d+ex)^3}{e^3}-\right.$$

$$=-\frac{1}{18}gn\left(\frac{18d^2(d+ex)}{e^3}-\frac{9d(d+ex)^2}{e^3}+\frac{2(d+ex)^3}{e^3}-\right.$$

$$=-\frac{1}{18}gn\left(\frac{18d^2(d+ex)}{e^3}-\frac{9d(d+ex)^2}{e^3}+\frac{2(d+ex)^3}{e^3}-\right.$$

$$=-\frac{1}{18}gn\left(\frac{18d^2(d+ex)}{e^3}-\frac{9d(d+ex)^2}{e^3}+\frac{2(d+ex)^3}{e^3}-\right.$$

$$=2\left(\frac{bd^2gn^2x}{e^2}-\frac{bdgn^2(d+ex)^2}{4e^3}+\frac{bgn^2(d+ex)^3}{27e^3}-\frac{b\right.$$

Mathematica [A] time = 0.09, size = 342, normalized size = 1.33

$$\frac{1}{3}agx^3\log\left(c(d+ex)^n\right)+\frac{ad^3gn\log(d+ex)}{3e^3}-\frac{ad^2gnx}{3e^2}+\frac{adgnx^2}{6e}+\frac{1}{3}afx^3-\frac{1}{9}agnx^3+\frac{bd^3g\log^2\left(c(d+ex)^n\right)}{3e^3}-\frac{11bd^3}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n]),x]
```

```
[Out] -1/3*(b*d^2*f*n*x)/e^2 - (a*d^2*g*n*x)/(3*e^2) + (11*b*d^2*g*n^2*x)/(9*e^2)
 + (b*d*f*n*x^2)/(6*e) + (a*d*g*n*x^2)/(6*e) - (5*b*d*g*n^2*x^2)/(18*e) + (
```

```
a*f*x^3)/3 - (b*f*n*x^3)/9 - (a*g*n*x^3)/9 + (2*b*g*n^2*x^3)/27 + (b*d^3*f*
n*Log[d + e*x])/(3*e^3) + (a*d^3*g*n*Log[d + e*x])/(3*e^3) - (11*b*d^3*g*n*
Log[c*(d + e*x)^n])/(9*e^3) - (2*b*d^2*g*n*x*Log[c*(d + e*x)^n])/(3*e^2) +
(b*d*g*n*x^2*Log[c*(d + e*x)^n])/(3*e) + (b*f*x^3*Log[c*(d + e*x)^n])/3 + (
a*g*x^3*Log[c*(d + e*x)^n])/3 - (2*b*g*n*x^3*Log[c*(d + e*x)^n])/9 + (b*d^3
*g*Log[c*(d + e*x)^n]^2)/(3*e^3) + (b*g*x^3*Log[c*(d + e*x)^n]^2)/3
```

fricas [A] time = 0.45, size = 329, normalized size = 1.28

$$\frac{18\, be^3 gx^3 \log(c)^2 + 2\left(2\, be^3 gn^2 + 9\, ae^3 f - 3\left(be^3 f + ae^3 g\right)n\right)x^3 - 3\left(5\, bde^2 gn^2 - 3\left(bde^2 f + ade^2 g\right)n\right)x^2 + 18\left(be^3 \ldots\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n)),x, algorithm="f
ricas")
```

```
[Out] 1/54*(18*b*e^3*g*x^3*log(c)^2 + 2*(2*b*e^3*g*n^2 + 9*a*e^3*f - 3*(b*e^3*f +
 a*e^3*g)*n)*x^3 - 3*(5*b*d*e^2*g*n^2 - 3*(b*d*e^2*f + a*d*e^2*g)*n)*x^2 +
18*(b*e^3*g*n^2*x^3 + b*d^3*g*n^2)*log(e*x + d)^2 + 6*(11*b*d^2*e*g*n^2 - 3
*(b*d^2*e*f + a*d^2*e*g)*n)*x + 6*(3*b*d*e^2*g*n^2*x^2 - 6*b*d^2*e*g*n^2*x
- 11*b*d^3*g*n^2 - (2*b*e^3*g*n^2 - 3*(b*e^3*f + a*e^3*g)*n)*x^3 + 3*(b*d^3
*f + a*d^3*g)*n + 6*(b*e^3*g*n*x^3 + b*d^3*g*n)*log(c))*log(e*x + d) + 6*(3
*b*d*e^2*g*n*x^2 - 6*b*d^2*e*g*n*x - (2*b*e^3*g*n - 3*b*e^3*f - 3*a*e^3*g)*
x^3)*log(c))/e^3
```

giac [B] time = 0.21, size = 756, normalized size = 2.93

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n)),x, algorithm="g
iac")
```

```
[Out] 1/3*(x*e + d)^3*b*g*n^2*e^(-3)*log(x*e + d)^2 - (x*e + d)^2*b*d*g*n^2*e^(-3
)*log(x*e + d)^2 + (x*e + d)*b*d^2*g*n^2*e^(-3)*log(x*e + d)^2 - 2/9*(x*e +
 d)^3*b*g*n^2*e^(-3)*log(x*e + d) + (x*e + d)^2*b*d*g*n^2*e^(-3)*log(x*e +
d) - 2*(x*e + d)*b*d^2*g*n^2*e^(-3)*log(x*e + d) + 2/3*(x*e + d)^3*b*g*n*e^
(-3)*log(x*e + d)*log(c) - 2*(x*e + d)^2*b*d*g*n*e^(-3)*log(x*e + d)*log(c)
 + 2*(x*e + d)*b*d^2*g*n*e^(-3)*log(x*e + d)*log(c) + 2/27*(x*e + d)^3*b*g*
n^2*e^(-3) - 1/2*(x*e + d)^2*b*d*g*n^2*e^(-3) + 2*(x*e + d)*b*d^2*g*n^2*e^(
-3) + 1/3*(x*e + d)^3*b*f*n*e^(-3)*log(x*e + d) - (x*e + d)^2*b*d*f*n*e^(-3
)*log(x*e + d) + (x*e + d)*b*d^2*f*n*e^(-3)*log(x*e + d) + 1/3*(x*e + d)^3*
a*g*n*e^(-3)*log(x*e + d) - (x*e + d)^2*a*d*g*n*e^(-3)*log(x*e + d) + (x*e
+ d)*a*d^2*g*n*e^(-3)*log(x*e + d) - 2/9*(x*e + d)^3*b*g*n*e^(-3)*log(c) +
(x*e + d)^2*b*d*g*n*e^(-3)*log(c) - 2*(x*e + d)*b*d^2*g*n*e^(-3)*log(c) + 1
/3*(x*e + d)^3*b*g*e^(-3)*log(c)^2 - (x*e + d)^2*b*d*g*e^(-3)*log(c)^2 + (x
*e + d)*b*d^2*g*e^(-3)*log(c)^2 - 1/9*(x*e + d)^3*b*f*n*e^(-3) + 1/2*(x*e +
 d)^2*b*d*f*n*e^(-3) - (x*e + d)*b*d^2*f*n*e^(-3) - 1/9*(x*e + d)^3*a*g*n*e
^(-3) + 1/2*(x*e + d)^2*a*d*g*n*e^(-3) - (x*e + d)*a*d^2*g*n*e^(-3) + 1/3*(
x*e + d)^3*b*f*e^(-3)*log(c) - (x*e + d)^2*b*d*f*e^(-3)*log(c) + (x*e + d)*
b*d^2*f*e^(-3)*log(c) + 1/3*(x*e + d)^3*a*g*e^(-3)*log(c) - (x*e + d)^2*a*d
*g*e^(-3)*log(c) + (x*e + d)*a*d^2*g*e^(-3)*log(c) + 1/3*(x*e + d)^3*a*f*e^
(-3) - (x*e + d)^2*a*d*f*e^(-3) + (x*e + d)*a*d^2*f*e^(-3)
```

maple [C] time = 0.53, size = 1785, normalized size = 6.92

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(b*ln(c*(e*x+d)^n)+a)*(f+g*ln(c*(e*x+d)^n)),x)
```

```
[Out] 1/9*(-3*I*Pi*b*e^3*g*x^3*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+3*
I*Pi*b*e^3*g*x^3*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+3*I*Pi*b*e^3*g*x^3*csgn(I*
(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-3*I*Pi*b*e^3*g*x^3*csgn(I*c*(e*x+d)^n)^3+6
*ln(c)*b*e^3*g*x^3-2*b*e^3*g*n*x^3+3*a*e^3*g*x^3+3*b*d*e^2*g*n*x^2+3*b*e^3*
f*x^3+6*b*d^3*g*n*ln(e*x+d)-6*b*d^2*e*g*n*x)/e^3*ln((e*x+d)^n)+1/3*a*f*x^3+
1/3*g*b*x^3*ln((e*x+d)^n)^2+11/9*b*d^2*g*n^2*x/e^2-1/3*b*d^2*f*n*x/e^2+1/3*
ln(c)^2*b*g*x^3+1/3*ln(c)*a*g*x^3+1/3*ln(c)*b*f*x^3+1/3*I*ln(c)*Pi*b*g*x^3*
csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/9*I*n*Pi*b*g*x^3*csgn(I*c)*csgn(I*c*(e*x+
d)^n)^2-1/9*I*n*Pi*b*g*x^3*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/6*I*Pi
*a*g*x^3*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/3*I*ln(c)*Pi*b*g
*x^3*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/6*I*Pi*b*f*x^3*csgn(I*c)*csg
n(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/3*b*d^3*g*n^2*ln(e*x+d)^2/e^3+1/3*I/e^
2*Pi*b*d^2*g*n*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/6*I/e*Pi
*b*d*g*n*x^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/3*I/e^3*Pi*l
n(e*x+d)*b*d^3*g*n*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-5/18/e*b
*d*g*n^2*x^2+1/6/e*a*d*g*n*x^2+1/6/e*b*d*f*n*x^2+1/3/e^3*ln(e*x+d)*a*d^3*g*
n+1/3/e^3*ln(e*x+d)*b*d^3*f*n-1/12*Pi^2*b*g*x^3*csgn(I*c)^2*csgn(I*c*(e*x+d
)^n)^4+1/6*Pi^2*b*g*x^3*csgn(I*c)*csgn(I*c*(e*x+d)^n)^5-1/12*Pi^2*b*g*x^3*c
sgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^4+1/6*Pi^2*b*g*x^3*csgn(I*(e*x+d)^n)
*csgn(I*c*(e*x+d)^n)^5-1/6*I*Pi*a*g*x^3*csgn(I*c*(e*x+d)^n)^3-1/3*Pi^2*b*g*
x^3*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^4-1/12*Pi^2*b*g*x^3*csg
n(I*c)^2*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^2+1/6*Pi^2*b*g*x^3*csgn(I*
c)^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^3+1/6*Pi^2*b*g*x^3*csgn(I*c)*csg
n(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^3-2/3/e^2*ln(c)*b*d^2*g*n*x+2/3/e^3*ln
(c)*ln(e*x+d)*b*d^3*g*n+1/3/e*ln(c)*b*d*g*n*x^2+1/6*I*Pi*b*f*x^3*csgn(I*c)*
csgn(I*c*(e*x+d)^n)^2+1/6*I*Pi*a*g*x^3*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n
)^2+1/6*I*Pi*b*f*x^3*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/3*I*ln(c)*Pi
*b*g*x^3*csgn(I*c*(e*x+d)^n)^3+1/6*I*Pi*a*g*x^3*csgn(I*c)*csgn(I*c*(e*x+d)^
n)^2+1/9*I*n*Pi*b*g*x^3*csgn(I*c*(e*x+d)^n)^3-2/9*n*ln(c)*b*g*x^3-1/12*Pi^2
*b*g*x^3*csgn(I*c*(e*x+d)^n)^6-1/9*n*b*f*x^3+2/27*b*g*n^2*x^3-1/9*n*a*g*x^3
+1/3*I/e^3*Pi*ln(e*x+d)*b*d^3*g*n*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/3*I/e^3
*Pi*ln(e*x+d)*b*d^3*g*n*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/6*I/e*Pi*
b*d*g*n*x^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/3/e^2*a*d^2*g*n*x+1/9*I*n*Pi*
b*g*x^3*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/3*I/e^3*Pi*ln(e*x
+d)*b*d^3*g*n*csgn(I*c*(e*x+d)^n)^3-1/6*I/e*Pi*b*d*g*n*x^2*csgn(I*c*(e*x+d)
^n)^3+1/3*I/e^2*Pi*b*d^2*g*n*x*csgn(I*c*(e*x+d)^n)^3-1/3*I*ln(c)*Pi*b*g*x^3
*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/6*I/e*Pi*b*d*g*n*x^2*csg
n(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/3*I/e^2*Pi*b*d^2*g*n*x*csgn(I*c)*csg
n(I*c*(e*x+d)^n)^2-1/3*I/e^2*Pi*b*d^2*g*n*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x
+d)^n)^2-1/6*I*Pi*b*f*x^3*csgn(I*c*(e*x+d)^n)^3-11/9*b*d^3*g*n^2/e^3*ln(e*x
+d)
```

maxima [A] time = 0.50, size = 274, normalized size = 1.06

$$\frac{1}{3}\,bgx^3\log\left((ex+d)^nc\right)^2+\frac{1}{3}\,bfx^3\log\left((ex+d)^nc\right)+\frac{1}{3}\,agx^3\log\left((ex+d)^nc\right)+\frac{1}{3}\,afx^3+\frac{1}{18}\,befn\left(\frac{6\,d^3\log\left(ex+d\right)}{e^4}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n)),x, algorithm="m
axima")
```

```
[Out] 1/3*b*g*x^3*log((e*x + d)^n*c)^2 + 1/3*b*f*x^3*log((e*x + d)^n*c) + 1/3*a*g
*x^3*log((e*x + d)^n*c) + 1/3*a*f*x^3 + 1/18*b*e*f*n*(6*d^3*log(e*x + d)/e^
4 - (2*e^2*x^3 - 3*d*e*x^2 + 6*d^2*x)/e^3) + 1/18*a*e*g*n*(6*d^3*log(e*x +
d)/e^4 - (2*e^2*x^3 - 3*d*e*x^2 + 6*d^2*x)/e^3) + 1/54*(6*e*n*(6*d^3*log(e*
x + d)/e^4 - (2*e^2*x^3 - 3*d*e*x^2 + 6*d^2*x)/e^3)*log((e*x + d)^n*c) + (4
*e^3*x^3 - 15*d*e^2*x^2 - 18*d^3*log(e*x + d)^2 + 66*d^2*e*x - 66*d^3*log(e
*x + d))*n^2/e^3)*b*g
```

mupad [B] time = 0.40, size = 323, normalized size = 1.25

$$\ln\left(c\,(d+e\,x)^n\right)\left(\frac{x^3\,\left(a\,g+b\,f-\frac{2\,b\,g\,n}{3}\right)}{3}+\frac{x^2\,\left(\frac{3\,d\,\left(a\,g+b\,f\right)}{2\,e}-\frac{d\,\left(9\,a\,g+9\,b\,f-6\,b\,g\,n\right)}{6\,e}\right)}{3}-\frac{d\,x\,\left(\frac{9\,d\,\left(a\,g+b\,f\right)}{e}-\frac{d\,\left(9\,a\,g+9\,b\,f-6\,b\,g\,n\right)}{e}\right.}{9\,e}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a + b*log(c*(d + e*x)^n))*(f + g*log(c*(d + e*x)^n)),x)
```

```
[Out] log(c*(d + e*x)^n)*((x^3*(a*g + b*f - (2*b*g*n)/3))/3 + (x^2*((3*d*(a*g + b
*f))/(2*e) - (d*(9*a*g + 9*b*f - 6*b*g*n))/(6*e)))/3 - (d*x*((9*d*(a*g + b*
f))/e - (d*(9*a*g + 9*b*f - 6*b*g*n))/e))/(9*e)) + x^2*((d*(3*a*f - b*g*n^2
))/(6*e) - (d*(a*f - (a*g*n)/3 - (b*f*n)/3 + (2*b*g*n^2)/9))/(2*e)) + log(c
*(d + e*x)^n)^2*((b*g*x^3)/3 + (b*d^3*g)/(3*e^3)) - x*((d*((d*(3*a*f - b*g*
n^2))/(3*e) - (d*(a*f - (a*g*n)/3 - (b*f*n)/3 + (2*b*g*n^2)/9))/e))/e - (2*
b*d^2*g*n^2)/(3*e^2)) + x^3*((a*f)/3 - (a*g*n)/9 - (b*f*n)/9 + (2*b*g*n^2)/
27) + (log(d + e*x)*(3*a*d^3*g*n + 3*b*d^3*f*n - 11*b*d^3*g*n^2))/(9*e^3)
```

sympy [A] time = 6.63, size = 508, normalized size = 1.97

$$\begin{cases}\frac{ad^3gn\log(d+ex)}{3e^3}-\frac{ad^2gnx}{3e^2}+\frac{adgnx^2}{6e}+\frac{afx^3}{3}+\frac{agnx^3\log(d+ex)}{3}-\frac{agnx^3}{9}+\frac{agx^3\log(c)}{3}+\frac{bd^3fn\log(d+ex)}{3e^3}+\frac{bd^3gn^2\log(d+ex)^2}{3e^3}-\frac{11b}{} \\ \frac{x^3\left(a+b\log(cd^n)\right)\left(f+g\log(cd^n)\right)}{3}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(a+b*ln(c*(e*x+d)**n))*(f+g*ln(c*(e*x+d)**n)),x)
```

```
[Out] Piecewise((a*d**3*g*n*log(d + e*x)/(3*e**3) - a*d**2*g*n*x/(3*e**2) + a*d*g
*n*x**2/(6*e) + a*f*x**3/3 + a*g*n*x**3*log(d + e*x)/3 - a*g*n*x**3/9 + a*g
*x**3*log(c)/3 + b*d**3*f*n*log(d + e*x)/(3*e**3) + b*d**3*g*n**2*log(d + e
*x)**2/(3*e**3) - 11*b*d**3*g*n**2*log(d + e*x)/(9*e**3) + 2*b*d**3*g*n*log
(c)*log(d + e*x)/(3*e**3) - b*d**2*f*n*x/(3*e**2) - 2*b*d**2*g*n**2*x*log(d
 + e*x)/(3*e**2) + 11*b*d**2*g*n**2*x/(9*e**2) - 2*b*d**2*g*n*x*log(c)/(3*e
**2) + b*d*f*n*x**2/(6*e) + b*d*g*n**2*x**2*log(d + e*x)/(3*e) - 5*b*d*g*n*
*2*x**2/(18*e) + b*d*g*n*x**2*log(c)/(3*e) + b*f*n*x**3*log(d + e*x)/3 - b*
f*n*x**3/9 + b*f*x**3*log(c)/3 + b*g*n**2*x**3*log(d + e*x)**2/3 - 2*b*g*n*
*2*x**3*log(d + e*x)/9 + 2*b*g*n**2*x**3/27 + 2*b*g*n*x**3*log(c)*log(d + e
*x)/3 - 2*b*g*n*x**3*log(c)/9 + b*g*x**3*log(c)**2/3, Ne(e, 0)), (x**3*(a +
 b*log(c*d**n))*(f + g*log(c*d**n))/3, True))
```

3.380 $\int x\left(a+b\log\left(c(d+ex)^n\right)\right)\left(f+g\log\left(c(d+ex)^n\right)\right) d$

Optimal. Leaf size=196

$$-\frac{d^2n\log(d+ex)\left(ag+2bg\log\left(c(d+ex)^n\right)+bf\right)}{2e^2}+\frac{dn(d+ex)\left(ag+2bg\log\left(c(d+ex)^n\right)+bf\right)}{e^2}-\frac{n(d+ex)^2\left(a\right.}{}$$

```
[Out] -2*b*d*g*n^2*x/e+1/4*b*g*n^2*(e*x+d)^2/e^2+1/2*b*d^2*g*n^2*ln(e*x+d)^2/e^2+
1/2*x^2*(a+b*ln(c*(e*x+d)^n))*(f+g*ln(c*(e*x+d)^n))+d*n*(e*x+d)*(b*f+a*g+2*
b*g*ln(c*(e*x+d)^n))/e^2-1/4*n*(e*x+d)^2*(b*f+a*g+2*b*g*ln(c*(e*x+d)^n))/e^
2-1/2*d^2*n*ln(e*x+d)*(b*f+a*g+2*b*g*ln(c*(e*x+d)^n))/e^2
```

Rubi [A] time = 0.37, antiderivative size = 206, normalized size of antiderivative = 1.05, number of steps used = 13, number of rules used = 7, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.233, Rules used = {2439, 2411, 43, 2334, 12, 14, 2301}

$$\frac{1}{4}gn\left(-\frac{2d^2\log(d+ex)}{e^2}+\frac{4d(d+ex)}{e^2}-\frac{(d+ex)^2}{e^2}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)+\frac{1}{2}x^2\left(a+b\log\left(c(d+ex)^n\right)\right)\left(g\log\right.$$

Antiderivative was successfully verified.

```
[In] Int[x*(a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n]),x]
```

```
[Out] (-2*b*d*g*n^2*x)/e + (b*g*n^2*(d + e*x)^2)/(4*e^2) + (b*d^2*g*n^2*Log[d + e
*x]^2)/(2*e^2) + (g*n*((4*d*(d + e*x))/e^2 - (d + e*x)^2/e^2 - (2*d^2*Log[d
 + e*x])/e^2)*(a + b*Log[c*(d + e*x)^n]))/4 + (b*n*((4*d*(d + e*x))/e^2 - (
d + e*x)^2/e^2 - (2*d^2*Log[d + e*x])/e^2)*(f + g*Log[c*(d + e*x)^n]))/4 +
(x^2*(a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n]))/2
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2334

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*(x_)^(m_.)*((d_) + (e_.)*(x_)^(r_
.))^(q_.), x_Symbol] :> With[{u = IntHide[x^m*(d + e*x^r)^q, x]}, Simp[u*(a
 + b*Log[c*x^n]), x] - Dist[b*n, Int[SimplifyIntegrand[u/x, x], x], x]] /;
FreeQ[{a, b, c, d, e, n, r}, x] && IGtQ[q, 0] && IntegerQ[m] &&  !(EqQ[q, 1
] && EqQ[m, -1])
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2439

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*(x_)^(r_.), x_Symbol] :> Simp[(x^
(r + 1)*(a + b*Log[c*(d + e*x)^n])^p*(f + g*Log[h*(i + j*x)^m]))/(r + 1), x
] + (-Dist[(g*j*m)/(r + 1), Int[(x^(r + 1)*(a + b*Log[c*(d + e*x)^n])^p)/(i
 + j*x), x], x] - Dist[(b*e*n*p)/(r + 1), Int[(x^(r + 1)*(a + b*Log[c*(d +
e*x)^n])^(p - 1)*(f + g*Log[h*(i + j*x)^m]))/(d + e*x), x], x]) /; FreeQ[{a
, b, c, d, e, f, g, h, i, j, m, n}, x] && IGtQ[p, 0] && IntegerQ[r] && (EqQ
[p, 1] || GtQ[r, 0]) && NeQ[r, -1]
```

Rubi steps

$$\int x\left(a+b\log\left(c(d+ex)^n\right)\right)\left(f+g\log\left(c(d+ex)^n\right)\right)\,dx=\frac{1}{2}x^2\left(a+b\log\left(c(d+ex)^n\right)\right)\left(f+g\log\left(c(d+ex)^n\right)\right)-\frac{1}{2}$$

$$=\frac{1}{2}x^2\left(a+b\log\left(c(d+ex)^n\right)\right)\left(f+g\log\left(c(d+ex)^n\right)\right)-\frac{1}{2}$$

$$=\frac{1}{4}gn\left(\frac{4d(d+ex)}{e^2}-\frac{(d+ex)^2}{e^2}-\frac{2d^2\log(d+ex)}{e^2}\right)\left(a+b\right.$$

$$=\frac{1}{4}gn\left(\frac{4d(d+ex)}{e^2}-\frac{(d+ex)^2}{e^2}-\frac{2d^2\log(d+ex)}{e^2}\right)\left(a+b\right.$$

$$=\frac{1}{4}gn\left(\frac{4d(d+ex)}{e^2}-\frac{(d+ex)^2}{e^2}-\frac{2d^2\log(d+ex)}{e^2}\right)\left(a+b\right.$$

$$=\frac{1}{4}gn\left(\frac{4d(d+ex)}{e^2}-\frac{(d+ex)^2}{e^2}-\frac{2d^2\log(d+ex)}{e^2}\right)\left(a+b\right.$$

$$=2\left(-\frac{bdgn^2x}{e}+\frac{bgn^2(d+ex)^2}{8e^2}+\frac{bd^2gn^2\log^2(d+ex)}{4e^2}\right)+$$

Mathematica [A] time = 0.05, size = 263, normalized size = 1.34

$$\frac{1}{2}agx^2\log\left(c(d+ex)^n\right)-\frac{ad^2gn\log(d+ex)}{2e^2}+\frac{adgnx}{2e}+\frac{1}{2}afx^2-\frac{1}{4}agnx^2-\frac{bd^2g\log^2\left(c(d+ex)^n\right)}{2e^2}+\frac{3bd^2gn\log\left(c(d+e\right.}{2e^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n]),x]
```

```
[Out] (b*d*f*n*x)/(2*e) + (a*d*g*n*x)/(2*e) - (3*b*d*g*n^2*x)/(2*e) + (a*f*x^2)/2
 - (b*f*n*x^2)/4 - (a*g*n*x^2)/4 + (b*g*n^2*x^2)/4 - (b*d^2*f*n*Log[d + e*x
])/(2*e^2) - (a*d^2*g*n*Log[d + e*x])/(2*e^2) + (3*b*d^2*g*n*Log[c*(d + e*x
)^n])/(2*e^2) + (b*d*g*n*x*Log[c*(d + e*x)^n])/e + (b*f*x^2*Log[c*(d + e*x)
^n])/2 + (a*g*x^2*Log[c*(d + e*x)^n])/2 - (b*g*n*x^2*Log[c*(d + e*x)^n])/2
- (b*d^2*g*Log[c*(d + e*x)^n]^2)/(2*e^2) + (b*g*x^2*Log[c*(d + e*x)^n]^2)/2
```

fricas [A] time = 0.50, size = 256, normalized size = 1.31

$$2\,be^2gx^2\log(c)^2 + \left(be^2gn^2 + 2\,ae^2f - \left(be^2f + ae^2g\right)n\right)x^2 + 2\left(be^2gn^2x^2 - bd^2gn^2\right)\log\left(ex+d\right)^2 - 2\left(3\,bdegn^2\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n)),x, algorithm="fri
cas")
```

```
[Out] 1/4*(2*b*e^2*g*x^2*log(c)^2 + (b*e^2*g*n^2 + 2*a*e^2*f - (b*e^2*f + a*e^2*g
)*n)*x^2 + 2*(b*e^2*g*n^2*x^2 - b*d^2*g*n^2)*log(e*x + d)^2 - 2*(3*b*d*e*g*
n^2 - (b*d*e*f + a*d*e*g)*n)*x + 2*(2*b*d*e*g*n^2*x + 3*b*d^2*g*n^2 - (b*e^
2*g*n^2 - (b*e^2*f + a*e^2*g)*n)*x^2 - (b*d^2*f + a*d^2*g)*n + 2*(b*e^2*g*n
*x^2 - b*d^2*g*n)*log(c))*log(e*x + d) + 2*(2*b*d*e*g*n*x - (b*e^2*g*n - b*
e^2*f - a*e^2*g)*x^2)*log(c))/e^2
```

giac [B] time = 0.20, size = 477, normalized size = 2.43

$$\frac{1}{2}\left(xe+d\right)^2bgn^2e^{(-2)}\log\left(xe+d\right)^2-(xe+d)bdgn^2e^{(-2)}\log\left(xe+d\right)^2-\frac{1}{2}\left(xe+d\right)^2bgn^2e^{(-2)}\log\left(xe+d\right)+2\left(xe+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n)),x, algorithm="gia
c")
```

```
[Out] 1/2*(x*e + d)^2*b*g*n^2*e^(-2)*log(x*e + d)^2 - (x*e + d)*b*d*g*n^2*e^(-2)*
log(x*e + d)^2 - 1/2*(x*e + d)^2*b*g*n^2*e^(-2)*log(x*e + d) + 2*(x*e + d)*
b*d*g*n^2*e^(-2)*log(x*e + d) + (x*e + d)^2*b*g*n*e^(-2)*log(x*e + d)*log(c
) - 2*(x*e + d)*b*d*g*n*e^(-2)*log(x*e + d)*log(c) + 1/4*(x*e + d)^2*b*g*n^
2*e^(-2) - 2*(x*e + d)*b*d*g*n^2*e^(-2) + 1/2*(x*e + d)^2*b*f*n*e^(-2)*log(
x*e + d) - (x*e + d)*b*d*f*n*e^(-2)*log(x*e + d) + 1/2*(x*e + d)^2*a*g*n*e^
(-2)*log(x*e + d) - (x*e + d)*a*d*g*n*e^(-2)*log(x*e + d) - 1/2*(x*e + d)^2
*b*g*n*e^(-2)*log(c) + 2*(x*e + d)*b*d*g*n*e^(-2)*log(c) + 1/2*(x*e + d)^2*
b*g*e^(-2)*log(c)^2 - (x*e + d)*b*d*g*e^(-2)*log(c)^2 - 1/4*(x*e + d)^2*b*f
*n*e^(-2) + (x*e + d)*b*d*f*n*e^(-2) - 1/4*(x*e + d)^2*a*g*n*e^(-2) + (x*e
+ d)*a*d*g*n*e^(-2) + 1/2*(x*e + d)^2*b*f*e^(-2)*log(c) - (x*e + d)*b*d*f*e
^(-2)*log(c) + 1/2*(x*e + d)^2*a*g*e^(-2)*log(c) - (x*e + d)*a*d*g*e^(-2)*l
og(c) + 1/2*(x*e + d)^2*a*f*e^(-2) - (x*e + d)*a*d*f*e^(-2)
```

maple [C] time = 0.53, size = 1558, normalized size = 7.95

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(b*ln(c*(e*x+d)^n)+a)*(f+g*ln(c*(e*x+d)^n)),x)
```

```
[Out] 1/2*(-I*Pi*b*e^2*g*x^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*Pi
*b*e^2*g*x^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*Pi*b*e^2*g*x^2*csgn(I*(e*x+d
)^n)*csgn(I*c*(e*x+d)^n)^2-I*Pi*b*e^2*g*x^2*csgn(I*c*(e*x+d)^n)^3+2*b*e^2*g
*x^2*ln(c)-b*e^2*g*n*x^2+a*e^2*g*x^2-2*b*d^2*g*n*ln(e*x+d)+2*b*d*e*g*n*x+b*
e^2*f*x^2)/e^2*ln((e*x+d)^n)+1/2*ln(c)^2*b*g*x^2+1/2*ln(c)*a*g*x^2+1/2*ln(c
)*b*f*x^2+1/2*a*f*x^2+1/2*g*b*x^2*ln((e*x+d)^n)^2-3/2*b*d*g*n^2*x/e+1/2*b*d
/e*f*n*x+1/4*x^2*b*g*n^2-1/4*x^2*n*a*g-1/4*x^2*n*b*f+1/2*I/e^2*ln(e*x+d)*Pi
*b*d^2*g*n*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/2*I/e*Pi*b*d*g
*n*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/2*I*ln(c)*Pi*b*g*x^2
*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/4*I*n*Pi*b*g*x^2*csgn(I*c)*csgn(I*c*(e*x
+d)^n)^2+1/2*I*ln(c)*Pi*b*g*x^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/4
*I*n*Pi*b*g*x^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/4*I*Pi*a*g*x^2*cs
gn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/4*I*Pi*b*f*x^2*csgn(I*c)*cs
```

```
gn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/2*b*d^2*g*n^2*ln(e*x+d)^2/e^2-1/2*I/e
^2*ln(e*x+d)*Pi*b*d^2*g*n*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/2*I/e^2*ln(e*x+
d)*Pi*b*d^2*g*n*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/2*I/e*Pi*b*d*g*n*
x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/2*I/e*Pi*b*d*g*n*x*csgn(I*(e*x+d)^n)*cs
gn(I*c*(e*x+d)^n)^2-1/2*I*ln(c)*Pi*b*g*x^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn
(I*c*(e*x+d)^n)+1/4*I*n*Pi*b*g*x^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*
x+d)^n)+1/2*I/e^2*ln(e*x+d)*Pi*b*d^2*g*n*csgn(I*c*(e*x+d)^n)^3-1/2*I/e*Pi*b
*d*g*n*x*csgn(I*c*(e*x+d)^n)^3-1/e^2*ln(e*x+d)*ln(c)*b*d^2*g*n+1/e*ln(c)*b*
d*g*n*x-1/2*Pi^2*b*g*x^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^4+
1/4*Pi^2*b*g*x^2*csgn(I*c)^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^3-1/2*n*
ln(c)*b*g*x^2-1/8*Pi^2*b*g*x^2*csgn(I*c*(e*x+d)^n)^6+1/4*Pi^2*b*g*x^2*csgn(
I*c)*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^3-1/8*Pi^2*b*g*x^2*csgn(I*c)^2
*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^2+1/4*I*n*Pi*b*g*x^2*csgn(I*c*(e*x
+d)^n)^3+1/4*I*Pi*a*g*x^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/4*I*Pi*b*f*x^2*
csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/4*I*Pi*a*g*x^2*csgn(I*(e*x+d)^n)*csgn(I*c
*(e*x+d)^n)^2+1/4*I*Pi*b*f*x^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/2*
I*ln(c)*Pi*b*g*x^2*csgn(I*c*(e*x+d)^n)^3+1/2/e*a*d*g*n*x+1/4*Pi^2*b*g*x^2*c
sgn(I*c)*csgn(I*c*(e*x+d)^n)^5+1/4*Pi^2*b*g*x^2*csgn(I*(e*x+d)^n)*csgn(I*c*
(e*x+d)^n)^5-1/8*Pi^2*b*g*x^2*csgn(I*c)^2*csgn(I*c*(e*x+d)^n)^4-1/8*Pi^2*b*
g*x^2*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^4-1/2/e^2*ln(e*x+d)*b*d^2*f*n
-1/2/e^2*ln(e*x+d)*a*d^2*g*n-1/4*I*Pi*a*g*x^2*csgn(I*c*(e*x+d)^n)^3-1/4*I*P
i*b*f*x^2*csgn(I*c*(e*x+d)^n)^3+3/2*b*d^2*g*n^2/e^2*ln(e*x+d)
```

maxima [A] time = 0.53, size = 224, normalized size = 1.14

$$\frac{1}{2}\,bgx^2\log\left(\left(ex+d\right)^n c\right)^2-\frac{1}{4}\,befn\left(\frac{2\,d^2\log\left(ex+d\right)}{e^3}+\frac{ex^2-2\,dx}{e^2}\right)-\frac{1}{4}\,aegn\left(\frac{2\,d^2\log\left(ex+d\right)}{e^3}+\frac{ex^2-2\,dx}{e^2}\right)+\frac{1}{2}\,bfx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n)),x, algorithm="max
ima")
```

```
[Out] 1/2*b*g*x^2*log((e*x + d)^n*c)^2 - 1/4*b*e*f*n*(2*d^2*log(e*x + d)/e^3 + (e
*x^2 - 2*d*x)/e^2) - 1/4*a*e*g*n*(2*d^2*log(e*x + d)/e^3 + (e*x^2 - 2*d*x)/
e^2) + 1/2*b*f*x^2*log((e*x + d)^n*c) + 1/2*a*g*x^2*log((e*x + d)^n*c) + 1/
2*a*f*x^2 - 1/4*(2*e*n*(2*d^2*log(e*x + d)/e^3 + (e*x^2 - 2*d*x)/e^2)*log((
e*x + d)^n*c) - (e^2*x^2 + 2*d^2*log(e*x + d)^2 - 6*d*e*x + 6*d^2*log(e*x +
 d))*n^2/e^2)*b*g
```

mupad [B] time = 0.35, size = 203, normalized size = 1.04

$$x\left(\frac{d\,\left(a\,f-b\,g\,n^2\right)}{e}-\frac{d\,\left(a\,f-\frac{a\,g\,n}{2}-\frac{b\,f\,n}{2}+\frac{b\,g\,n^2}{2}\right)}{e}\right)+\ln\left(c\,{\left(d+e\,x\right)}^n\right)\,\left(\left(\frac{a\,g}{2}+\frac{b\,f}{2}-\frac{b\,g\,n}{2}\right)\,x^2+\left(\frac{d\,\left(a\,g+b\,f\right)}{e}-\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a + b*log(c*(d + e*x)^n))*(f + g*log(c*(d + e*x)^n)),x)
```

```
[Out] x*((d*(a*f - b*g*n^2))/e - (d*(a*f - (a*g*n)/2 - (b*f*n)/2 + (b*g*n^2)/2))/
e) + log(c*(d + e*x)^n)*(x*((d*(a*g + b*f))/e - (d*(a*g + b*f - b*g*n))/e)
+ x^2*((a*g)/2 + (b*f)/2 - (b*g*n)/2)) + log(c*(d + e*x)^n)^2*((b*g*x^2)/2
- (b*d^2*g)/(2*e^2)) + x^2*((a*f)/2 - (a*g*n)/4 - (b*f*n)/4 + (b*g*n^2)/4)
- (log(d + e*x)*(a*d^2*g*n + b*d^2*f*n - 3*b*d^2*g*n^2))/(2*e^2)
```

sympy [A] time = 3.57, size = 389, normalized size = 1.98

$$\begin{cases} -\frac{ad^2gn\log\left(d+ex\right)}{2e^2}+\frac{adgnx}{2e}+\frac{afx^2}{2}+\frac{agnx^2\log\left(d+ex\right)}{2}-\frac{agnx^2}{4}+\frac{agx^2\log\left(c\right)}{2}-\frac{bd^2fn\log\left(d+ex\right)}{2e^2}-\frac{bd^2gn^2\log\left(d+ex\right)^2}{2e^2}+\frac{3bd^2gn^2\log\left(\right.}{2e^2} \\ \frac{x^2\left(a+b\log\left(cd^n\right)\right)\left(f+g\log\left(cd^n\right)\right)}{2} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*ln(c*(e*x+d)**n))*(f+g*ln(c*(e*x+d)**n)),x)
```

```
[Out] Piecewise((-a*d**2*g*n*log(d + e*x)/(2*e**2) + a*d*g*n*x/(2*e) + a*f*x**2/2
 + a*g*n*x**2*log(d + e*x)/2 - a*g*n*x**2/4 + a*g*x**2*log(c)/2 - b*d**2*f*
n*log(d + e*x)/(2*e**2) - b*d**2*g*n**2*log(d + e*x)**2/(2*e**2) + 3*b*d**2
*g*n**2*log(d + e*x)/(2*e**2) - b*d**2*g*n*log(c)*log(d + e*x)/e**2 + b*d*f
*n*x/(2*e) + b*d*g*n**2*x*log(d + e*x)/e - 3*b*d*g*n**2*x/(2*e) + b*d*g*n*x
*log(c)/e + b*f*n*x**2*log(d + e*x)/2 - b*f*n*x**2/4 + b*f*x**2*log(c)/2 +
b*g*n**2*x**2*log(d + e*x)**2/2 - b*g*n**2*x**2*log(d + e*x)/2 + b*g*n**2*x
**2/4 + b*g*n*x**2*log(c)*log(d + e*x) - b*g*n*x**2*log(c)/2 + b*g*x**2*log
(c)**2/2, Ne(e, 0)), (x**2*(a + b*log(c*d**n))*(f + g*log(c*d**n))/2, True)
)
```

3.381 $\int \left(a+b \log \left(c(d+e x)^n\right)\right) \left(f+g \log \left(c(d+e x)^n\right)\right) \, dx$

Optimal. Leaf size=110

$$\frac{d \left(a g+2 b g \log \left(c(d+e x)^n\right)+b f\right)^2}{4 b e g}+x \left(a+b \log \left(c(d+e x)^n\right)\right) \left(g \log \left(c(d+e x)^n\right)+f\right)-n x (a g+b f)-\frac{2 b g n (d+e x)}{}$$

[Out] -(a*g+b*f)*n*x+2*b*g*n^2*x-2*b*g*n*(e*x+d)*ln(c*(e*x+d)^n)/e+x*(a+b*ln(c*(e*x+d)^n))*(f+g*ln(c*(e*x+d)^n))+1/4*d*(b*f+a*g+2*b*g*ln(c*(e*x+d)^n))^2/b/e/g

Rubi [A] time = 0.22, antiderivative size = 130, normalized size of antiderivative = 1.18, number of steps used = 11, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.172, Rules used = {2430, 2411, 2346, 2301, 2295}

$$x \left(a+b \log \left(c(d+e x)^n\right)\right) \left(g \log \left(c(d+e x)^n\right)+f\right)+\frac{d g \left(a+b \log \left(c(d+e x)^n\right)\right)^2}{2 b e}-a g n x+\frac{b d \left(g \log \left(c(d+e x)^n\right)+f\right)^2}{2 e g}$$

Antiderivative was successfully verified.

[In] Int[(a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n]),x]

[Out] -(b*f*n*x) - a*g*n*x + 2*b*g*n^2*x - (2*b*g*n*(d + e*x)*Log[c*(d + e*x)^n])/e + (d*g*(a + b*Log[c*(d + e*x)^n])^2)/(2*b*e) + x*(a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n]) + (b*d*(f + g*Log[c*(d + e*x)^n])^2)/(2*e*g)

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2346

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.))
/(x_), x_Symbol] :> Dist[d, Int[((d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p)/x,
 x], x] + Dist[e, Int[(d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p, x], x] /; Fre
eQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0] && GtQ[q, 0] && IntegerQ[2*q]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2430

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)), x_Symbol] :> Simp[x*(a + b*Log[c
*(d + e*x)^n])^p*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[g*j*m, Int[(x*(a +
 b*Log[c*(d + e*x)^n])^p)/(i + j*x), x], x] - Dist[b*e*n*p, Int[(x*(a + b*L
og[c*(d + e*x)^n])^(p - 1)*(f + g*Log[h*(i + j*x)^m]))/(d + e*x), x], x]) /
; FreeQ[{a, b, c, d, e, f, g, h, i, j, m, n}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int \left(a+b\log\left(c(d+ex)^n\right)\right)\left(f+g\log\left(c(d+ex)^n\right)\right)\,dx = x\left(a+b\log\left(c(d+ex)^n\right)\right)\left(f+g\log\left(c(d+ex)^n\right)\right)-(b$$

$$= x\left(a+b\log\left(c(d+ex)^n\right)\right)\left(f+g\log\left(c(d+ex)^n\right)\right)-(b$$

$$= x\left(a+b\log\left(c(d+ex)^n\right)\right)\left(f+g\log\left(c(d+ex)^n\right)\right)-\frac{(b}{}$$

$$= -bfnx-agnx+\frac{dg\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2be}+x\left(a+\right.$$

$$= -bfnx-agnx+\frac{dg\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2be}+x\left(a+\right.$$

Mathematica [A] time = 0.03, size = 76, normalized size = 0.69

$$\frac{(d+ex)(ag+b(f-2gn))\log\left(c(d+ex)^n\right)+ex(a(f-gn)+bn(2gn-f))+bg(d+ex)\log^2\left(c(d+ex)^n\right)}{e}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n]),x]
```

```
[Out] (e*(a*(f - g*n) + b*n*(-f + 2*g*n))*x + (a*g + b*(f - 2*g*n))*(d + e*x)*Log
[c*(d + e*x)^n] + b*g*(d + e*x)*Log[c*(d + e*x)^n]^2)/e
```

fricas [A] time = 0.43, size = 156, normalized size = 1.42

$$\frac{begx\log(c)^2+\left(begn^2x+bdgn^2\right)\log(ex+d)^2-\left(2\,begn-bef-aeg\right)x\log(c)+\left(2\,begn^2+aef-\left(bef+aeg\right)\right.}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n)),x, algorithm="frica
s")
```

```
[Out] (b*e*g*x*log(c)^2 + (b*e*g*n^2*x + b*d*g*n^2)*log(e*x + d)^2 - (2*b*e*g*n -
 b*e*f - a*e*g)*x*log(c) + (2*b*e*g*n^2 + a*e*f - (b*e*f + a*e*g)*n)*x - (2
*b*d*g*n^2 - (b*d*f + a*d*g)*n + (2*b*e*g*n^2 - (b*e*f + a*e*g)*n)*x - 2*(b
*e*g*n*x + b*d*g*n)*log(c))*log(e*x + d))/e
```

giac [A] time = 0.19, size = 214, normalized size = 1.95

$$(xe+d)bgn^2e^{(-1)}\log(xe+d)^2-2\,(xe+d)bgn^2e^{(-1)}\log(xe+d)+2\,(xe+d)bgne^{(-1)}\log(xe+d)\log(c)+2\,(xe+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n)),x, algorithm="giac"
)
```

```
[Out] (x*e + d)*b*g*n^2*e^(-1)*log(x*e + d)^2 - 2*(x*e + d)*b*g*n^2*e^(-1)*log(x*
e + d) + 2*(x*e + d)*b*g*n*e^(-1)*log(x*e + d)*log(c) + 2*(x*e + d)*b*g*n^2
*e^(-1) + (x*e + d)*b*f*n*e^(-1)*log(x*e + d) + (x*e + d)*a*g*n*e^(-1)*log(
x*e + d) - 2*(x*e + d)*b*g*n*e^(-1)*log(c) + (x*e + d)*b*g*e^(-1)*log(c)^2
- (x*e + d)*b*f*n*e^(-1) - (x*e + d)*a*g*n*e^(-1) + (x*e + d)*b*f*e^(-1)*lo
g(c) + (x*e + d)*a*g*e^(-1)*log(c) + (x*e + d)*a*f*e^(-1)
```

maple [A] time = 0.08, size = 156, normalized size = 1.42

$$-\frac{2bdg\,n^{2}\ln(ex+d)}{e}+2bg\,n^{2}x-2bgnx\ln\left(c\,\mathrm{e}^{n\ln(ex+d)}\right)+bgx\ln\left(c\,\mathrm{e}^{n\ln(ex+d)}\right)^{2}+\frac{adgn\ln(ex+d)}{e}-agnx+agx\ln\left(c\,(e\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)*(f+g*ln(c*(e*x+d)^n)),x)
```

```
[Out] x*a*f+x*a*g*ln(c*(e*x+d)^n)-a*g*n*x+a*g/e*n*d*ln(e*x+d)+x*b*ln(c*(e*x+d)^n)
*f-b*f*n*x+b*f/e*n*d*ln(e*x+d)+b*g*x*ln(c*exp(n*ln(e*x+d)))^2+b*d*g/e*ln(c*
exp(n*ln(e*x+d)))^2+2*b*g*n^2*x-2*n^2*b*d*g/e*ln(e*x+d)-2*b*g*n*x*ln(c*exp(
n*ln(e*x+d)))
```

maxima [A] time = 0.50, size = 165, normalized size = 1.50

$$-befn\left(\frac{x}{e}-\frac{d\log(ex+d)}{e^{2}}\right)-aegn\left(\frac{x}{e}-\frac{d\log(ex+d)}{e^{2}}\right)+bgx\log\left((ex+d)^{n}c\right)^{2}+bfx\log\left((ex+d)^{n}c\right)+agx\log\left((ex\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n)),x, algorithm="maxim
a")
```

```
[Out] -b*e*f*n*(x/e - d*log(e*x + d)/e^2) - a*e*g*n*(x/e - d*log(e*x + d)/e^2) +
b*g*x*log((e*x + d)^n*c)^2 + b*f*x*log((e*x + d)^n*c) + a*g*x*log((e*x + d)
^n*c) - (2*e*n*(x/e - d*log(e*x + d)/e^2)*log((e*x + d)^n*c) + (d*log(e*x +
 d)^2 - 2*e*x + 2*d*log(e*x + d))*n^2/e)*b*g + a*f*x
```

mupad [B] time = 0.27, size = 102, normalized size = 0.93

$$\ln\left(c\,(d+e\,x)^{n}\right)^{2}\,\left(b\,g\,x+\frac{b\,d\,g}{e}\right)+x\,\left(a\,f-a\,g\,n-b\,f\,n+2\,b\,g\,n^{2}\right)+x\,\ln\left(c\,(d+e\,x)^{n}\right)\,\left(a\,g+b\,f-2\,b\,g\,n\right)+\frac{\ln(d+}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))*(f + g*log(c*(d + e*x)^n)),x)
```

```
[Out] log(c*(d + e*x)^n)^2*(b*g*x + (b*d*g)/e) + x*(a*f - a*g*n - b*f*n + 2*b*g*n
^2) + x*log(c*(d + e*x)^n)*(a*g + b*f - 2*b*g*n) + (log(d + e*x)*(a*d*g*n -
 2*b*d*g*n^2 + b*d*f*n))/e
```

sympy [A] time = 1.66, size = 257, normalized size = 2.34

$$\begin{cases}\frac{adgn\log(d+ex)}{e}+afx+agnx\log(d+ex)-agnx+agx\log(c)+\frac{bdfn\log(d+ex)}{e}+\frac{bdgn^{2}\log(d+ex)^{2}}{e}-\frac{2bdgn^{2}\log(d+ex)}{e}+\\ x\left(a+b\log(cd^{n})\right)\left(f+g\log(cd^{n})\right)\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))*(f+g*ln(c*(e*x+d)**n)),x)
```

```
[Out] Piecewise((a*d*g*n*log(d + e*x)/e + a*f*x + a*g*n*x*log(d + e*x) - a*g*n*x
+ a*g*x*log(c) + b*d*f*n*log(d + e*x)/e + b*d*g*n**2*log(d + e*x)**2/e - 2*
b*d*g*n**2*log(d + e*x)/e + 2*b*d*g*n*log(c)*log(d + e*x)/e + b*f*n*x*log(d
 + e*x) - b*f*n*x + b*f*x*log(c) + b*g*n**2*x*log(d + e*x)**2 - 2*b*g*n**2*
x*log(d + e*x) + 2*b*g*n**2*x + 2*b*g*n*x*log(c)*log(d + e*x) - 2*b*g*n*x*l
og(c) + b*g*x*log(c)**2, Ne(e, 0)), (x*(a + b*log(c*d**n))*(f + g*log(c*d**
n)), True))
```

3.382 $\int \frac{(a+b\log(c(d+ex)^n))(f+g\log(c(d+ex)^n))}{x}\,dx$

Optimal. Leaf size=158

$$n\mathrm{Li}_2\left(\frac{ex}{d}+1\right)\left(ag+2bg\log\left(c(d+ex)^n\right)+bf\right)-\frac{\log(x)\left(ag+2bg\log\left(c(d+ex)^n\right)+bf\right)^2}{4bg}+\frac{\log\left(-\frac{ex}{d}\right)\left(ag+2bg\right.}{}$$

```
[Out] ln(x)*(a+b*ln(c*(e*x+d)^n))*(f+g*ln(c*(e*x+d)^n))-1/4*ln(x)*(b*f+a*g+2*b*g*
ln(c*(e*x+d)^n))^2/b/g+1/4*ln(-e*x/d)*(b*f+a*g+2*b*g*ln(c*(e*x+d)^n))^2/b/g
+n*(b*f+a*g+2*b*g*ln(c*(e*x+d)^n))*polylog(2,1+e*x/d)-2*b*g*n^2*polylog(3,1
+e*x/d)
```

Rubi [A] time = 0.33, antiderivative size = 219, normalized size of antiderivative = 1.39, number of steps used = 11, number of rules used = 6, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188, Rules used = {2434, 2433, 2375, 2317, 2374, 6589}

$$gn\text{PolyLog}\left(2,\frac{ex}{d}+1\right)\left(a+b\log\left(c(d+ex)^n\right)\right)+bn\text{PolyLog}\left(2,\frac{ex}{d}+1\right)\left(g\log\left(c(d+ex)^n\right)+f\right)-2bgn^2\text{PolyLo}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n]))/x,x]
```

```
[Out] -(g*Log[x]*(a + b*Log[c*(d + e*x)^n])^2)/(2*b) + (g*Log[-((e*x)/d)]*(a + b*
Log[c*(d + e*x)^n])^2)/(2*b) + Log[x]*(a + b*Log[c*(d + e*x)^n])*(f + g*Log
[c*(d + e*x)^n]) - (b*Log[x]*(f + g*Log[c*(d + e*x)^n])^2)/(2*g) + (b*Log[-
((e*x)/d)]*(f + g*Log[c*(d + e*x)^n])^2)/(2*g) + g*n*(a + b*Log[c*(d + e*x)
^n])*PolyLog[2, 1 + (e*x)/d] + b*n*(f + g*Log[c*(d + e*x)^n])*PolyLog[2, 1
+ (e*x)/d] - 2*b*g*n^2*PolyLog[3, 1 + (e*x)/d]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2375

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m
- 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
```

```
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] :> Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m]))/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\left(f+g\log\left(c(d+ex)^n\right)\right)}{x}\,dx = \log(x)\left(a+b\log\left(c(d+ex)^n\right)\right)\left(f+g\log\left(c(d+ex)^n\right)\right) -$$

$$= \log(x)\left(a+b\log\left(c(d+ex)^n\right)\right)\left(f+g\log\left(c(d+ex)^n\right)\right) -$$

$$= -\frac{g\log(x)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2b} + \log(x)\left(a+b\log(c\right.$$

$$= -\frac{g\log(x)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2b} + \frac{g\log\left(-\frac{ex}{d}\right)\left(a+b\,\mathrm{l}\right.}{2b}$$

$$= -\frac{g\log(x)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2b} + \frac{g\log\left(-\frac{ex}{d}\right)\left(a+b\,\mathrm{l}\right.}{2b}$$

$$= -\frac{g\log(x)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2b} + \frac{g\log\left(-\frac{ex}{d}\right)\left(a+b\,\mathrm{l}\right.}{2b}$$

Mathematica [A] time = 0.06, size = 227, normalized size = 1.44

$$ag\log\left(-\frac{ex}{d}\right)\log\left(c(d+ex)^n\right)+agn\mathrm{Li}_2\left(\frac{d+ex}{d}\right)+af\log(x)+bf\log\left(-\frac{ex}{d}\right)\log\left(c(d+ex)^n\right)+2bgn\left(\log(x)\left(\log(d+\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n]))/x,x]
```

```
[Out] a*f*Log[x] + b*f*Log[-((e*x)/d)]*Log[c*(d + e*x)^n] + a*g*Log[-((e*x)/d)]*L
og[c*(d + e*x)^n] + b*g*Log[x]*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n])^2 +
 2*b*g*n*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n])*(Log[x]*(Log[d + e*x] - L
og[1 + (e*x)/d]) - PolyLog[2, -((e*x)/d)]) + b*f*n*PolyLog[2, (d + e*x)/d]
+ a*g*n*PolyLog[2, (d + e*x)/d] + 2*b*g*n^2*((Log[d + e*x]^2*Log[1 - (d + e
*x)/d])/2 + Log[d + e*x]*PolyLog[2, (d + e*x)/d] - PolyLog[3, (d + e*x)/d])
```

fricas [F] time = 0.42, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{bg\log\left((ex+d)^n c\right)^2 + af + \left(bf + ag\right)\log\left((ex+d)^n c\right)}{x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n))/x,x, algorithm="fri
cas")
```

```
[Out] integral((b*g*log((e*x + d)^n*c)^2 + a*f + (b*f + a*g)*log((e*x + d)^n*c))/
x, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\log\left((ex+d)^n c\right) + a\right)\left(g\log\left((ex+d)^n c\right) + f\right)}{x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n))/x,x, algorithm="gia
c")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*(g*log((e*x + d)^n*c) + f)/x, x)
```

maple [C] time = 0.44, size = 1534, normalized size = 9.71

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)*(f+g*ln(c*(e*x+d)^n))/x,x)
```

```
[Out] I*Pi*ln(x)*ln((e*x+d)/d)*b*g*n*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)
^n)-ln(x)*ln((e*x+d)/d)*a*g*n-ln(x)*ln((e*x+d)/d)*b*f*n+ln((e*x+d)^n)^2*ln(
e*x)*b*g+ln(x)*ln((e*x+d)^n)*a*g+ln(x)*ln((e*x+d)^n)*b*f+ln(c)*ln(x)*b*f+ln
(c)^2*ln(x)*b*g+ln(c)*ln(x)*a*g-2*polylog(3,(e*x+d)/d)*b*g*n^2+a*f*ln(x)+2*
ln((e*x+d)^n)*dilog(-1/d*e*x)*b*g*n+I*Pi*dilog((e*x+d)/d)*b*g*n*csgn(I*c)*c
sgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-I*ln(c)*Pi*ln(x)*b*g*csgn(I*c)*csgn(I*
(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-I*Pi*ln(x)*ln((e*x+d)/d)*b*g*n*csgn(I*(e*x+d
)^n)*csgn(I*c*(e*x+d)^n)^2-dilog((e*x+d)/d)*a*g*n-dilog((e*x+d)/d)*b*f*n+I*
Pi*ln(x)*ln((e*x+d)^n)*b*g*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+2*ln((e*x+d)^n)*
ln(-1/d*e*x)*ln(e*x+d)*b*g*n+1/2*Pi^2*ln(x)*b*g*csgn(I*c)*csgn(I*c*(e*x+d)^
n)^5-1/4*Pi^2*ln(x)*b*g*csgn(I*c)^2*csgn(I*c*(e*x+d)^n)^4+1/2*I*Pi*ln(x)*b*
f*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/2*Pi^2*ln(x)*b*g*csgn(I*(e*x+d)^n)*csgn
(I*c*(e*x+d)^n)^5-1/4*Pi^2*ln(x)*b*g*csgn(I*c*(e*x+d)^n)^6+I*Pi*ln(x)*ln((e
*x+d)/d)*b*g*n*csgn(I*c*(e*x+d)^n)^3+I*ln(c)*Pi*ln(x)*b*g*csgn(I*c)*csgn(I*
c*(e*x+d)^n)^2-I*Pi*dilog((e*x+d)/d)*b*g*n*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+
1/2*Pi^2*ln(x)*b*g*csgn(I*c)*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^3+I*Pi
*ln(x)*ln((e*x+d)^n)*b*g*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/2*I*Pi*l
n(x)*a*g*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+ln(1-(e*x+d)/d)*ln(e*x+d)^
2*b*g*n^2-1/2*I*Pi*ln(x)*b*f*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n
)-1/2*I*Pi*ln(x)*a*g*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*ln(c
)*Pi*ln(x)*b*g*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*Pi*dilog((e*x+d)/d
)*b*g*n*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-2*dilog(-1/d*e*x)*ln(e*x+d)
*b*g*n^2-2*ln(c)*dilog((e*x+d)/d)*b*g*n-2*ln(-1/d*e*x)*ln(e*x+d)^2*b*g*n^2+
ln(e*x)*ln(e*x+d)^2*b*g*n^2+2*polylog(2,(e*x+d)/d)*ln(e*x+d)*b*g*n^2+2*ln(c
)*ln(x)*ln((e*x+d)^n)*b*g-2*ln((e*x+d)^n)*ln(e*x)*ln(e*x+d)*b*g*n-1/4*Pi^2*
ln(x)*b*g*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^4-1/2*I*Pi*ln(x)*b*f*csgn
(I*c*(e*x+d)^n)^3+1/2*I*Pi*ln(x)*b*f*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^
```

```
2+1/2*I*Pi*ln(x)*a*g*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-Pi^2*ln(x)*b*g*csgn(I*
c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^4-2*ln(c)*ln(x)*ln((e*x+d)/d)*b*g*
n-1/2*I*Pi*ln(x)*a*g*csgn(I*c*(e*x+d)^n)^3+I*Pi*dilog((e*x+d)/d)*b*g*n*csgn
(I*c*(e*x+d)^n)^3+1/2*Pi^2*ln(x)*b*g*csgn(I*c)^2*csgn(I*(e*x+d)^n)*csgn(I*c
*(e*x+d)^n)^3-I*Pi*ln(x)*ln((e*x+d)/d)*b*g*n*csgn(I*c)*csgn(I*c*(e*x+d)^n)^
2-I*Pi*ln(x)*ln((e*x+d)^n)*b*g*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)
^n)-I*Pi*ln(x)*ln((e*x+d)^n)*b*g*csgn(I*c*(e*x+d)^n)^3-1/4*Pi^2*ln(x)*b*g*c
sgn(I*c)^2*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^2-I*ln(c)*Pi*ln(x)*b*g*c
sgn(I*c*(e*x+d)^n)^3
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$af\log(x)+\int \frac{bg\log\left((ex+d)^n\right)^2+ag\log(c)+\left(g\log(c)^2+f\log(c)\right)b+\left(\left(2g\log(c)+f\right)b+ag\right)\log\left((ex+d)^n\right)}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n))/x,x, algorithm="max
ima")
```

```
[Out] a*f*log(x) + integrate((b*g*log((e*x + d)^n)^2 + a*g*log(c) + (g*log(c)^2 +
 f*log(c))*b + ((2*g*log(c) + f)*b + a*g)*log((e*x + d)^n))/x, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)\,\left(f+g\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*log(c*(d + e*x)^n))*(f + g*log(c*(d + e*x)^n)))/x,x)
```

```
[Out] int(((a + b*log(c*(d + e*x)^n))*(f + g*log(c*(d + e*x)^n)))/x, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\log\left(c\left(d+ex\right)^n\right)\right)\left(f+g\log\left(c\left(d+ex\right)^n\right)\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))*(f+g*ln(c*(e*x+d)**n))/x,x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))*(f + g*log(c*(d + e*x)**n))/x, x)
```

3.383 $\int \frac{(a+b\log(c(d+ex)^n))(f+g\log(c(d+ex)^n))}{x^2}\,dx$

Optimal. Leaf size=96

$$\frac{en\log\left(1-\frac{d}{d+ex}\right)\left(ag+2bg\log\left(c(d+ex)^n\right)+bf\right)}{d}-\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\left(g\log\left(c(d+ex)^n\right)+f\right)}{x}-\frac{2begn^2\mathrm{Li}}{d}$$

```
[Out] -(a+b*ln(c*(e*x+d)^n))*(f+g*ln(c*(e*x+d)^n))/x+e*n*(b*f+a*g+2*b*g*ln(c*(e*x
+d)^n))*ln(1-d/(e*x+d))/d-2*b*e*g*n^2*polylog(2,d/(e*x+d))/d
```

Rubi [A] time = 0.35, antiderivative size = 169, normalized size of antiderivative = 1.76, number of steps used = 11, number of rules used = 6, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188, Rules used = {2439, 2411, 2344, 2301, 2317, 2391}

$$\frac{2begn^2\mathrm{PolyLog}\left(2,\frac{ex}{d}+1\right)}{d}-\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\left(g\log\left(c(d+ex)^n\right)+f\right)}{x}+\frac{egn\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+e\right.\right.}{d}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n]))/x^2,x]
```

```
[Out] (e*g*n*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]))/d - (e*g*(a + b*Log[c*(d
 + e*x)^n])^2)/(2*b*d) + (b*e*n*Log[-((e*x)/d)]*(f + g*Log[c*(d + e*x)^n]))
/d - ((a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n]))/x - (b*e*(f +
g*Log[c*(d + e*x)^n])^2)/(2*d*g) + (2*b*e*g*n^2*PolyLog[2, 1 + (e*x)/d])/d
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2439

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*(x_)^(r_.), x_Symbol] :> Simp[(x^
(r + 1)*(a + b*Log[c*(d + e*x)^n])^p*(f + g*Log[h*(i + j*x)^m]))/(r + 1), x
] + (-Dist[(g*j*m)/(r + 1), Int[(x^(r + 1)*(a + b*Log[c*(d + e*x)^n])^p)/(i
 + j*x), x], x] - Dist[(b*e*n*p)/(r + 1), Int[(x^(r + 1)*(a + b*Log[c*(d +
e*x)^n])^(p - 1)*(f + g*Log[h*(i + j*x)^m]))/(d + e*x), x], x]) /; FreeQ[{a
, b, c, d, e, f, g, h, i, j, m, n}, x] && IGtQ[p, 0] && IntegerQ[r] && (EqQ
[p, 1] || GtQ[r, 0]) && NeQ[r, -1]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\left(f+g\log\left(c(d+ex)^n\right)\right)}{x^2}\,dx = -\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\left(f+g\log\left(c(d+ex)^n\right)\right)}{x} + (ben$$

$$= -\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\left(f+g\log\left(c(d+ex)^n\right)\right)}{x} + (bn)$$

$$= -\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\left(f+g\log\left(c(d+ex)^n\right)\right)}{x} + \frac{(bn)}{}$$

$$= \frac{egn\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{d} - \frac{eg\left(a+b\log(c(\right.}{2bd}$$

$$= \frac{egn\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{d} - \frac{eg\left(a+b\log(c(\right.}{2bd}$$

Mathematica [A] time = 0.03, size = 180, normalized size = 1.88

$$-\frac{ag\log\left(c(d+ex)^n\right)}{x}+\frac{aegn\log(x)}{d}-\frac{aegn\log(d+ex)}{d}-\frac{af}{x}-\frac{bf\log\left(c(d+ex)^n\right)}{x}-\frac{beg\log^2\left(c(d+ex)^n\right)}{d}-\frac{bg\log^2\left(c(\right.}{x}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n]))/x^2,x]
```

```
[Out] -((a*f)/x) + (b*e*f*n*Log[x])/d + (a*e*g*n*Log[x])/d - (b*e*f*n*Log[d + e*x
])/d - (a*e*g*n*Log[d + e*x])/d - (b*f*Log[c*(d + e*x)^n])/x - (a*g*Log[c*(
d + e*x)^n])/x + (2*b*e*g*n*Log[-((e*x)/d)]*Log[c*(d + e*x)^n])/d - (b*e*g*
Log[c*(d + e*x)^n]^2)/d - (b*g*Log[c*(d + e*x)^n]^2)/x + (2*b*e*g*n^2*PolyL
og[2, (d + e*x)/d])/d
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{bg\log\left((ex+d)^n c\right)^2 + af + \left(bf+ag\right)\log\left((ex+d)^n c\right)}{x^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n))/x^2,x, algorithm="f
ricas")
```

```
[Out] integral((b*g*log((e*x + d)^n*c)^2 + a*f + (b*f + a*g)*log((e*x + d)^n*c))/
x^2, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b \log\left((ex+d)^n c\right)+a\right)\left(g \log\left((ex+d)^n c\right)+f\right)}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n))/x^2,x, algorithm="g
iac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*(g*log((e*x + d)^n*c) + f)/x^2, x)
```

maple [C] time = 0.34, size = 931, normalized size = 9.70

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)*(f+g*ln(c*(e*x+d)^n))/x^2,x)
```

```
[Out] -I*ln((e*x+d)^n)/x*Pi*b*g*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*e*n/d*ln(e*x+d)
*Pi*b*g*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-b*g/x*ln((e*x+d)^n)
^2-ln((e*x+d)^n)/x*a*g-ln((e*x+d)^n)/x*b*f-I*ln((e*x+d)^n)/x*Pi*b*g*csgn(I*
(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/4*(-I*Pi*b*csgn(I*c)*csgn(I*(e*x+d)^n)*c
sgn(I*c*(e*x+d)^n)+I*Pi*b*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*Pi*b*csgn(I*(e*
x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*Pi*b*csgn(I*c*(e*x+d)^n)^3+2*b*ln(c)+2*a)*(
-I*g*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*g*Pi*csgn(I*c)*cs
gn(I*c*(e*x+d)^n)^2+I*g*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*g*Pi*c
sgn(I*c*(e*x+d)^n)^3+2*g*ln(c)+2*f)/x-I*e*n/d*ln(x)*Pi*b*g*csgn(I*c)*csgn(I
*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+2*b*g*e*n*ln((e*x+d)^n)/d*ln(x)-2*b*g*e*n*l
n((e*x+d)^n)/d*ln(e*x+d)+I*e*n/d*ln(x)*Pi*b*g*csgn(I*c)*csgn(I*c*(e*x+d)^n)
^2-I*e*n/d*ln(e*x+d)*Pi*b*g*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-2*b*g*e*n^2/d*l
n(x)*ln((e*x+d)/d)+I*ln((e*x+d)^n)/x*Pi*b*g*csgn(I*c*(e*x+d)^n)^3+I*e*n/d*l
n(x)*Pi*b*g*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-2*ln((e*x+d)^n)/x*ln(c)
*b*g+I*e*n/d*ln(e*x+d)*Pi*b*g*csgn(I*c*(e*x+d)^n)^3+I*ln((e*x+d)^n)/x*Pi*b*
g*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-I*e*n/d*ln(e*x+d)*Pi*b*g*
csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*e*n/d*ln(x)*Pi*b*g*csgn(I*c*(e*x+
d)^n)^3+e*n/d*ln(x)*a*g+e*n/d*ln(x)*b*f-e*n/d*ln(e*x+d)*a*g-e*n/d*ln(e*x+d)
*b*f-2*b*g*e*n^2/d*dilog((e*x+d)/d)+b*g*e*n^2/d*ln(e*x+d)^2+2*e*n/d*ln(x)*l
n(c)*b*g-2*e*n/d*ln(e*x+d)*ln(c)*b*g
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-befn\left(\frac{\log(ex+d)}{d}-\frac{\log(x)}{d}\right)-aegn\left(\frac{\log(ex+d)}{d}-\frac{\log(x)}{d}\right)-bg\left(\frac{\log\left((ex+d)^n\right)^2}{x}-\int\frac{ex\log(c)^2+d\log(c)^2}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n))/x^2,x, algorithm="m
axima")
```

```
[Out] -b*e*f*n*(log(e*x + d)/d - log(x)/d) - a*e*g*n*(log(e*x + d)/d - log(x)/d)
- b*g*(log((e*x + d)^n)^2/x - integrate((e*x*log(c)^2 + d*log(c)^2 + 2*((e*
n + e*log(c))*x + d*log(c))*log((e*x + d)^n))/(e*x^3 + d*x^2), x)) - b*f*lo
g((e*x + d)^n*c)/x - a*g*log((e*x + d)^n*c)/x - a*f/x
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)\,\left(f+g\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*log(c*(d + e*x)^n))*(f + g*log(c*(d + e*x)^n)))/x^2,x)
```

```
[Out] int(((a + b*log(c*(d + e*x)^n))*(f + g*log(c*(d + e*x)^n)))/x^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a + b \log\left(c \left(d + ex\right)^{n}\right)\right) \left(f + g \log\left(c \left(d + ex\right)^{n}\right)\right)}{x^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))*(f+g*ln(c*(e*x+d)**n))/x**2,x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))*(f + g*log(c*(d + e*x)**n))/x**2, x)
```

3.384 $\int \frac{(a+b\log(c(d+ex)^n))(f+g\log(c(d+ex)^n))}{x^3} dx$

Optimal. Leaf size=156

$$-\frac{e^2 n \log\left(1-\frac{d}{d+ex}\right)\left(ag+2bg\log\left(c(d+ex)^n\right)+bf\right)}{2d^2}-\frac{en(d+ex)\left(ag+2bg\log\left(c(d+ex)^n\right)+bf\right)}{2d^2x}-\frac{\left(a+b\log\right.}{}$$

```
[Out] b*e^2*g*n^2*ln(x)/d^2-1/2*(a+b*ln(c*(e*x+d)^n))*(f+g*ln(c*(e*x+d)^n))/x^2-1
/2*e*n*(e*x+d)*(b*f+a*g+2*b*g*ln(c*(e*x+d)^n))/d^2/x-1/2*e^2*n*(b*f+a*g+2*b
*g*ln(c*(e*x+d)^n))*ln(1-d/(e*x+d))/d^2+b*e^2*g*n^2*polylog(2,d/(e*x+d))/d^
2
```

Rubi [A] time = 0.56, antiderivative size = 265, normalized size of antiderivative = 1.70, number of steps used = 17, number of rules used = 9, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.281, Rules used = {2439, 2411, 2347, 2344, 2301, 2317, 2391, 2314, 31}

$$-\frac{be^2gn^2\text{PolyLog}\left(2,\frac{ex}{d}+1\right)}{d^2}+\frac{e^2g\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{4bd^2}-\frac{e^2gn\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{2d^2}-\frac{egn(d+e}{}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n]))/x^3,x]
```

```
[Out] (b*e^2*g*n^2*Log[x])/d^2 - (e*g*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n]))/(2*
d^2*x) - (e^2*g*n*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]))/(2*d^2) + (e^
2*g*(a + b*Log[c*(d + e*x)^n])^2)/(4*b*d^2) - (b*e*n*(d + e*x)*(f + g*Log[c
*(d + e*x)^n]))/(2*d^2*x) - (b*e^2*n*Log[-((e*x)/d)]*(f + g*Log[c*(d + e*x)
^n]))/(2*d^2) - ((a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n]))/(2*
x^2) + (b*e^2*(f + g*Log[c*(d + e*x)^n])^2)/(4*d^2*g) - (b*e^2*g*n^2*PolyLo
g[2, 1 + (e*x)/d])/d^2
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2314

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_), x
_Symbol] :> Simp[(x*(d + e*x^r)^(q + 1)*(a + b*Log[c*x^n]))/d, x] - Dist[(b
*n)/d, Int[(d + e*x^r)^(q + 1), x], x] /; FreeQ[{a, b, c, d, e, n, q, r}, x
] && EqQ[r*(q + 1) + 1, 0]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
```

```
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2347

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/x
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2439

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*(x_)^(r_.), x_Symbol] :> Simp[(x^
(r + 1)*(a + b*Log[c*(d + e*x)^n])^p*(f + g*Log[h*(i + j*x)^m]))/(r + 1), x
] + (-Dist[(g*j*m)/(r + 1), Int[(x^(r + 1)*(a + b*Log[c*(d + e*x)^n])^p)/(i
 + j*x), x], x] - Dist[(b*e*n*p)/(r + 1), Int[(x^(r + 1)*(a + b*Log[c*(d +
e*x)^n])^(p - 1)*(f + g*Log[h*(i + j*x)^m]))/(d + e*x), x], x]) /; FreeQ[{a
, b, c, d, e, f, g, h, i, j, m, n}, x] && IGtQ[p, 0] && IntegerQ[r] && (EqQ
[p, 1] || GtQ[r, 0]) && NeQ[r, -1]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\left(f+g\log\left(c(d+ex)^n\right)\right)}{x^3}\,dx = -\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\left(f+g\log\left(c(d+ex)^n\right)\right)}{2x^2}+\frac{1}{2}(be$$

$$= -\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\left(f+g\log\left(c(d+ex)^n\right)\right)}{2x^2}+\frac{1}{2}(bn$$

$$= -\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\left(f+g\log\left(c(d+ex)^n\right)\right)}{2x^2}+\frac{(bn)}{}$$

$$= -\frac{egn(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)}{2d^2x}-\frac{ben(d+ex)\left(f+\right.}{2}$$

$$= \frac{be^2gn^2\log(x)}{d^2}-\frac{egn(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)}{2d^2x}-\frac{e^2}{}$$

$$= \frac{be^2gn^2\log(x)}{d^2}-\frac{egn(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)}{2d^2x}-\frac{e^2}{}$$

Mathematica [A] time = 0.13, size = 254, normalized size = 1.63

$$-\frac{ag\log\left(c(d+ex)^n\right)}{2x^2}+\frac{1}{2}aegn\left(-\frac{e\log(x)}{d^2}+\frac{e\log(d+ex)}{d^2}-\frac{1}{dx}\right)-\frac{af}{2x^2}+begn\left(\frac{e\log^2\left(c(d+ex)^n\right)}{2d^2n}-\frac{e\log\left(-\frac{ex}{d}\right)\mathrm{l}}{}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n]))/x^3,x]
```

```
[Out] -1/2*(a*f)/x^2 + (b*e*f*n*(-(1/(d*x)) - (e*Log[x])/d^2 + (e*Log[d + e*x])/d
^2))/2 + (a*e*g*n*(-(1/(d*x)) - (e*Log[x])/d^2 + (e*Log[d + e*x])/d^2))/2 -
 (b*f*Log[c*(d + e*x)^n])/(2*x^2) - (a*g*Log[c*(d + e*x)^n])/(2*x^2) - (b*g
*Log[c*(d + e*x)^n]^2)/(2*x^2) + b*e*g*n*((e*n*(Log[x]/d - Log[d + e*x]/d))
/d - Log[c*(d + e*x)^n]/(d*x) - (e*Log[-((e*x)/d)]*Log[c*(d + e*x)^n])/d^2
+ (e*Log[c*(d + e*x)^n]^2)/(2*d^2*n) - (e*n*PolyLog[2, (d + e*x)/d])/d^2)
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{bg\log\left((ex+d)^n c\right)^2+af+(bf+ag)\log\left((ex+d)^n c\right)}{x^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n))/x^3,x, algorithm="f
ricas")
```

```
[Out] integral((b*g*log((e*x + d)^n*c)^2 + a*f + (b*f + a*g)*log((e*x + d)^n*c))/
x^3, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(b\log\left((ex+d)^n c\right)+a\right)\left(g\log\left((ex+d)^n c\right)+f\right)}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n))/x^3,x, algorithm="g
iac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*(g*log((e*x + d)^n*c) + f)/x^3, x)
```

maple [C] time = 0.35, size = 1201, normalized size = 7.70

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)*(f+g*ln(c*(e*x+d)^n))/x^3,x)
```

```
[Out] -1/2*I*e*n/d/x*Pi*b*g*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/2*ln((e*x+d)^n)/x^2
*a*g-1/2*b*g/x^2*ln((e*x+d)^n)^2-1/2*ln((e*x+d)^n)/x^2*b*f-1/8*(-I*Pi*b*csg
n(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*Pi*b*csgn(I*c)*csgn(I*c*(e*x
+d)^n)^2+I*Pi*b*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*Pi*b*csgn(I*c*(e*
x+d)^n)^3+2*b*ln(c)+2*a)*(-I*Pi*g*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x
+d)^n)+I*Pi*g*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*Pi*g*csgn(I*(e*x+d)^n)*csgn
(I*c*(e*x+d)^n)^2-I*Pi*g*csgn(I*c*(e*x+d)^n)^3+2*g*ln(c)+2*f)/x^2-1/2*I*e^2
*n/d^2*ln(e*x+d)*Pi*b*g*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/2
*I*e^2*n/d^2*ln(x)*Pi*b*g*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1
/2*I*e*n/d/x*Pi*b*g*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/2*I*e
^2*n/d^2*ln(x)*Pi*b*g*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/2*I*e*n/d/x*Pi*b*g*
```

```
csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+b*e^2*g*n^2*ln(x)/d^2+b*g*e^2*n^2/d
^2*ln(x)*ln((e*x+d)/d)-e*n/d/x*ln(c)*b*g-e^2*n/d^2*ln(x)*ln(c)*b*g+e^2*n/d^
2*ln(e*x+d)*ln(c)*b*g+b*g*e^2*n^2/d^2*dilog((e*x+d)/d)-1/2*I*ln((e*x+d)^n)/
x^2*Pi*b*g*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-b*g*e^2*n*ln((e*x+d)^n)/
d^2*ln(x)+1/2*I*ln((e*x+d)^n)/x^2*Pi*b*g*csgn(I*c*(e*x+d)^n)^3-b*g*e*n*ln((
e*x+d)^n)/d/x-1/2*I*ln((e*x+d)^n)/x^2*Pi*b*g*csgn(I*c)*csgn(I*c*(e*x+d)^n)^
2-1/2*I*e^2*n/d^2*ln(x)*Pi*b*g*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/2*
I*e^2*n/d^2*ln(e*x+d)*Pi*b*g*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/2*I*e^2*n/d^
2*ln(e*x+d)*Pi*b*g*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+b*g*e^2*n*ln((e*
x+d)^n)/d^2*ln(e*x+d)-ln((e*x+d)^n)/x^2*ln(c)*b*g+1/2*I*e^2*n/d^2*ln(x)*Pi*
b*g*csgn(I*c*(e*x+d)^n)^3+1/2*I*ln((e*x+d)^n)/x^2*Pi*b*g*csgn(I*c)*csgn(I*(
e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/2*I*e^2*n/d^2*ln(e*x+d)*Pi*b*g*csgn(I*c*(e*
x+d)^n)^3+1/2*I*e*n/d/x*Pi*b*g*csgn(I*c*(e*x+d)^n)^3+1/2*e^2*n/d^2*ln(e*x+d
)*a*g+1/2*e^2*n/d^2*ln(e*x+d)*b*f-1/2*e^2*n/d^2*ln(x)*a*g-1/2*e^2*n/d^2*ln(
x)*b*f-1/2*e*n/d/x*a*g-1/2*e*n/d/x*b*f-1/2*b*g*e^2*n^2/d^2*ln(e*x+d)^2-b*g*
e^2*n^2/d^2*ln(e*x+d)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{2}\,befn\left(\frac{e\log\left(ex+d\right)}{d^2}-\frac{e\log(x)}{d^2}-\frac{1}{dx}\right)+\frac{1}{2}\,aegn\left(\frac{e\log\left(ex+d\right)}{d^2}-\frac{e\log(x)}{d^2}-\frac{1}{dx}\right)-\frac{1}{2}\,bg\left(\frac{\log\left(\left(ex+d\right)^n\right)^2}{x^2}-2\int\frac{e}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n))/x^3,x, algorithm="m
axima")
```

```
[Out] 1/2*b*e*f*n*(e*log(e*x + d)/d^2 - e*log(x)/d^2 - 1/(d*x)) + 1/2*a*e*g*n*(e*
log(e*x + d)/d^2 - e*log(x)/d^2 - 1/(d*x)) - 1/2*b*g*(log((e*x + d)^n)^2/x^
2 - 2*integrate((e*x*log(c)^2 + d*log(c)^2 + ((e*n + 2*e*log(c))*x + 2*d*lo
g(c))*log((e*x + d)^n))/(e*x^4 + d*x^3), x)) - 1/2*b*f*log((e*x + d)^n*c)/x
^2 - 1/2*a*g*log((e*x + d)^n*c)/x^2 - 1/2*a*f/x^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)\,\left(f+g\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}{x^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*log(c*(d + e*x)^n))*(f + g*log(c*(d + e*x)^n)))/x^3,x)
```

```
[Out] int(((a + b*log(c*(d + e*x)^n))*(f + g*log(c*(d + e*x)^n)))/x^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\log\left(c\left(d+ex\right)^{n}\right)\right)\left(f+g\log\left(c\left(d+ex\right)^{n}\right)\right)}{x^{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))*(f+g*ln(c*(e*x+d)**n))/x**3,x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))*(f + g*log(c*(d + e*x)**n))/x**3, x)
```

3.385 $\int \frac{(a+b\log(c(d+ex)^n))(f+g\log(c(d+ex)^n))}{x^4}\,dx$

Optimal. Leaf size=234

$$\frac{e^3 n\log\left(1-\frac{d}{d+ex}\right)\left(ag+2bg\log\left(c(d+ex)^n\right)+bf\right)}{3d^3}+\frac{e^2 n(d+ex)\left(ag+2bg\log\left(c(d+ex)^n\right)+bf\right)}{3d^3 x}-\frac{\left(a+b\log(\right.}{}$$

```
[Out] -1/3*b*e^2*g*n^2/d^2/x-b*e^3*g*n^2*ln(x)/d^3+1/3*b*e^3*g*n^2*ln(e*x+d)/d^3-
1/3*(a+b*ln(c*(e*x+d)^n))*(f+g*ln(c*(e*x+d)^n))/x^3-1/6*e*n*(b*f+a*g+2*b*g*
ln(c*(e*x+d)^n))/d/x^2+1/3*e^2*n*(e*x+d)*(b*f+a*g+2*b*g*ln(c*(e*x+d)^n))/d^
3/x+1/3*e^3*n*(b*f+a*g+2*b*g*ln(c*(e*x+d)^n))*ln(1-d/(e*x+d))/d^3-2/3*b*e^3
*g*n^2*polylog(2,d/(e*x+d))/d^3
```

Rubi [A] time = 0.82, antiderivative size = 365, normalized size of antiderivative = 1.56, number of steps used = 25, number of rules used = 11, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.344, Rules used = {2439, 2411, 2347, 2344, 2301, 2317, 2391, 2314, 31, 2319, 44}

$$\frac{2be^3gn^2\text{PolyLog}\left(2,\frac{ex}{d}+1\right)}{3d^3}-\frac{e^3g\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{6bd^3}+\frac{e^3gn\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{3d^3}+\frac{e^2gn(d+}{}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n]))/x^4,x]
```

```
[Out] -(b*e^2*g*n^2)/(3*d^2*x) - (b*e^3*g*n^2*Log[x])/d^3 + (b*e^3*g*n^2*Log[d +
e*x])/(3*d^3) - (e*g*n*(a + b*Log[c*(d + e*x)^n]))/(6*d*x^2) + (e^2*g*n*(d
+ e*x)*(a + b*Log[c*(d + e*x)^n]))/(3*d^3*x) + (e^3*g*n*Log[-((e*x)/d)]*(a
+ b*Log[c*(d + e*x)^n]))/(3*d^3) - (e^3*g*(a + b*Log[c*(d + e*x)^n])^2)/(6*
b*d^3) - (b*e*n*(f + g*Log[c*(d + e*x)^n]))/(6*d*x^2) + (b*e^2*n*(d + e*x)*
(f + g*Log[c*(d + e*x)^n]))/(3*d^3*x) + (b*e^3*n*Log[-((e*x)/d)]*(f + g*Log
[c*(d + e*x)^n]))/(3*d^3) - ((a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e
*x)^n]))/(3*x^3) - (b*e^3*(f + g*Log[c*(d + e*x)^n])^2)/(6*d^3*g) + (2*b*e^
3*g*n^2*PolyLog[2, 1 + (e*x)/d])/(3*d^3)
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2314

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_), x
_Symbol] :> Simp[(x*(d + e*x^r)^(q + 1)*(a + b*Log[c*x^n]))/d, x] - Dist[(b
*n)/d, Int[(d + e*x^r)^(q + 1), x], x] /; FreeQ[{a, b, c, d, e, n, q, r}, x
] && EqQ[r*(q + 1) + 1, 0]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2319

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/(e*(q + 1)), x]
- Dist[(b*n*p)/(e*(q + 1)), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2347

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/x
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2439

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*(x_)^(r_.), x_Symbol] :> Simp[(x^
(r + 1)*(a + b*Log[c*(d + e*x)^n])^p*(f + g*Log[h*(i + j*x)^m]))/(r + 1), x
] + (-Dist[(g*j*m)/(r + 1), Int[(x^(r + 1)*(a + b*Log[c*(d + e*x)^n])^p)/(i
 + j*x), x], x] - Dist[(b*e*n*p)/(r + 1), Int[(x^(r + 1)*(a + b*Log[c*(d +
e*x)^n])^(p - 1)*(f + g*Log[h*(i + j*x)^m]))/(d + e*x), x], x]) /; FreeQ[{a
, b, c, d, e, f, g, h, i, j, m, n}, x] && IGtQ[p, 0] && IntegerQ[r] && (EqQ
[p, 1] || GtQ[r, 0]) && NeQ[r, -1]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\left(f+g\log\left(c(d+ex)^n\right)\right)}{x^4}\,dx = -\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\left(f+g\log\left(c(d+ex)^n\right)\right)}{3x^3}+\frac{1}{3}$$

$$= -\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\left(f+g\log\left(c(d+ex)^n\right)\right)}{3x^3}+\frac{1}{3}$$

$$= -\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\left(f+g\log\left(c(d+ex)^n\right)\right)}{3x^3}+-$$

$$= -\frac{egn\left(a+b\log\left(c(d+ex)^n\right)\right)}{6dx^2}-\frac{ben\left(f+g\log\left(c(d+\right.\right.}{6dx^2}$$

$$= -\frac{egn\left(a+b\log\left(c(d+ex)^n\right)\right)}{6dx^2}+\frac{e^2gn(d+ex)\left(a+b\log\right.}{3d^3x}$$

$$= -\frac{2be^3gn^2\log(x)}{3d^3}+2\left(-\frac{be^2gn^2}{6d^2x}-\frac{be^3gn^2\log(x)}{6d^3}+\frac{be^3}{}\right.$$

$$= -\frac{2be^3gn^2\log(x)}{3d^3}+2\left(-\frac{be^2gn^2}{6d^2x}-\frac{be^3gn^2\log(x)}{6d^3}+\frac{be^3}{}\right.$$

Mathematica [A] time = 0.18, size = 351, normalized size = 1.50

$$-\frac{ag\log\left(c(d+ex)^n\right)}{3x^3}+\frac{1}{3}aegn\left(\frac{e^2\log(x)}{d^3}-\frac{e^2\log(d+ex)}{d^3}+\frac{e}{d^2x}-\frac{1}{2dx^2}\right)-\frac{af}{3x^3}-\frac{be^3g\log^2\left(c(d+ex)^n\right)}{3d^3}+\frac{2be^3gn}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n]))/x^4,x]
```

```
[Out] -1/3*(a*f)/x^3 - (b*e^2*g*n^2)/(3*d^2*x) - (b*e^3*g*n^2*Log[x])/d^3 + (b*e^
3*g*n^2*Log[d + e*x])/d^3 + (b*e*f*n*(-1/2*1/(d*x^2) + e/(d^2*x) + (e^2*Log
[x])/d^3 - (e^2*Log[d + e*x])/d^3))/3 + (a*e*g*n*(-1/2*1/(d*x^2) + e/(d^2*x
) + (e^2*Log[x])/d^3 - (e^2*Log[d + e*x])/d^3))/3 - (b*f*Log[c*(d + e*x)^n]
)/(3*x^3) - (a*g*Log[c*(d + e*x)^n])/(3*x^3) - (b*e*g*n*Log[c*(d + e*x)^n])
/(3*d*x^2) + (2*b*e^2*g*n*Log[c*(d + e*x)^n])/(3*d^2*x) + (2*b*e^3*g*n*Log[
-((e*x)/d)]*Log[c*(d + e*x)^n])/(3*d^3) - (b*e^3*g*Log[c*(d + e*x)^n]^2)/(3
*d^3) - (b*g*Log[c*(d + e*x)^n]^2)/(3*x^3) + (2*b*e^3*g*n^2*PolyLog[2, (d +
 e*x)/d])/(3*d^3)
```

fricas [F] time = 0.43, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{bg\log\left((ex+d)^nc\right)^2+af+\left(bf+ag\right)\log\left((ex+d)^nc\right)}{x^4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n))/x^4,x, algorithm="f
ricas")
```

```
[Out] integral((b*g*log((e*x + d)^n*c)^2 + a*f + (b*f + a*g)*log((e*x + d)^n*c))/
x^4, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)\left(g\log\left((ex+d)^n c\right)+f\right)}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n))/x^4,x, algorithm="g
iac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*(g*log((e*x + d)^n*c) + f)/x^4, x)
```

maple [C] time = 0.43, size = 1437, normalized size = 6.14

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)*(f+g*ln(c*(e*x+d)^n))/x^4,x)
```

```
[Out] -1/12*(-I*Pi*b*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*Pi*b*csgn(
I*c)*csgn(I*c*(e*x+d)^n)^2+I*Pi*b*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I
*Pi*b*csgn(I*c*(e*x+d)^n)^3+2*b*ln(c)+2*a)*(-I*Pi*g*csgn(I*c)*csgn(I*(e*x+d
)^n)*csgn(I*c*(e*x+d)^n)+I*Pi*g*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*Pi*g*csgn
(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*Pi*g*csgn(I*c*(e*x+d)^n)^3+2*g*ln(c)+
2*f)/x^3-1/6*I*e*n/d/x^2*Pi*b*g*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/3*b*g/x^3
*ln((e*x+d)^n)^2-1/3*ln((e*x+d)^n)/x^3*a*g-1/3*ln((e*x+d)^n)/x^3*b*f+b*e^3*
g*n^2*ln(e*x+d)/d^3-1/3*b*e^2*g*n^2/d^2/x-1/3*b*g*e*n*ln((e*x+d)^n)/d/x^2+2
/3*b*g*e^3*n*ln((e*x+d)^n)/d^3*ln(x)+2/3*b*g*e^2*n*ln((e*x+d)^n)/d^2/x+1/3*
I*e^2*n/d^2/x*Pi*b*g*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/3*I*e^2*n/d^2/x*Pi*b
*g*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/3*I*e^3*n/d^3*ln(x)*Pi*b*g*csg
n(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/6*I*e*n/d/x^2*Pi*b*g*csgn(I*
c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-b*e^3*g*n^2*ln(x)/d^3-1/3*I*ln((e*
x+d)^n)/x^3*Pi*b*g*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/3*I*ln((e*x+d)
^n)/x^3*Pi*b*g*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/3*I*e^3*n/d^3*ln(e*x+d)*Pi
*b*g*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/3*I*e^2*n/d^2/x*Pi*b
*g*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-2/3*b*g*e^3*n*ln((e*x+d)
^n)/d^3*ln(e*x+d)+1/3*I*ln((e*x+d)^n)/x^3*Pi*b*g*csgn(I*c*(e*x+d)^n)^3+1/3*
I*ln((e*x+d)^n)/x^3*Pi*b*g*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+
1/3*I*e^3*n/d^3*ln(x)*Pi*b*g*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/6*I*
e*n/d/x^2*Pi*b*g*csgn(I*c*(e*x+d)^n)^3-1/3*I*e^2*n/d^2/x*Pi*b*g*csgn(I*c*(e
*x+d)^n)^3-2/3*ln((e*x+d)^n)/x^3*ln(c)*b*g-1/6*I*e*n/d/x^2*Pi*b*g*csgn(I*(e
*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/3*I*e^3*n/d^3*ln(e*x+d)*Pi*b*g*csgn(I*c)*c
sgn(I*c*(e*x+d)^n)^2-2/3*b*g*e^3*n^2/d^3*ln(x)*ln((e*x+d)/d)+2/3*e^3*n/d^3*
ln(x)*ln(c)*b*g-2/3*e^3*n/d^3*ln(e*x+d)*ln(c)*b*g-1/3*e*n/d/x^2*ln(c)*b*g+2
/3*e^2*n/d^2/x*ln(c)*b*g-1/3*I*e^3*n/d^3*ln(e*x+d)*Pi*b*g*csgn(I*(e*x+d)^n)
*csgn(I*c*(e*x+d)^n)^2+1/3*I*e^3*n/d^3*ln(x)*Pi*b*g*csgn(I*c)*csgn(I*c*(e*x
+d)^n)^2-2/3*b*g*e^3*n^2/d^3*dilog((e*x+d)/d)+1/3*b*g*e^3*n^2/d^3*ln(e*x+d)
^2-1/6*e*n/d/x^2*a*g-1/6*e*n/d/x^2*b*f+1/3*e^2*n/d^2/x*a*g+1/3*e^2*n/d^2/x*
b*f+1/3*e^3*n/d^3*ln(x)*a*g+1/3*e^3*n/d^3*ln(x)*b*f-1/3*e^3*n/d^3*ln(e*x+d)
*a*g-1/3*e^3*n/d^3*ln(e*x+d)*b*f-1/3*I*e^3*n/d^3*ln(x)*Pi*b*g*csgn(I*c*(e*x
+d)^n)^3+1/3*I*e^3*n/d^3*ln(e*x+d)*Pi*b*g*csgn(I*c*(e*x+d)^n)^3
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{6}\,befn\left(\frac{2\,e^2\log(ex+d)}{d^3}-\frac{2\,e^2\log(x)}{d^3}-\frac{2\,ex-d}{d^2x^2}\right)-\frac{1}{6}\,aegn\left(\frac{2\,e^2\log(ex+d)}{d^3}-\frac{2\,e^2\log(x)}{d^3}-\frac{2\,ex-d}{d^2x^2}\right)-\frac{1}{3}\,bg\Bigg(\mathrm{lo}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n))/x^4,x, algorithm="m
axima")
```

```
[Out] -1/6*b*e*f*n*(2*e^2*log(e*x + d)/d^3 - 2*e^2*log(x)/d^3 - (2*e*x - d)/(d^2*
x^2)) - 1/6*a*e*g*n*(2*e^2*log(e*x + d)/d^3 - 2*e^2*log(x)/d^3 - (2*e*x - d
)/(d^2*x^2)) - 1/3*b*g*(log((e*x + d)^n)^2/x^3 - 3*integrate(1/3*(3*e*x*log
(c)^2 + 3*d*log(c)^2 + 2*((e*n + 3*e*log(c))*x + 3*d*log(c))*log((e*x + d)^
n))/(e*x^5 + d*x^4), x)) - 1/3*b*f*log((e*x + d)^n*c)/x^3 - 1/3*a*g*log((e*
x + d)^n*c)/x^3 - 1/3*a*f/x^3
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)\,\left(f+g\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*log(c*(d + e*x)^n))*(f + g*log(c*(d + e*x)^n)))/x^4,x)
```

```
[Out] int(((a + b*log(c*(d + e*x)^n))*(f + g*log(c*(d + e*x)^n)))/x^4, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a + b \log{\left(c \left(d + e x\right)^{n} \right)}\right) \left(f + g \log{\left(c \left(d + e x\right)^{n} \right)}\right)}{x^{4}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))*(f+g*ln(c*(e*x+d)**n))/x**4,x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))*(f + g*log(c*(d + e*x)**n))/x**4, x)
```

3.386 $\int x^3 \left(a+b\log\left(c(d+ex)^n\right)\right)\left(f+g\log\left(h(i+jx)^m\right)\right)\,dx$

Optimal. Leaf size=742

$$\frac{1}{4}x^4\left(a+b\log\left(c(d+ex)^n\right)\right)\left(f+g\log\left(h(i+jx)^m\right)\right)-\frac{gi^4m\log\left(\frac{e(i+jx)}{ei-dj}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{4j^4}-\frac{gi^2mx^2\left(a+b\log\right.}{8j^2}$$

```
[Out] 1/4*x^4*(a+b*ln(c*(e*x+d)^n))*(f+g*ln(h*(j*x+i)^m))-5/24*b*d*g*i^2*m*n*x/e/
j^2-5/24*b*d^2*g*i*m*n*x/e^2/j+1/12*b*d*g*i*m*n*x^2/e/j-1/4*b*g*i^4*m*n*pol
ylog(2,-j*(e*x+d)/(-d*j+e*i))/j^4-1/4*b*d^4*g*m*n*polylog(2,e*(j*x+i)/(-d*j
+e*i))/e^4-1/16*g*m*x^4*(a+b*ln(c*(e*x+d)^n))-1/16*b*n*x^4*(f+g*ln(h*(j*x+i
)^m))+1/32*b*g*m*n*x^4+1/4*b*g*i^3*m*(e*x+d)*ln(c*(e*x+d)^n)/e/j^3+1/4*b*d^
3*g*n*(j*x+i)*ln(h*(j*x+i)^m)/e^3/j-5/16*b*d^3*g*m*n*x/e^3-5/16*b*g*i^3*m*n
*x/j^3+3/32*b*d^2*g*m*n*x^2/e^2+3/32*b*g*i^2*m*n*x^2/j^2-7/144*b*d*g*m*n*x^
3/e-7/144*b*g*i*m*n*x^3/j+1/16*b*g*i^4*m*n*ln(j*x+i)/j^4+1/16*b*d^4*g*m*n*l
n(e*x+d)/e^4+1/8*b*d^2*g*i^2*m*n*ln(e*x+d)/e^2/j^2+1/12*b*d^3*g*i*m*n*ln(e*
x+d)/e^3/j+1/12*b*d*g*i^3*m*n*ln(j*x+i)/e/j^3+1/8*b*d^2*g*i^2*m*n*ln(j*x+i)
/e^2/j^2+1/4*a*g*i^3*m*x/j^3+1/4*b*d^3*f*n*x/e^3-1/8*g*i^2*m*x^2*(a+b*ln(c*
(e*x+d)^n))/j^2+1/12*g*i*m*x^3*(a+b*ln(c*(e*x+d)^n))/j-1/4*g*i^4*m*(a+b*ln(
c*(e*x+d)^n))*ln(e*(j*x+i)/(-d*j+e*i))/j^4-1/8*b*d^2*n*x^2*(f+g*ln(h*(j*x+i
)^m))/e^2+1/12*b*d*n*x^3*(f+g*ln(h*(j*x+i)^m))/e-1/4*b*d^4*n*ln(-j*(e*x+d)/
(-d*j+e*i))*(f+g*ln(h*(j*x+i)^m))/e^4
```

Rubi [A] time = 0.87, antiderivative size = 742, normalized size of antiderivative = 1.00, number of steps used = 35, number of rules used = 9, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.281, Rules used = {2439, 43, 2416, 2389, 2295, 2395, 2394, 2393, 2391}

$$-\frac{bd^4gmn\text{PolyLog}\left(2,\frac{e(i+jx)}{ei-dj}\right)}{4e^4}-\frac{bgi^4mn\text{PolyLog}\left(2,-\frac{j(d+ex)}{ei-dj}\right)}{4j^4}+\frac{1}{4}x^4\left(a+b\log\left(c(d+ex)^n\right)\right)\left(f+g\log\left(h(i+jx)^m\right)\right)$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]),x]
```

```
[Out] (a*g*i^3*m*x)/(4*j^3) + (b*d^3*f*n*x)/(4*e^3) - (5*b*d^3*g*m*n*x)/(16*e^3)
- (5*b*g*i^3*m*n*x)/(16*j^3) - (5*b*d*g*i^2*m*n*x)/(24*e*j^2) - (5*b*d^2*g*
i*m*n*x)/(24*e^2*j) + (3*b*d^2*g*m*n*x^2)/(32*e^2) + (3*b*g*i^2*m*n*x^2)/(3
2*j^2) + (b*d*g*i*m*n*x^2)/(12*e*j) - (7*b*d*g*m*n*x^3)/(144*e) - (7*b*g*i*
m*n*x^3)/(144*j) + (b*g*m*n*x^4)/32 + (b*d^4*g*m*n*Log[d + e*x])/(16*e^4) +
 (b*d^2*g*i^2*m*n*Log[d + e*x])/(8*e^2*j^2) + (b*d^3*g*i*m*n*Log[d + e*x])/
(12*e^3*j) + (b*g*i^3*m*(d + e*x)*Log[c*(d + e*x)^n])/(4*e*j^3) - (g*i^2*m*
x^2*(a + b*Log[c*(d + e*x)^n]))/(8*j^2) + (g*i*m*x^3*(a + b*Log[c*(d + e*x)
^n]))/(12*j) - (g*m*x^4*(a + b*Log[c*(d + e*x)^n]))/16 + (b*g*i^4*m*n*Log[i
 + j*x])/(16*j^4) + (b*d*g*i^3*m*n*Log[i + j*x])/(12*e*j^3) + (b*d^2*g*i^2*
m*n*Log[i + j*x])/(8*e^2*j^2) - (g*i^4*m*(a + b*Log[c*(d + e*x)^n])*Log[(e*
(i + j*x))/(e*i - d*j)])/(4*j^4) + (b*d^3*g*n*(i + j*x)*Log[h*(i + j*x)^m])
/(4*e^3*j) - (b*d^2*n*x^2*(f + g*Log[h*(i + j*x)^m]))/(8*e^2) + (b*d*n*x^3*
(f + g*Log[h*(i + j*x)^m]))/(12*e) - (b*n*x^4*(f + g*Log[h*(i + j*x)^m]))/1
6 - (b*d^4*n*Log[-((j*(d + e*x))/(e*i - d*j))]*(f + g*Log[h*(i + j*x)^m]))/
(4*e^4) + (x^4*(a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]))/4 - (
b*g*i^4*m*n*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])/(4*j^4) - (b*d^4*g*m*
n*PolyLog[2, (e*(i + j*x))/(e*i - d*j)])/(4*e^4)
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
```

```
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2439

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*(x_)^(r_.), x_Symbol] :> Simp[(x^
(r + 1)*(a + b*Log[c*(d + e*x)^n])^p*(f + g*Log[h*(i + j*x)^m]))/(r + 1), x
] + (-Dist[(g*j*m)/(r + 1), Int[(x^(r + 1)*(a + b*Log[c*(d + e*x)^n])^p)/(i
 + j*x), x], x] - Dist[(b*e*n*p)/(r + 1), Int[(x^(r + 1)*(a + b*Log[c*(d +
e*x)^n])^(p - 1)*(f + g*Log[h*(i + j*x)^m]))/(d + e*x), x], x]) /; FreeQ[{a
, b, c, d, e, f, g, h, i, j, m, n}, x] && IGtQ[p, 0] && IntegerQ[r] && (EqQ
[p, 1] || GtQ[r, 0]) && NeQ[r, -1]
```

Rubi steps

$$\int x^3 \left(a + b\log\left(c(d+ex)^n\right)\right)\left(f + g\log\left(h(386+jx)^m\right)\right)dx = \frac{1}{4}x^4\left(a + b\log\left(c(d+ex)^n\right)\right)\left(f + g\log\left(h(386+jx\right.\right.$$

$$= \frac{1}{4}x^4\left(a + b\log\left(c(d+ex)^n\right)\right)\left(f + g\log\left(h(386+jx\right.\right.$$

$$= \frac{1}{4}x^4\left(a + b\log\left(c(d+ex)^n\right)\right)\left(f + g\log\left(h(386+jx\right.\right.$$

$$= \frac{14378114agmx}{j^3} + \frac{bd^3fnx}{4e^3} - \frac{37249gmx^2\left(a + b\log\right.}{2j^2}$$

$$= \frac{14378114agmx}{j^3} + \frac{bd^3fnx}{4e^3} - \frac{37249gmx^2\left(a + b\log\right.}{2j^2}$$

$$= \frac{14378114agmx}{j^3} + \frac{bd^3fnx}{4e^3} - \frac{5bd^3gmnx}{16e^3} - \frac{359452}{2}$$

Mathematica [A] time = 1.20, size = 605, normalized size = 0.82

$$\frac{e\left(j\left(-6gj^3x\left(bn\left(-12d^3 + 6d^2ex - 4de^2x^2 + 3e^3x^3\right) - 12ae^3x^3\right)\log\left(h(i+jx)^m\right) + 6ae^3x\left(12fj^3x^3 + gm\left(12i^3 - 6i^2j\right.\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]),x]
```

```
[Out] (6*b*n*Log[d + e*x]*(12*e^4*g*i^4*m*Log[i + j*x] - 12*g*(e^4*i^4 - d^4*j^4)
*m*Log[(e*(i + j*x))/(e*i - d*j)] + d*j*(12*e^3*g*i^3*m + 6*d*e^2*g*i^2*j*m
 + 4*d^2*e*g*i*j^2*m + 3*d^3*j^3*(-4*f + g*m) - 12*d^3*g*j^3*Log[h*(i + j*x
)^m])) + e*(6*g*i*m*(-12*a*e^3*i^3 + b*(3*e^3*i^3 + 4*d*e^2*i^2*j + 6*d^2*e
*i*j^2 + 12*d^3*j^3)*n)*Log[i + j*x] - 6*b*e^3*Log[c*(d + e*x)^n]*(-12*f*j^
4*x^4 + g*j*m*x*(-12*i^3 + 6*i^2*j*x - 4*i*j^2*x^2 + 3*j^3*x^3) + 12*g*i^4*
m*Log[i + j*x] - 12*g*j^4*x^4*Log[h*(i + j*x)^m]) + j*(6*a*e^3*x*(12*f*j^3*
x^3 + g*m*(12*i^3 - 6*i^2*j*x + 4*i*j^2*x^2 - 3*j^3*x^3)) - b*n*(18*d^3*j^3
*(-4*f + 5*g*m)*x + 3*d^2*e*j^2*x*(12*f*j*x + g*m*(20*i - 9*j*x)) + e^3*x*(
18*f*j^3*x^3 + g*m*(90*i^3 - 27*i^2*j*x + 14*i*j^2*x^2 - 9*j^3*x^3)) + 2*d*
e^2*(-12*f*j^3*x^3 + g*m*(36*i^3 + 30*i^2*j*x - 12*i*j^2*x^2 + 7*j^3*x^3)))
 - 6*g*j^3*x*(-12*a*e^3*x^3 + b*n*(-12*d^3 + 6*d^2*e*x - 4*d*e^2*x^2 + 3*e^
3*x^3))*Log[h*(i + j*x)^m])) - 72*b*g*(e^4*i^4 - d^4*j^4)*m*n*PolyLog[2, (j
*(d + e*x))/(-(e*i) + d*j)])/(288*e^4*j^4)
```

fricas [F] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(bfx^3\log\left((ex+d)^n c\right) + afx^3 + \left(bgx^3\log\left((ex+d)^n c\right) + agx^3\right)\log\left((jx+i)^m h\right), x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m)),x, algorithm="f
ricas")
```

```
[Out] integral(b*f*x^3*log((e*x + d)^n*c) + a*f*x^3 + (b*g*x^3*log((e*x + d)^n*c)
 + a*g*x^3)*log((j*x + i)^m*h), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b\log\left((ex+d)^n c\right)+a\right)\left(g\log\left(\left(jx+i\right)^m h\right)+f\right)x^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m)),x, algorithm="g
iac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*(g*log((j*x + i)^m*h) + f)*x^3, x)
```

maple [C] time = 2.21, size = 4217, normalized size = 5.68

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(b*ln(c*(e*x+d)^n)+a)*(f+g*ln(h*(j*x+i)^m)),x)
```

```
[Out] 1/4/j^4*b*g*i^4*m*n*ln(j*x+i)*ln(((j*x+i)*e+d*j-e*i)/(d*j-e*i))+1/8*I*b*Pi*
csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*g*m/j^4*i^4*ln(j*x+i)+1/16*
b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x^4*g*csgn(I*h*(j*x+i)^m)^3+1/16*b*P
i^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*x^4*g*csgn(I*h*(j*x+i)^m)^3+1/1
6*b*Pi^2*csgn(I*c*(e*x+d)^n)^3*x^4*g*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2+1/16*b
*Pi^2*csgn(I*c*(e*x+d)^n)^3*x^4*g*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2-1
/32*I*Pi*x^4*b*g*m*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/8*I*b*Pi*csgn(
I*c)*csgn(I*c*(e*x+d)^n)^2*g*x^4*ln((j*x+i)^m)+1/8*I*b*Pi*csgn(I*(e*x+d)^n)
*csgn(I*c*(e*x+d)^n)^2*g*x^4*ln((j*x+i)^m)+1/8*I*Pi*x^4*b*f*csgn(I*c)*csgn(
I*c*(e*x+d)^n)^2-1/8*I*ln(c)*Pi*x^4*b*g*csgn(I*h*(j*x+i)^m)^3-1/8*I/j^3*Pi*
x*b*g*i^3*m*csgn(I*c*(e*x+d)^n)^3+1/4*a*g*i^3*m*x/j^3+1/4*b*d^3*f*n*x/e^3+1
/16/j^4*g*i^4*m*ln((e*x+d)*j-d*j+e*i)*b*n+1/4/e^4*b*d^4*g*m*n*dilog(((e*x+d
)*j-d*j+e*i)/(-d*j+e*i))+1/32*I*Pi*x^4*b*g*n*csgn(I*h*(j*x+i)^m)^3+1/8*I*Pi
*x^4*a*g*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2+1/8*I*Pi*x^4*b*f*csgn(I*(e*x+d)^n)
*csgn(I*c*(e*x+d)^n)^2+1/8*I/j^3*Pi*x*b*g*i^3*m*csgn(I*c)*csgn(I*c*(e*x+d)^
n)^2-1/8*I/e^4*ln(e*x+d)*Pi*b*d^4*g*n*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)
^2-1/8*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*g*m/j^4*i^4*ln(j*x+i)-1/8*I*b
*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*g*m/j^4*i^4*ln(j*x+i)-1/8*I*b*P
i*csgn(I*c*(e*x+d)^n)^3*g*x^4*ln((j*x+i)^m)-1/16*b*Pi^2*csgn(I*(e*x+d)^n)*c
sgn(I*c*(e*x+d)^n)^2*x^4*g*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2-5/16*b*d
^3*g*m*n*x/e^3-5/16*b*g*i^3*m*n*x/j^3+3/32*b*d^2*g*m*n*x^2/e^2+3/32*b*g*i^2
*m*n*x^2/j^2-7/144*b*d*g*m*n*x^3/e+1/4*x^4*a*f-1/16*x^4*a*g*m-1/16*x^4*b*f*
n+(1/4*g*b*x^4*ln((j*x+i)^m)-1/48*b*(6*I*Pi*g*j^4*x^4*csgn(I*h)*csgn(I*(j*x
+i)^m)*csgn(I*h*(j*x+i)^m)-6*I*Pi*g*j^4*x^4*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2
-6*I*Pi*g*j^4*x^4*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2+6*I*Pi*g*j^4*x^4*
csgn(I*h*(j*x+i)^m)^3-12*ln(h)*g*j^4*x^4+3*g*j^4*m*x^4-12*f*j^4*x^4-4*g*i*j
^3*m*x^3+6*g*i^2*j^2*m*x^2+12*g*i^4*m*ln(j*x+i)-12*g*i^3*j*m*x)/j^4)*ln((e*
x+d)^n)-1/16/e/j^3*b*d*g*i^3*m*n-3/16/e^3/j*g*i*m*b*d^3*n-11/96/e^2/j^2*g*i
^2*m*b*d^2*n-1/16*b*Pi^2*csgn(I*c*(e*x+d)^n)^3*x^4*g*csgn(I*h*(j*x+i)^m)^3-
1/8*I*Pi*x^4*b*f*csgn(I*c*(e*x+d)^n)^3-1/8*I*Pi*x^4*a*g*csgn(I*h*(j*x+i)^m)
^3+1/8*I/e^3*Pi*x*b*d^3*g*n*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2+1/24*I/
j*Pi*x^3*b*g*i*m*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/8*I/j^3*Pi*x*b*g*i^3*m*c
sgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/4*a*g*x^4*ln((j*x+i)^m)-1/16*b*Pi^
2*csgn(I*c*(e*x+d)^n)^3*x^4*g*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^
m)+1/8*I*ln(c)*Pi*x^4*b*g*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2+1/4/e^4*b
*d^4*g*m*n*ln(e*x+d)*ln(((e*x+d)*j-d*j+e*i)/(-d*j+e*i))-1/16*n*b*g*ln((j*x+
i)^m)*x^4+1/8*I*Pi*x^4*a*g*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2+1/4/e/j^
3*ln(e*x+d)*b*d*g*i^3*m*n+1/12/e/j^3*g*i^3*m*ln((e*x+d)*j-d*j+e*i)*b*d*n+1/
4/e^3/j*g*i*m*ln((e*x+d)*j-d*j+e*i)*b*d^3*n+1/8/e^2/j^2*g*i^2*m*ln((e*x+d)*
j-d*j+e*i)*b*d^2*n-1/24*I/e*Pi*x^3*b*d*g*n*csgn(I*h*(j*x+i)^m)^3+1/16*I/e^2
*Pi*x^2*b*d^2*g*n*csgn(I*h*(j*x+i)^m)^3-1/8*I/e^3*Pi*x*b*d^3*g*n*csgn(I*h*(
```

```
j*x+i)^m)^3+1/32*I*Pi*x^4*b*g*n*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i
)^m)-5/24*b*d*g*i^2*m*n*x/e/j^2-5/24*b*d^2*g*i*m*n*x/e^2/j+1/12*b*d*g*i*m*n
*x^2/e/j+1/4*ln(c)*x^4*b*f+1/4*ln(h)*x^4*a*g-1/16*ln(c)*x^4*b*g*m-1/16*ln(h
)*x^4*b*g*n+1/4*ln(c)*ln(h)*x^4*b*g+1/4/j^4*b*g*i^4*m*n*dilog(((j*x+i)*e+d*
j-e*i)/(d*j-e*i))-1/16*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^
n)*x^4*g*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)+1/8*I/e^3*Pi*x*b*d
^3*g*n*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2+1/24*I/e*Pi*x^3*b*d*g*n*csgn(I*(j*x+
i)^m)*csgn(I*h*(j*x+i)^m)^2-1/16*I/e^2*Pi*x^2*b*d^2*g*n*csgn(I*(j*x+i)^m)*c
sgn(I*h*(j*x+i)^m)^2-205/576/e^4*b*d^4*g*m*n-1/4*a*g*m/j^4*i^4*ln(j*x+i)+1/
32*I*Pi*x^4*b*g*m*csgn(I*c*(e*x+d)^n)^3+1/32*b*g*m*n*x^4-1/8*I*ln(c)*Pi*x^4
*b*g*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)+1/8*I/e^4*ln(e*x+d)*Pi
*b*d^4*g*n*csgn(I*h*(j*x+i)^m)^3+1/16*I/j^2*Pi*x^2*b*g*i^2*m*csgn(I*c*(e*x+
d)^n)^3-1/8*I*Pi*ln(h)*x^4*b*g*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)
^n)+1/8*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*g*m/j^4*i^4*ln(j*x+i)+1/16*b*Pi^2*csgn
(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*x^4*g*csgn(I*h)*csgn(I*h*(j*x+i
)^m)^2+1/16*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*x^4*g*cs
gn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2+1/16*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d
)^n)^2*x^4*g*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)+1/16*b*Pi^2*cs
gn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*x^4*g*csgn(I*h)*csgn(I*(j*x+i)^m)*csg
n(I*h*(j*x+i)^m)-1/4/e^4*ln(e*x+d)*ln(h)*b*d^4*g*n+1/12/e*ln(h)*x^3*b*d*g*n
-1/8/e^2*ln(h)*x^2*b*d^2*g*n-1/4*b*ln(c)*g*m/j^4*i^4*ln(j*x+i)-1/8*I/j^3*Pi
*x*b*g*i^3*m*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/8*I/e^4*ln(e
*x+d)*Pi*b*d^4*g*n*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2-1/16*I/j^2*Pi*x^2*b*g*i^
2*m*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/24*I/j*Pi*x^3*b*g*i*m*csgn(I*(e*x+d)^
n)*csgn(I*c*(e*x+d)^n)^2-1/24*I/e*Pi*x^3*b*d*g*n*csgn(I*h)*csgn(I*(j*x+i)^m
)*csgn(I*h*(j*x+i)^m)+1/16*I/e^2*Pi*x^2*b*d^2*g*n*csgn(I*h)*csgn(I*(j*x+i)^
m)*csgn(I*h*(j*x+i)^m)-1/8*I/e^3*Pi*x*b*d^3*g*n*csgn(I*h)*csgn(I*(j*x+i)^m)
*csgn(I*h*(j*x+i)^m)+1/12/e*x^3*b*d*f*n-1/8/e^2*x^2*b*d^2*f*n+1/12/j*x^3*a*
g*i*m-1/8/j^2*x^2*a*g*i^2*m-1/4/e^4*ln(e*x+d)*b*d^4*f*n+1/4*b*ln(c)*g*x^4*l
n((j*x+i)^m)-1/16*I/j^2*Pi*x^2*b*g*i^2*m*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)
^n)^2+1/24*I/e*Pi*x^3*b*d*g*n*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2-1/16*I/e^2*Pi
*x^2*b*d^2*g*n*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2+1/12/e*n*b*g*ln((j*x+i)^m)*x
^3*d-1/8/e^2*n*b*g*ln((j*x+i)^m)*x^2*d^2+1/4/e^3*n*b*g*ln((j*x+i)^m)*x*d^3-
1/4/e^4*n*b*g*ln((j*x+i)^m)*d^4*ln(e*x+d)+1/16*b*d^4*g*m*n*ln(e*x+d)/e^4+1/
8*b*d^2*g*i^2*m*n*ln(e*x+d)/e^2/j^2+1/12*b*d^3*g*i*m*n*ln(e*x+d)/e^3/j-1/16
*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*x^4*g*csgn(I*h*(j*x
+i)^m)^3-1/16*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x^4*g*csgn(I*h)*csgn(I
*h*(j*x+i)^m)^2-1/16*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x^4*g*csgn(I*(j
*x+i)^m)*csgn(I*h*(j*x+i)^m)^2-1/16*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+
d)^n)^2*x^4*g*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2+1/4/e^3*ln(h)*x*b*d^3*g*n+1/1
2/j*ln(c)*x^3*b*g*i*m-1/8/j^2*ln(c)*x^2*b*g*i^2*m+1/4/j^3*ln(c)*x*b*g*i^3*m
-1/32*I*Pi*x^4*b*g*m*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/8*I*ln(c)*Pi*x^4*b*g
*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2-1/32*I*Pi*x^4*b*g*n*csgn(I*h)*csgn(I*h*(j*
x+i)^m)^2-1/8*I*Pi*x^4*b*f*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-
7/144*b*g*i*m*n*x^3/j+1/8*I/e^4*ln(e*x+d)*Pi*b*d^4*g*n*csgn(I*h)*csgn(I*(j*
x+i)^m)*csgn(I*h*(j*x+i)^m)+1/16*I/j^2*Pi*x^2*b*g*i^2*m*csgn(I*c)*csgn(I*(e
*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/24*I/j*Pi*x^3*b*g*i*m*csgn(I*c)*csgn(I*(e*x+
d)^n)*csgn(I*c*(e*x+d)^n)-1/8*I*Pi*ln(h)*x^4*b*g*csgn(I*c*(e*x+d)^n)^3+1/32
*I*Pi*x^4*b*g*m*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/24*I/j*Pi
*x^3*b*g*i*m*csgn(I*c*(e*x+d)^n)^3-1/8*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*c
sgn(I*c*(e*x+d)^n)*g*x^4*ln((j*x+i)^m)-1/32*I*Pi*x^4*b*g*n*csgn(I*(j*x+i)^m
)*csgn(I*h*(j*x+i)^m)^2-1/8*I*Pi*x^4*a*g*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I
*h*(j*x+i)^m)+1/8*I*Pi*ln(h)*x^4*b*g*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/8*I*
Pi*ln(h)*x^4*b*g*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{4}bfx^4\log\left((ex+d)^n c\right)+\frac{1}{4}agx^4\log\left(\left(jx+i\right)^m h\right)+\frac{1}{4}afx^4-\frac{1}{48}befn\left(\frac{12d^4\log(ex+d)}{e^5}+\frac{3e^3x^4-4de^2x^3+6d^2e}{e^4}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m)),x, algorithm="m
axima")
```

```
[Out] 1/4*b*f*x^4*log((e*x + d)^n*c) + 1/4*a*g*x^4*log((j*x + i)^m*h) + 1/4*a*f*x
^4 - 1/48*b*e*f*n*(12*d^4*log(e*x + d)/e^5 + (3*e^3*x^4 - 4*d*e^2*x^3 + 6*d
^2*e*x^2 - 12*d^3*x)/e^4) - 1/48*a*g*j*m*(12*i^4*log(j*x + i)/j^5 + (3*j^3*
x^4 - 4*i*j^2*x^3 + 6*i^2*j*x^2 - 12*i^3*x)/j^4) + 1/48*b*g*((12*e^4*i^4*m*
n*log(e*x + d)*log(j*x + i) + (4*e^4*i*j^3*m*x^3 - 6*e^4*i^2*j^2*m*x^2 + 12
*e^4*i^3*j*m*x - 12*e^4*i^4*m*log(j*x + i) - 3*(j^4*m - 4*j^4*log(h))*e^4*x
^4)*log((e*x + d)^n) + (12*e^4*j^4*x^4*log((e*x + d)^n) + 4*d*e^3*j^4*n*x^3
 - 6*d^2*e^2*j^4*n*x^2 + 12*d^3*e*j^4*n*x - 12*d^4*j^4*n*log(e*x + d) - 3*(
e^4*j^4*n - 4*e^4*j^4*log(c))*x^4)*log((j*x + i)^m))/(e^4*j^4) + 48*integra
te(-1/48*(6*(2*(j^4*m - 4*j^4*log(h))*e^5*log(c) - (j^4*m*n - 2*j^4*n*log(h
))*e^5)*x^5 + (d*e^4*j^4*m*n + (i*j^3*m*n + 12*i*j^3*n*log(h))*e^5 - 12*(4*
e^5*i*j^3*log(h) - (j^4*m - 4*j^4*log(h))*d*e^4)*log(c))*x^4 - 2*(e^5*i^2*j
^2*m*n + d^2*e^3*j^4*m*n + 24*d*e^4*i*j^3*log(c)*log(h))*x^3 + 6*(e^5*i^3*j
*m*n + d^3*e^2*j^4*m*n)*x^2 + 12*(e^5*i^4*m*n + d^4*e*j^4*m*n)*x + 12*(d*e^
4*i^4*m*n - d^5*j^4*m*n + (e^5*i^4*m*n - d^4*e*j^4*m*n)*x)*log(e*x + d))/(e
^5*j^4*x^2 + d*e^4*i*j^3 + (e^5*i*j^3 + d*e^4*j^4)*x), x))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^3\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)\,\left(f+g\,\ln\left(h\,{\left(i+j\,x\right)}^m\right)\right) \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a + b*log(c*(d + e*x)^n))*(f + g*log(h*(i + j*x)^m)),x)
```

```
[Out] int(x^3*(a + b*log(c*(d + e*x)^n))*(f + g*log(h*(i + j*x)^m)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(a+b*ln(c*(e*x+d)**n))*(f+g*ln(h*(j*x+i)**m)),x)
```

```
[Out] Timed out
```

3.387 $\int x^2 \left(a+b\log\left(c(d+ex)^n\right)\right)\left(f+g\log\left(h(i+jx)^m\right)\right)dx$

Optimal. Leaf size=558

$$\frac{1}{3}x^3\left(a+b\log\left(c(d+ex)^n\right)\right)\left(f+g\log\left(h(i+jx)^m\right)\right)+\frac{gi^3m\log\left(\frac{e(i+jx)}{ei-dj}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{3j^3}+\frac{gimx^2\left(a+b\log\right.}{6j}$$

```
[Out] -1/3*a*g*i^2*m*x/j^2-1/3*b*d^2*f*n*x/e^2+4/9*b*d^2*g*m*n*x/e^2+4/9*b*g*i^2*
m*n*x/j^2+1/3*b*d*g*i*m*n*x/e/j-5/36*b*d*g*m*n*x^2/e-5/36*b*g*i*m*n*x^2/j+2
/27*b*g*m*n*x^3-1/9*b*d^3*g*m*n*ln(e*x+d)/e^3-1/6*b*d^2*g*i*m*n*ln(e*x+d)/e
^2/j-1/3*b*g*i^2*m*(e*x+d)*ln(c*(e*x+d)^n)/e/j^2+1/6*g*i*m*x^2*(a+b*ln(c*(e
*x+d)^n))/j-1/9*g*m*x^3*(a+b*ln(c*(e*x+d)^n))-1/9*b*g*i^3*m*n*ln(j*x+i)/j^3
-1/6*b*d*g*i^2*m*n*ln(j*x+i)/e/j^2+1/3*g*i^3*m*(a+b*ln(c*(e*x+d)^n))*ln(e*(
j*x+i)/(-d*j+e*i))/j^3-1/3*b*d^2*g*n*(j*x+i)*ln(h*(j*x+i)^m)/e^2/j+1/6*b*d*
n*x^2*(f+g*ln(h*(j*x+i)^m))/e-1/9*b*n*x^3*(f+g*ln(h*(j*x+i)^m))+1/3*b*d^3*n
*ln(-j*(e*x+d)/(-d*j+e*i))*(f+g*ln(h*(j*x+i)^m))/e^3+1/3*x^3*(a+b*ln(c*(e*x
+d)^n))*(f+g*ln(h*(j*x+i)^m))+1/3*b*g*i^3*m*n*polylog(2,-j*(e*x+d)/(-d*j+e*
i))/j^3+1/3*b*d^3*g*m*n*polylog(2,e*(j*x+i)/(-d*j+e*i))/e^3
```

Rubi [A] time = 0.61, antiderivative size = 558, normalized size of antiderivative = 1.00, number of steps used = 29, number of rules used = 9, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.281, Rules used = {2439, 43, 2416, 2389, 2295, 2395, 2394, 2393, 2391}

$$\frac{bd^3gmn\text{PolyLog}\left(2,\frac{e(i+jx)}{ei-dj}\right)}{3e^3}+\frac{bgi^3mn\text{PolyLog}\left(2,-\frac{j(d+ex)}{ei-dj}\right)}{3j^3}+\frac{1}{3}x^3\left(a+b\log\left(c(d+ex)^n\right)\right)\left(f+g\log\left(h(i+jx)^m\right)\right)-$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]),x]
```

```
[Out] -(a*g*i^2*m*x)/(3*j^2) - (b*d^2*f*n*x)/(3*e^2) + (4*b*d^2*g*m*n*x)/(9*e^2)
+ (4*b*g*i^2*m*n*x)/(9*j^2) + (b*d*g*i*m*n*x)/(3*e*j) - (5*b*d*g*m*n*x^2)/(
36*e) - (5*b*g*i*m*n*x^2)/(36*j) + (2*b*g*m*n*x^3)/27 - (b*d^3*g*m*n*Log[d
+ e*x])/(9*e^3) - (b*d^2*g*i*m*n*Log[d + e*x])/(6*e^2*j) - (b*g*i^2*m*(d +
e*x)*Log[c*(d + e*x)^n])/(3*e*j^2) + (g*i*m*x^2*(a + b*Log[c*(d + e*x)^n]))
/(6*j) - (g*m*x^3*(a + b*Log[c*(d + e*x)^n]))/9 - (b*g*i^3*m*n*Log[i + j*x]
)/(9*j^3) - (b*d*g*i^2*m*n*Log[i + j*x])/(6*e*j^2) + (g*i^3*m*(a + b*Log[c*
(d + e*x)^n])*Log[(e*(i + j*x))/(e*i - d*j)])/(3*j^3) - (b*d^2*g*n*(i + j*x
)*Log[h*(i + j*x)^m])/(3*e^2*j) + (b*d*n*x^2*(f + g*Log[h*(i + j*x)^m]))/(6
*e) - (b*n*x^3*(f + g*Log[h*(i + j*x)^m]))/9 + (b*d^3*n*Log[-((j*(d + e*x))
/(e*i - d*j))]*(f + g*Log[h*(i + j*x)^m]))/(3*e^3) + (x^3*(a + b*Log[c*(d +
 e*x)^n])*(f + g*Log[h*(i + j*x)^m]))/3 + (b*g*i^3*m*n*PolyLog[2, -((j*(d +
 e*x))/(e*i - d*j))])/(3*j^3) + (b*d^3*g*m*n*PolyLog[2, (e*(i + j*x))/(e*i
- d*j)])/(3*e^3)
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2439

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*(x_)^(r_.), x_Symbol] :> Simp[(x^
(r + 1)*(a + b*Log[c*(d + e*x)^n])^p*(f + g*Log[h*(i + j*x)^m]))/(r + 1), x
] + (-Dist[(g*j*m)/(r + 1), Int[(x^(r + 1)*(a + b*Log[c*(d + e*x)^n])^p)/(i
 + j*x), x], x] - Dist[(b*e*n*p)/(r + 1), Int[(x^(r + 1)*(a + b*Log[c*(d +
e*x)^n])^(p - 1)*(f + g*Log[h*(i + j*x)^m]))/(d + e*x), x], x]) /; FreeQ[{a
, b, c, d, e, f, g, h, i, j, m, n}, x] && IGtQ[p, 0] && IntegerQ[r] && (EqQ
[p, 1] || GtQ[r, 0]) && NeQ[r, -1]
```

Rubi steps

$$\int x^2 \left(a + b\log\left(c(d+ex)^n\right)\right)\left(f + g\log\left(h(387+jx)^m\right)\right)dx = \frac{1}{3}x^3\left(a+b\log\left(c(d+ex)^n\right)\right)\left(f+g\log\left(h(387+jx\right.\right.$$

$$= \frac{1}{3}x^3\left(a+b\log\left(c(d+ex)^n\right)\right)\left(f+g\log\left(h(387+jx\right.\right.$$

$$= \frac{1}{3}x^3\left(a+b\log\left(c(d+ex)^n\right)\right)\left(f+g\log\left(h(387+jx\right.\right.$$

$$= -\frac{49923agmx}{j^2} - \frac{bd^2fnx}{3e^2} + \frac{129gmx^2\left(a+b\log\left(c(\right.\right.}{2j}$$

$$= -\frac{49923agmx}{j^2} - \frac{bd^2fnx}{3e^2} + \frac{129gmx^2\left(a+b\log\left(c(\right.\right.}{2j}$$

$$= -\frac{49923agmx}{j^2} - \frac{bd^2fnx}{3e^2} + \frac{4bd^2gmnx}{9e^2} + \frac{66564bg}{j^2}$$

Mathematica [A] time = 0.95, size = 492, normalized size = 0.88

$$\frac{e\left(j\left(-6gj^2x\left(bn\left(6d^2-3dex+2e^2x^2\right)-6ae^2x^2\right)\log\left(h(i+jx)^m\right)+6ae^2x\left(6fj^2x^2+gm\left(-6i^2+3ijx-2j^2x^2\right)\right)+b\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]),x]
```

```
[Out] (6*b*n*Log[d + e*x]*(-6*e^3*g*i^3*m*Log[i + j*x] + 6*g*(e^3*i^3 - d^3*j^3)*
m*Log[(e*(i + j*x))/(e*i - d*j)] + d*j*(-6*e^2*g*i^2*m - 3*d*e*g*i*j*m + 2*
d^2*j^2*(3*f - g*m) + 6*d^2*g*j^2*Log[h*(i + j*x)^m])) + e*(6*g*i*m*(6*a*e^
2*i^2 - b*(2*e^2*i^2 + 3*d*e*i*j + 6*d^2*j^2)*n)*Log[i + j*x] + 6*b*e^2*Log
[c*(d + e*x)^n]*(6*f*j^3*x^3 + g*j*m*x*(-6*i^2 + 3*i*j*x - 2*j^2*x^2) + 6*g
*i^3*m*Log[i + j*x] + 6*g*j^3*x^3*Log[h*(i + j*x)^m]) + j*(6*a*e^2*x*(6*f*j
^2*x^2 + g*m*(-6*i^2 + 3*i*j*x - 2*j^2*x^2)) + b*n*(12*d^2*j^2*(-3*f + 4*g*
m)*x + 3*d*e*(6*f*j^2*x^2 + g*m*(12*i^2 + 12*i*j*x - 5*j^2*x^2)) + e^2*x*(-
12*f*j^2*x^2 + g*m*(48*i^2 - 15*i*j*x + 8*j^2*x^2))) - 6*g*j^2*x*(-6*a*e^2*
x^2 + b*n*(6*d^2 - 3*d*e*x + 2*e^2*x^2))*Log[h*(i + j*x)^m])) + 36*b*g*(e^3
*i^3 - d^3*j^3)*m*n*PolyLog[2, (j*(d + e*x))/(-(e*i) + d*j)])/(108*e^3*j^3)
```

fricas [F] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(bfx^2\log\left((ex+d)^nc\right)+afx^2+\left(bgx^2\log\left((ex+d)^nc\right)+agx^2\right)\log\left((jx+i)^mh\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m)),x, algorithm="f
ricas")
```

```
[Out] integral(b*f*x^2*log((e*x + d)^n*c) + a*f*x^2 + (b*g*x^2*log((e*x + d)^n*c)
 + a*g*x^2)*log((j*x + i)^m*h), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(b\log\left((ex+d)^nc\right)+a\right)\left(g\log\left((jx+i)^mh\right)+f\right)x^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m)),x, algorithm="g
iac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*(g*log((j*x + i)^m*h) + f)*x^2, x)
```

maple [C] time = 1.76, size = 3680, normalized size = 6.59

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(b*ln(c*(e*x+d)^n)+a)*(f+g*ln(h*(j*x+i)^m)),x)
```

```
[Out] 1/3*b*ln(c)*g/j^3*m*i^3*ln(j*x+i)+1/6/e*ln(h)*x^2*b*d*g*n-1/3/e^2*ln(h)*x*b
*d^2*g*n+1/6/j*ln(c)*x^2*b*g*i*m-1/3/j^2*ln(c)*x*b*g*i^2*m-1/12*b*Pi^2*csgn
(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*x^3*g*csgn(I*h)*csgn(I*(j*x+i)^
m)*csgn(I*h*(j*x+i)^m)+1/12*I/j*Pi*x^2*b*g*i*m*csgn(I*(e*x+d)^n)*csgn(I*c*(
e*x+d)^n)^2-1/6*I/j^2*Pi*x*b*g*i^2*m*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/6*I/
j^2*Pi*x*b*g*i^2*m*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/18*I*Pi*x^3*b*
g*m*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/18*I*Pi*x^3*b*g*m*csgn(I*(e*x+d)^n)*c
sgn(I*c*(e*x+d)^n)^2+1/3*a*f*x^3-1/3*a*g*i^2*m*x/j^2-1/3*b*d^2/e^2*f*n*x+1/
3*b*f*x^3*ln(c)+49/108/e^3*b*d^3*g*m*n-1/6*I*Pi*b*f*x^3*csgn(I*c)*csgn(I*(e
*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/3/e^3*ln(e*x+d)*ln(h)*b*d^3*g*n-1/9*x^3*a*g*
m+1/3*ln(h)*x^3*a*g-1/12*b*Pi^2*csgn(I*c*(e*x+d)^n)^3*x^3*g*csgn(I*h*(j*x+i
)^m)^3-1/6*I*Pi*x^3*a*g*csgn(I*h*(j*x+i)^m)^3-1/12*b*Pi^2*csgn(I*c)*csgn(I*
(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*x^3*g*csgn(I*h*(j*x+i)^m)^3+1/12*b*Pi^2*csgn
(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*x^3*g*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(
I*h*(j*x+i)^m)-1/6*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*g/j^3*m*i^3*ln(j*x+i)-1/6*I
*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*g*x^3*ln((j*x+i)^m)-1
/6*I*Pi*ln(h)*x^3*b*g*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/6*b
*d/e*f*n*x^2+1/3*b*d^3/e^3*f*n*ln(e*x+d)+2/9/e^2/j*b*d^2*g*i*m*n+1/9/e/j^2*
b*d*g*i^2*m*n+1/6*I*Pi*b*f*x^3*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/6*I*Pi*b*f
*x^3*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/6*I*Pi*ln(c)*x^3*b*g*csgn(I*
(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2-1/12*I/j*Pi*x^2*b*g*i*m*csgn(I*c)*csgn(I*(
e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/6*I/j^2*Pi*x*b*g*i^2*m*csgn(I*c)*csgn(I*(e*
x+d)^n)*csgn(I*c*(e*x+d)^n)-1/18*I*Pi*x^3*b*g*n*csgn(I*(j*x+i)^m)*csgn(I*h*
(j*x+i)^m)^2+1/6*I*Pi*ln(c)*x^3*b*g*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2-1/18*I*
Pi*x^3*b*g*n*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2+1/6*I*b*Pi*csgn(I*c)*csgn(I*c*
(e*x+d)^n)^2*g*x^3*ln((j*x+i)^m)+1/6*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x
+d)^n)^2*g*x^3*ln((j*x+i)^m)-1/12*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x^
3*g*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2+1/3*a*g*x^3*ln((j*x+i)^m)-1/9/j^3*g*i^3
*m*ln((e*x+d)*j-d*j+e*i)*b*n-1/3/e^3*b*d^3*g*m*n*dilog(((e*x+d)*j-d*j+e*i)/
(-d*j+e*i))+1/6/j*x^2*a*g*i*m-1/3/j^3*b*g*i^3*m*n*ln(j*x+i)*ln(((j*x+i)*e+d
*j-e*i)/(d*j-e*i))+1/12*I/e*Pi*x^2*b*d*g*n*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2-
1/6*I/e^2*Pi*x*b*d^2*g*n*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2+1/12*I/e*Pi*x^2*b*
d*g*n*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2-1/3/e^2/j*g*i*m*ln((e*x+d)*j-
d*j+e*i)*b*d^2*n-1/12*I/j*Pi*x^2*b*g*i*m*csgn(I*c*(e*x+d)^n)^3-1/12*b*Pi^2*
csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x^3*g*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)
^2-1/12*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*x^3*g*csgn(I*h)*csgn
(I*h*(j*x+i)^m)^2-1/12*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*x^3*g
*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2-1/12*b*Pi^2*csgn(I*c*(e*x+d)^n)^3*
x^3*g*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)-1/6*I*Pi*ln(c)*x^3*b*
g*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)-1/12*I/e*Pi*x^2*b*d*g*n*c
sgn(I*h*(j*x+i)^m)^3+1/6*I/j^2*Pi*x*b*g*i^2*m*csgn(I*c*(e*x+d)^n)^3+1/18*I*
Pi*x^3*b*g*m*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/3/e^3*b*d^3*
g*m*n*ln(e*x+d)*ln(((e*x+d)*j-d*j+e*i)/(-d*j+e*i))+1/6*I*Pi*x^3*a*g*csgn(I*
h)*csgn(I*h*(j*x+i)^m)^2-1/9*b*f*n*x^3+1/6*I*Pi*ln(h)*x^3*b*g*csgn(I*c)*csg
n(I*c*(e*x+d)^n)^2+1/6*I*Pi*ln(h)*x^3*b*g*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d
)^n)^2-1/6*I*Pi*x^3*a*g*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)+1/3
```

```
*b*d*g*i*m*n*x/e/j+(1/3*g*b*x^3*ln((j*x+i)^m)+1/18*b*(-3*I*Pi*g*j^3*x^3*csg
n(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)+3*I*Pi*g*j^3*x^3*csgn(I*h)*csg
n(I*h*(j*x+i)^m)^2+3*I*Pi*g*j^3*x^3*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2
-3*I*Pi*g*j^3*x^3*csgn(I*h*(j*x+i)^m)^3+6*ln(h)*g*j^3*x^3-2*g*j^3*m*x^3+6*f
*j^3*x^3+3*g*i*j^2*m*x^2+6*g*i^3*m*ln(j*x+i)-6*g*i^2*j*m*x)/j^3)*ln((e*x+d)
^n)-1/9*n*b*g*ln((j*x+i)^m)*x^3+1/3*b*ln(c)*g*x^3*ln((j*x+i)^m)-1/3/e/j^2*l
n(e*x+d)*b*d*g*i^2*m*n-1/6/e/j^2*g*i^2*m*ln((e*x+d)*j-d*j+e*i)*b*d*n-1/6*I*
Pi*ln(c)*x^3*b*g*csgn(I*h*(j*x+i)^m)^3+1/18*I*Pi*x^3*b*g*m*csgn(I*c*(e*x+d)
^n)^3+1/18*I*Pi*x^3*b*g*n*csgn(I*h*(j*x+i)^m)^3+2/27*b*g*m*n*x^3+1/12*b*Pi^
2*csgn(I*c*(e*x+d)^n)^3*x^3*g*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2+1/12*b*Pi^2*c
sgn(I*c*(e*x+d)^n)^3*x^3*g*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2-1/6*I*Pi
*ln(h)*x^3*b*g*csgn(I*c*(e*x+d)^n)^3+1/3*ln(h)*ln(c)*x^3*b*g-1/9*ln(h)*x^3*
b*g*n-1/9*ln(c)*x^3*b*g*m-1/6*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(
e*x+d)^n)*g/j^3*m*i^3*ln(j*x+i)+1/6*I*Pi*x^3*a*g*csgn(I*(j*x+i)^m)*csgn(I*h
*(j*x+i)^m)^2-1/6*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*g*x^3*ln((j*x+i)^m)+1/3*a*g/
j^3*m*i^3*ln(j*x+i)-1/9*b*d^3*g*m*n*ln(e*x+d)/e^3+1/12*I/j*Pi*x^2*b*g*i*m*c
sgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/6*I/e^3*ln(e*x+d)*Pi*b*d^3*g*n*csgn(I*h)*c
sgn(I*h*(j*x+i)^m)^2+1/6*I/e^3*ln(e*x+d)*Pi*b*d^3*g*n*csgn(I*(j*x+i)^m)*csg
n(I*h*(j*x+i)^m)^2-1/6*I*Pi*b*f*x^3*csgn(I*c*(e*x+d)^n)^3-1/6*b*d^2*g*i*m*n
*ln(e*x+d)/e^2/j-1/6*I/e^3*ln(e*x+d)*Pi*b*d^3*g*n*csgn(I*h*(j*x+i)^m)^3-1/3
/j^3*b*g*i^3*m*n*dilog(((j*x+i)*e+d*j-e*i)/(d*j-e*i))+4/9*b*d^2*g*m*n*x/e^2
+4/9*b*g*i^2*m*n*x/j^2-5/36*b*d*g*m*n*x^2/e-5/36*b*g*i*m*n*x^2/j+1/6*I/e^2*
Pi*x*b*d^2*g*n*csgn(I*h*(j*x+i)^m)^3+1/18*I*Pi*x^3*b*g*n*csgn(I*h)*csgn(I*(
j*x+i)^m)*csgn(I*h*(j*x+i)^m)+1/12*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(
I*c*(e*x+d)^n)*x^3*g*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2+1/12*b*Pi^2*csgn(I*c)*
csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*x^3*g*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x
+i)^m)^2+1/12*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x^3*g*csgn(I*h)*csgn(I
*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)-1/12*I/e*Pi*x^2*b*d*g*n*csgn(I*h)*csgn(I*(j
*x+i)^m)*csgn(I*h*(j*x+i)^m)+1/6*I/e^2*Pi*x*b*d^2*g*n*csgn(I*h)*csgn(I*(j*x
+i)^m)*csgn(I*h*(j*x+i)^m)-1/6*I/e^3*ln(e*x+d)*Pi*b*d^3*g*n*csgn(I*h)*csgn(
I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)+1/6/e*n*b*g*ln((j*x+i)^m)*x^2*d-1/3/e^2*n*
b*g*ln((j*x+i)^m)*x*d^2+1/3/e^3*n*b*g*ln((j*x+i)^m)*d^3*ln(e*x+d)+1/12*b*Pi
^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x^3*g*csgn(I*h*(j*x+i)^m)^3+1/12*b*Pi^2*
csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*x^3*g*csgn(I*h*(j*x+i)^m)^3-1/6*I/e
^2*Pi*x*b*d^2*g*n*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2+1/6*I*b*Pi*csgn(I
*c)*csgn(I*c*(e*x+d)^n)^2*g/j^3*m*i^3*ln(j*x+i)+1/6*I*b*Pi*csgn(I*(e*x+d)^n
)*csgn(I*c*(e*x+d)^n)^2*g/j^3*m*i^3*ln(j*x+i)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{3}bfx^3\log\left((ex+d)^nc\right)+\frac{1}{3}agx^3\log\left(\left(jx+i\right)^mh\right)+\frac{1}{3}afx^3+\frac{1}{18}befn\left(\frac{6d^3\log(ex+d)}{e^4}-\frac{2e^2x^3-3dex^2+6d^2x}{e^3}\right)+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m)),x, algorithm="m
axima")
```

```
[Out] 1/3*b*f*x^3*log((e*x + d)^n*c) + 1/3*a*g*x^3*log((j*x + i)^m*h) + 1/3*a*f*x
^3 + 1/18*b*e*f*n*(6*d^3*log(e*x + d)/e^4 - (2*e^2*x^3 - 3*d*e*x^2 + 6*d^2*
x)/e^3) + 1/18*a*g*j*m*(6*i^3*log(j*x + i)/j^4 - (2*j^2*x^3 - 3*i*j*x^2 + 6
*i^2*x)/j^3) - 1/18*b*g*((6*e^3*i^3*m*n*log(e*x + d)*log(j*x + i) - (3*e^3*
i*j^2*m*x^2 - 6*e^3*i^2*j*m*x + 6*e^3*i^3*m*log(j*x + i) - 2*(j^3*m - 3*j^3
*log(h))*e^3*x^3)*log((e*x + d)^n) - (6*e^3*j^3*x^3*log((e*x + d)^n) + 3*d*
e^2*j^3*n*x^2 - 6*d^2*e*j^3*n*x + 6*d^3*j^3*n*log(e*x + d) - 2*(e^3*j^3*n -
 3*e^3*j^3*log(c))*x^3)*log((j*x + i)^m))/(e^3*j^3) + 18*integrate(1/18*(2*
(3*(j^3*m - 3*j^3*log(h))*e^4*log(c) - (2*j^3*m*n - 3*j^3*n*log(h))*e^4)*x^
4 + (d*e^3*j^3*m*n + (i*j^2*m*n + 6*i*j^2*n*log(h))*e^4 - 6*(3*e^4*i*j^2*lo
g(h) - (j^3*m - 3*j^3*log(h))*d*e^3)*log(c))*x^3 - 3*(e^4*i^2*j*m*n + d^2*e
```

```
^2*j^3*m*n + 6*d*e^3*i*j^2*log(c)*log(h))*x^2 - 6*(e^4*i^3*m*n + d^3*e*j^3*
m*n)*x - 6*(d*e^3*i^3*m*n - d^4*j^3*m*n + (e^4*i^3*m*n - d^3*e*j^3*m*n)*x)*
log(e*x + d))/(e^4*j^3*x^2 + d*e^3*i*j^2 + (e^4*i*j^2 + d*e^3*j^3)*x), x))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^2 \left(a + b \ln\left(c \left(d + e x\right)^n\right)\right) \left(f + g \ln\left(h \left(i + j x\right)^m\right)\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a + b*log(c*(d + e*x)^n))*(f + g*log(h*(i + j*x)^m)),x)
[Out] int(x^2*(a + b*log(c*(d + e*x)^n))*(f + g*log(h*(i + j*x)^m)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(a+b*ln(c*(e*x+d)**n))*(f+g*ln(h*(j*x+i)**m)),x)
[Out] Timed out
```

3.388 $\int x\left(a+b\log\left(c(d+ex)^n\right)\right)\left(f+g\log\left(h(i+jx)^m\right)\right)\,dx$

Optimal. Leaf size=397

$$\frac{1}{2}x^2\left(a+b\log\left(c(d+ex)^n\right)\right)\left(f+g\log\left(h(i+jx)^m\right)\right)-\frac{gi^2m\log\left(\frac{e(i+jx)}{ei-dj}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{2j^2}-\frac{1}{4}gmx^2\left(a+b\log\right.$$

```
[Out] 1/2*a*g*i*m*x/j+1/2*b*d*f*n*x/e-3/4*b*d*g*m*n*x/e-3/4*b*g*i*m*n*x/j+1/4*b*g
*m*n*x^2+1/4*b*d^2*g*m*n*ln(e*x+d)/e^2+1/2*b*g*i*m*(e*x+d)*ln(c*(e*x+d)^n)/
e/j-1/4*g*m*x^2*(a+b*ln(c*(e*x+d)^n))+1/4*b*g*i^2*m*n*ln(j*x+i)/j^2-1/2*g*i
^2*m*(a+b*ln(c*(e*x+d)^n))*ln(e*(j*x+i)/(-d*j+e*i))/j^2+1/2*b*d*g*n*(j*x+i)
*ln(h*(j*x+i)^m)/e/j-1/4*b*n*x^2*(f+g*ln(h*(j*x+i)^m))-1/2*b*d^2*n*ln(-j*(e
*x+d)/(-d*j+e*i))*(f+g*ln(h*(j*x+i)^m))/e^2+1/2*x^2*(a+b*ln(c*(e*x+d)^n))*(
f+g*ln(h*(j*x+i)^m))-1/2*b*g*i^2*m*n*polylog(2,-j*(e*x+d)/(-d*j+e*i))/j^2-1
/2*b*d^2*g*m*n*polylog(2,e*(j*x+i)/(-d*j+e*i))/e^2
```

Rubi [A] time = 0.43, antiderivative size = 397, normalized size of antiderivative = 1.00, number of steps used = 23, number of rules used = 9, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.300, Rules used = {2439, 43, 2416, 2389, 2295, 2395, 2394, 2393, 2391}

$$-\frac{bd^2gmn\text{PolyLog}\left(2,\frac{e(i+jx)}{ei-dj}\right)}{2e^2}-\frac{bgi^2mn\text{PolyLog}\left(2,-\frac{j(d+ex)}{ei-dj}\right)}{2j^2}+\frac{1}{2}x^2\left(a+b\log\left(c(d+ex)^n\right)\right)\left(f+g\log\left(h(i+jx)^m\right)\right)$$

Antiderivative was successfully verified.

```
[In] Int[x*(a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]),x]
```

```
[Out] (a*g*i*m*x)/(2*j) + (b*d*f*n*x)/(2*e) - (3*b*d*g*m*n*x)/(4*e) - (3*b*g*i*m*
n*x)/(4*j) + (b*g*m*n*x^2)/4 + (b*d^2*g*m*n*Log[d + e*x])/(4*e^2) + (b*g*i*
m*(d + e*x)*Log[c*(d + e*x)^n])/(2*e*j) - (g*m*x^2*(a + b*Log[c*(d + e*x)^n
]))/4 + (b*g*i^2*m*n*Log[i + j*x])/(4*j^2) - (g*i^2*m*(a + b*Log[c*(d + e*x
)^n])*Log[(e*(i + j*x))/(e*i - d*j)])/(2*j^2) + (b*d*g*n*(i + j*x)*Log[h*(i
 + j*x)^m])/(2*e*j) - (b*n*x^2*(f + g*Log[h*(i + j*x)^m]))/4 - (b*d^2*n*Log
[-((j*(d + e*x))/(e*i - d*j))]*(f + g*Log[h*(i + j*x)^m]))/(2*e^2) + (x^2*(
a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]))/2 - (b*g*i^2*m*n*Poly
Log[2, -((j*(d + e*x))/(e*i - d*j))])/(2*j^2) - (b*d^2*g*m*n*PolyLog[2, (e*
(i + j*x))/(e*i - d*j)])/(2*e^2)
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2439

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*(x_)^(r_.), x_Symbol] :> Simp[(x^
(r + 1)*(a + b*Log[c*(d + e*x)^n])^p*(f + g*Log[h*(i + j*x)^m]))/(r + 1), x
] + (-Dist[(g*j*m)/(r + 1), Int[(x^(r + 1)*(a + b*Log[c*(d + e*x)^n])^p)/(i
 + j*x), x], x] - Dist[(b*e*n*p)/(r + 1), Int[(x^(r + 1)*(a + b*Log[c*(d +
e*x)^n])^(p - 1)*(f + g*Log[h*(i + j*x)^m]))/(d + e*x), x], x]) /; FreeQ[{a
, b, c, d, e, f, g, h, i, j, m, n}, x] && IGtQ[p, 0] && IntegerQ[r] && (EqQ
[p, 1] || GtQ[r, 0]) && NeQ[r, -1]
```

Rubi steps

$$\int x\left(a+b\log\left(c(d+ex)^n\right)\right)\left(f+g\log\left(h(388+jx)^m\right)\right)\,dx=\frac{1}{2}x^2\left(a+b\log\left(c(d+ex)^n\right)\right)\left(f+g\log\left(h(388+jx)^{\cdot}\right.\right.$$

$$=\frac{1}{2}x^2\left(a+b\log\left(c(d+ex)^n\right)\right)\left(f+g\log\left(h(388+jx)^{\cdot}\right.\right.$$

$$=\frac{1}{2}x^2\left(a+b\log\left(c(d+ex)^n\right)\right)\left(f+g\log\left(h(388+jx)^{\cdot}\right.\right.$$

$$=\frac{194agmx}{j}+\frac{bdfnx}{2e}-\frac{1}{4}gmx^2\left(a+b\log\left(c(d+ex)^n\right)\right.$$

$$=\frac{194agmx}{j}+\frac{bdfnx}{2e}-\frac{1}{4}gmx^2\left(a+b\log\left(c(d+ex)^n\right)\right.$$

$$=\frac{194agmx}{j}+\frac{bdfnx}{2e}-\frac{3bdgmnx}{4e}-\frac{291bgmnx}{j}+\frac{1}{4}b$$

Mathematica [A] time = 0.60, size = 341, normalized size = 0.86

$$e\left(j\left(gjx(2aex+bn(2d-ex))\log\left(h(i+jx)^m\right)+aex(2fjx+gm(2i-jx))-bn(d(-2fjx+2gim+3gjmx)+ex(fjx\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]),x]
```

```
[Out] (b*n*Log[d + e*x]*(2*e^2*g*i^2*m*Log[i + j*x] + 2*g*(-(e^2*i^2) + d^2*j^2)*
m*Log[(e*(i + j*x))/(e*i - d*j)] + d*j*(-2*d*f*j + 2*e*g*i*m + d*g*j*m - 2*
d*g*j*Log[h*(i + j*x)^m])) + e*(g*i*m*(-2*a*e*i + b*(e*i + 2*d*j)*n)*Log[i
+ j*x] + j*(a*e*x*(2*f*j*x + g*m*(2*i - j*x)) - b*n*(e*x*(3*g*i*m + f*j*x -
 g*j*m*x) + d*(2*g*i*m - 2*f*j*x + 3*g*j*m*x)) + g*j*x*(2*a*e*x + b*n*(2*d
- e*x))*Log[h*(i + j*x)^m]) + b*e*Log[c*(d + e*x)^n]*(-2*g*i^2*m*Log[i + j*
x] + j*x*(2*g*i*m + 2*f*j*x - g*j*m*x + 2*g*j*x*Log[h*(i + j*x)^m]))) + 2*b
*g*(-(e^2*i^2) + d^2*j^2)*m*n*PolyLog[2, (j*(d + e*x))/(-(e*i) + d*j)])/(4*
e^2*j^2)
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(bfx\log\left((ex+d)^n c\right)+afx+\left(bgx\log\left((ex+d)^n c\right)+agx\right)\log\left((jx+i)^m h\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m)),x, algorithm="fri
cas")
```

```
[Out] integral(b*f*x*log((e*x + d)^n*c) + a*f*x + (b*g*x*log((e*x + d)^n*c) + a*g
*x)*log((j*x + i)^m*h), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(b\log\left((ex+d)^n c\right)+a\right)\left(g\log\left((jx+i)^m h\right)+f\right)x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m)),x, algorithm="gia
c")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*(g*log((j*x + i)^m*h) + f)*x, x)
```

maple [C]   time = 1.61, size = 3163, normalized size = 7.97

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(b*ln(c*(e*x+d)^n)+a)*(f+g*ln(h*(j*x+i)^m)),x)
```

```
[Out] 1/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*g/j^2*m*i^2*ln(j*x+i)-1/4*I*ln(c)*Pi*x^2*b
*g*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)-1/4*I/e*Pi*x*b*d*g*n*csg
n(I*h*(j*x+i)^m)^3-1/4*I/j*Pi*x*b*g*i*m*csgn(I*c*(e*x+d)^n)^3-1/4*I*Pi*ln(h
)*x^2*b*g*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/8*I*Pi*x^2*b*g*
m*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/8*I*Pi*x^2*b*g*n*csgn(I
*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)+1/4*I/e^2*Pi*ln(e*x+d)*b*d^2*g*n*
csgn(I*h*(j*x+i)^m)^3+1/2*b*f*x^2*ln(c)+1/2*a*f*x^2+1/2*a*g*x^2*ln((j*x+i)^
m)+1/2*a*g*i*m*x/j+1/2*b*d/e*f*n*x-1/4*b*f*n*x^2-1/4*I/e*Pi*x*b*d*g*n*csgn(
I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)+1/8*b*Pi^2*csgn(I*c)*csgn(I*(e*x
+d)^n)*csgn(I*c*(e*x+d)^n)*x^2*g*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2+1/8*b*Pi^2
*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*x^2*g*csgn(I*(j*x+i)^m)*cs
gn(I*h*(j*x+i)^m)^2+1/8*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x^2*g*csgn(I
*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)+1/8*b*Pi^2*csgn(I*(e*x+d)^n)*csgn
(I*c*(e*x+d)^n)^2*x^2*g*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)-1/4
*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*g*x^2*ln((j*x+i)^m)
-1/4*n*b*g*ln((j*x+i)^m)*x^2-1/8*I*Pi*x^2*b*g*n*csgn(I*h)*csgn(I*h*(j*x+i)^
m)^2-1/4*I*Pi*x^2*a*g*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)+1/4*I
*Pi*ln(h)*x^2*b*g*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/8*I*Pi*x^2*b*g*
m*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/2*b*ln(c)*g*x^2*ln((j*x+i)^m)-1/4*I*Pi*
b*f*x^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/4*a*g*m*x^2+1/2/e
^2*b*d^2*g*m*n*ln(e*x+d)*ln(((e*x+d)*j-d*j+e*i)/(-d*j+e*i))+1/2/j^2*b*g*i^2
*m*n*dilog(((j*x+i)*e+d*j-e*i)/(d*j-e*i))+1/4*I/j*Pi*x*b*g*i*m*csgn(I*(e*x+
d)^n)*csgn(I*c*(e*x+d)^n)^2+1/4*I/e*Pi*x*b*d*g*n*csgn(I*(j*x+i)^m)*csgn(I*h
*(j*x+i)^m)^2+1/8*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x^2*g*csgn(I*h*(j*
x+i)^m)^3+1/8*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*x^2*g*csgn(I*h
*(j*x+i)^m)^3+1/8*b*Pi^2*csgn(I*c*(e*x+d)^n)^3*x^2*g*csgn(I*h)*csgn(I*h*(j*
x+i)^m)^2-1/2*b*ln(c)*g/j^2*m*i^2*ln(j*x+i)+1/2/j^2*b*g*i^2*m*n*ln(j*x+i)*l
n(((j*x+i)*e+d*j-e*i)/(d*j-e*i))-1/8*b*Pi^2*csgn(I*c*(e*x+d)^n)^3*x^2*g*csg
n(I*h*(j*x+i)^m)^3+1/8*b*Pi^2*csgn(I*c*(e*x+d)^n)^3*x^2*g*csgn(I*(j*x+i)^m)
*csgn(I*h*(j*x+i)^m)^2-1/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*g*x^2*ln((j*x+i)^m)
+1/2*ln(h)*x^2*a*g-1/8*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x^2*g*csgn(I*
(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2-1/8*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x
+d)^n)^2*x^2*g*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2-1/8*b*Pi^2*csgn(I*(e*x+d)^n)
*csgn(I*c*(e*x+d)^n)^2*x^2*g*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2-1/8*b*
Pi^2*csgn(I*c*(e*x+d)^n)^3*x^2*g*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+
i)^m)-1/4*I*Pi*x^2*a*g*csgn(I*h*(j*x+i)^m)^3-1/4*ln(h)*x^2*b*g*n+1/4*I*Pi*x
^2*a*g*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2-1/2*m*a*g*i^2/j^2*ln(j*x+i)-
1/8*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*x^2*g*csgn(I*h)*
csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)-1/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)
^n)^2*g/j^2*m*i^2*ln(j*x+i)-1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n
)^2*g/j^2*m*i^2*ln(j*x+i)+1/4*I/j*Pi*x*b*g*i*m*csgn(I*c)*csgn(I*c*(e*x+d)^n
)^2-1/8*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*x^2*g*csgn(I
*h*(j*x+i)^m)^3-1/8*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x^2*g*csgn(I*h)*
csgn(I*h*(j*x+i)^m)^2+1/2/e^2*b*d^2*g*m*n*dilog(((e*x+d)*j-d*j+e*i)/(-d*j+e
*i))+1/4/j^2*g*i^2*m*ln((e*x+d)*j-d*j+e*i)*b*n+1/2/e/j*ln(e*x+d)*b*d*g*i*m*
n+1/2/e/j*g*i*m*ln((e*x+d)*j-d*j+e*i)*b*d*n-1/4*I/e^2*Pi*ln(e*x+d)*b*d^2*g*
n*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2-1/4*I/e^2*Pi*ln(e*x+d)*b*d^2*g*n*csgn(I*(
j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2+1/4*I/e*Pi*x*b*d*g*n*csgn(I*h)*csgn(I*h*(j*
```

```
x+i)^m)^2+1/2*ln(c)*ln(h)*x^2*b*g-1/4*ln(c)*x^2*b*g*m-1/8*I*Pi*x^2*b*g*m*cs
gn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/4*I*ln(c)*Pi*x^2*b*g*csgn(I*h)*csgn
(I*h*(j*x+i)^m)^2+1/4*I*ln(c)*Pi*x^2*b*g*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)
^m)^2+1/4*I*Pi*ln(h)*x^2*b*g*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/4*I*Pi*ln(h)
*x^2*b*g*csgn(I*c*(e*x+d)^n)^3+1/8*I*Pi*x^2*b*g*m*csgn(I*c*(e*x+d)^n)^3+1/8
*I*Pi*x^2*b*g*n*csgn(I*h*(j*x+i)^m)^3+1/4*I*Pi*b*f*x^2*csgn(I*c)*csgn(I*c*(
e*x+d)^n)^2+1/4*I*Pi*b*f*x^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/4*I*
Pi*x^2*a*g*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2+1/4*b*g*m*n*x^2-1/2*b*d^2/e^2*f*
n*ln(e*x+d)-1/4*I*Pi*b*f*x^2*csgn(I*c*(e*x+d)^n)^3-1/2/e^2*n*b*g*ln((j*x+i)
^m)*d^2*ln(e*x+d)+1/2/e*n*b*g*ln((j*x+i)^m)*x*d-1/4*I*ln(c)*Pi*x^2*b*g*csgn
(I*h*(j*x+i)^m)^3-1/2/e^2*ln(h)*ln(e*x+d)*b*d^2*g*n+1/2/j*ln(c)*x*b*g*i*m+1
/2/e*ln(h)*x*b*d*g*n-1/8*I*Pi*x^2*b*g*n*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^
m)^2+1/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*g*x^2*ln((j*x+i)^m)+1/4*I*b
*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*g*x^2*ln((j*x+i)^m)+(1/2*g*b*x^
2*ln((j*x+i)^m)-1/4*b*(I*Pi*g*j^2*x^2*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*
(j*x+i)^m)-I*Pi*g*j^2*x^2*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2-I*Pi*g*j^2*x^2*cs
gn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2+I*Pi*g*j^2*x^2*csgn(I*h*(j*x+i)^m)^3-
2*ln(h)*g*j^2*x^2+g*j^2*m*x^2+2*g*i^2*m*ln(j*x+i)-2*f*j^2*x^2-2*g*i*j*m*x)/
j^2)*ln((e*x+d)^n)-5/8/e^2*b*d^2*g*m*n+1/4*b*d^2*g*m*n*ln(e*x+d)/e^2-1/4/e/
j*g*i*m*b*d*n+1/4*I/e^2*Pi*ln(e*x+d)*b*d^2*g*n*csgn(I*h)*csgn(I*(j*x+i)^m)*
csgn(I*h*(j*x+i)^m)-1/4*I/j*Pi*x*b*g*i*m*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I
*c*(e*x+d)^n)+1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*g/
j^2*m*i^2*ln(j*x+i)-3/4*b*d*g*m*n*x/e-3/4*b*g*i*m*n*x/j
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{4}befn\left(\frac{2d^2\log(ex+d)}{e^3}+\frac{ex^2-2dx}{e^2}\right)-\frac{1}{4}agjm\left(\frac{2i^2\log(jx+i)}{j^3}+\frac{jx^2-2ix}{j^2}\right)+\frac{1}{2}bfx^2\log\left((ex+d)^nc\right)+\frac{1}{2}agx^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m)),x, algorithm="max
ima")
```

```
[Out] -1/4*b*e*f*n*(2*d^2*log(e*x + d)/e^3 + (e*x^2 - 2*d*x)/e^2) - 1/4*a*g*j*m*(
2*i^2*log(j*x + i)/j^3 + (j*x^2 - 2*i*x)/j^2) + 1/2*b*f*x^2*log((e*x + d)^n
*c) + 1/2*a*g*x^2*log((j*x + i)^m*h) + 1/2*a*f*x^2 + 1/4*b*g*((2*e^2*i^2*m*
n*log(e*x + d)*log(j*x + i) + (2*e^2*i*j*m*x - 2*e^2*i^2*m*log(j*x + i) - (
j^2*m - 2*j^2*log(h))*e^2*x^2)*log((e*x + d)^n) + (2*e^2*j^2*x^2*log((e*x +
 d)^n) + 2*d*e*j^2*n*x - 2*d^2*j^2*n*log(e*x + d) - (e^2*j^2*n - 2*e^2*j^2*
log(c))*x^2)*log((j*x + i)^m))/(e^2*j^2) + 4*integrate(-1/4*(2*((j^2*m - 2*
j^2*log(h))*e^3*log(c) - (j^2*m*n - j^2*n*log(h))*e^3)*x^3 + (d*e^2*j^2*m*n
 + (i*j*m*n + 2*i*j*n*log(h))*e^3 - 2*(2*e^3*i*j*log(h) - (j^2*m - 2*j^2*lo
g(h))*d*e^2)*log(c))*x^2 + 2*(e^3*i^2*m*n + d^2*e*j^2*m*n - 2*d*e^2*i*j*log
(c)*log(h))*x + 2*(d*e^2*i^2*m*n - d^3*j^2*m*n + (e^3*i^2*m*n - d^2*e*j^2*m
*n)*x)*log(e*x + d))/(e^3*j^2*x^2 + d*e^2*i*j + (e^3*i*j + d*e^2*j^2)*x), x
))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)\,\left(f+g\,\ln\left(h\,{\left(i+j\,x\right)}^m\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a + b*log(c*(d + e*x)^n))*(f + g*log(h*(i + j*x)^m)),x)
```

```
[Out] int(x*(a + b*log(c*(d + e*x)^n))*(f + g*log(h*(i + j*x)^m)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*ln(c*(e*x+d)**n))*(f+g*ln(h*(j*x+i)**m)),x)
```

```
[Out] Timed out
```

3.389 $\int (a+b\log (c(d+ex)^n)) (f+g\log (h(i+jx)^m)) \, dx$

Optimal. Leaf size=232

$$x(a+b\log(c(d+ex)^n))(f+g\log(h(i+jx)^m))+\frac{gim\log\left(\frac{e(i+jx)}{ei-dj}\right)(a+b\log(c(d+ex)^n))}{j}-agmx-\frac{bgm(d+ex)\,\mathrm{l}}{}$$

```
[Out] -a*g*m*x-b*f*n*x+2*b*g*m*n*x-b*g*m*(e*x+d)*ln(c*(e*x+d)^n)/e+g*i*m*(a+b*ln(
c*(e*x+d)^n))*ln(e*(j*x+i)/(-d*j+e*i))/j-b*g*n*(j*x+i)*ln(h*(j*x+i)^m)/j+b*
d*n*ln(-j*(e*x+d)/(-d*j+e*i))*(f+g*ln(h*(j*x+i)^m))/e+x*(a+b*ln(c*(e*x+d)^n
))*(f+g*ln(h*(j*x+i)^m))+b*g*i*m*n*polylog(2,-j*(e*x+d)/(-d*j+e*i))/j+b*d*g
*m*n*polylog(2,e*(j*x+i)/(-d*j+e*i))/e
```

Rubi [A] time = 0.28, antiderivative size = 232, normalized size of antiderivative = 1.00, number of steps used = 17, number of rules used = 8, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.276, Rules used = {2430, 43, 2416, 2389, 2295, 2394, 2393, 2391}

$$\frac{bgimn\,\text{PolyLog}\left(2,-\frac{j(d+ex)}{ei-dj}\right)}{j}+\frac{bdgmn\,\text{PolyLog}\left(2,\frac{e(i+jx)}{ei-dj}\right)}{e}+x(a+b\log(c(d+ex)^n))(f+g\log(h(i+jx)^m))+\frac{gim}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]),x]
```

```
[Out] -(a*g*m*x) - b*f*n*x + 2*b*g*m*n*x - (b*g*m*(d + e*x)*Log[c*(d + e*x)^n])/e
 + (g*i*m*(a + b*Log[c*(d + e*x)^n])*Log[(e*(i + j*x))/(e*i - d*j)])/j - (b
*g*n*(i + j*x)*Log[h*(i + j*x)^m])/j + (b*d*n*Log[-((j*(d + e*x))/(e*i - d*
j))]*(f + g*Log[h*(i + j*x)^m]))/e + x*(a + b*Log[c*(d + e*x)^n])*(f + g*Lo
g[h*(i + j*x)^m]) + (b*g*i*m*n*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])/j
 + (b*d*g*m*n*PolyLog[2, (e*(i + j*x))/(e*i - d*j)])/e
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
```

```
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2430

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)), x_Symbol] :> Simp[x*(a + b*Log[c
*(d + e*x)^n])^p*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[g*j*m, Int[(x*(a +
 b*Log[c*(d + e*x)^n])^p)/(i + j*x), x], x] - Dist[b*e*n*p, Int[(x*(a + b*L
og[c*(d + e*x)^n])^(p - 1)*(f + g*Log[h*(i + j*x)^m]))/(d + e*x), x], x]) /
; FreeQ[{a, b, c, d, e, f, g, h, i, j, m, n}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int \left(a+b\log\left(c(d+ex)^n\right)\right)\left(f+g\log\left(h(389+jx)^m\right)\right)\,dx = x\left(a+b\log\left(c(d+ex)^n\right)\right)\left(f+g\log\left(h(389+jx)^m\right.\right.$$

$$= x\left(a+b\log\left(c(d+ex)^n\right)\right)\left(f+g\log\left(h(389+jx)^m\right.\right.$$

$$= x\left(a+b\log\left(c(d+ex)^n\right)\right)\left(f+g\log\left(h(389+jx)^m\right.\right.$$

$$= -agmx - bfnx + \frac{389gm\left(a+b\log\left(c(d+ex)^n\right)\right)\text{lo}}{j}$$

$$= -agmx - bfnx + \frac{389gm\left(a+b\log\left(c(d+ex)^n\right)\right)\text{lo}}{j}$$

$$= -agmx - bfnx + 2bgmnx - \frac{bgm(d+ex)\log\left(c(d\right.}{e}$$

Mathematica [A] time = 0.24, size = 329, normalized size = 1.42

$$\frac{aefjx + aegjx\log\left(h(i+jx)^m\right) + aegim\log(i+jx) - aegjmx + befjx\log\left(c(d+ex)^n\right) + begjx\log\left(c(d+ex)^n\right)\text{lo}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]),x]
```

```
[Out] (-(b*d*f*j*n) + b*d*g*j*m*n + a*e*f*j*x - a*e*g*j*m*x - b*e*f*j*n*x + 2*b*e
*g*j*m*n*x + b*e*f*j*x*Log[c*(d + e*x)^n] - b*e*g*j*m*x*Log[c*(d + e*x)^n]
+ a*e*g*i*m*Log[i + j*x] - b*e*g*i*m*n*Log[i + j*x] + b*d*g*j*m*n*Log[i + j
*x] + b*e*g*i*m*Log[c*(d + e*x)^n]*Log[i + j*x] - b*d*g*j*n*Log[h*(i + j*x)
^m] + a*e*g*j*x*Log[h*(i + j*x)^m] - b*e*g*j*n*x*Log[h*(i + j*x)^m] + b*e*g
*j*x*Log[c*(d + e*x)^n]*Log[h*(i + j*x)^m] + b*n*Log[d + e*x]*(-(e*g*i*m*Lo
g[i + j*x]) + g*(e*i - d*j)*m*Log[(e*(i + j*x))/(e*i - d*j)] + d*j*(f - g*m
 + g*Log[h*(i + j*x)^m])) + b*g*(e*i - d*j)*m*n*PolyLog[2, (j*(d + e*x))/(-
(e*i) + d*j)])/(e*j)
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(bf\log\left((ex+d)^n c\right)+af+\left(bg\log\left((ex+d)^n c\right)+ag\right)\log\left(\left(jx+i\right)^m h\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m)),x, algorithm="frica
s")
```

```
[Out] integral(b*f*log((e*x + d)^n*c) + a*f + (b*g*log((e*x + d)^n*c) + a*g)*log(
(j*x + i)^m*h), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(b\log\left((ex+d)^n c\right)+a\right)\left(g\log\left(\left(jx+i\right)^m h\right)+f\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m)),x, algorithm="giac"
)
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*(g*log((j*x + i)^m*h) + f), x)
```

maple [C] time = 1.20, size = 2544, normalized size = 10.97

Expression too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)*(f+g*ln(h*(j*x+i)^m)),x)
```

```
[Out] -1/j*b*g*i*m*n*ln(j*x+i)*ln(((j*x+i)*e+d*j-e*i)/(d*j-e*i))+x*a*f+1/2*I*b*Pi
*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*g*x*ln((j*x+i)^m)-1/2*I*Pi*b*g*m*c
sgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x-1/2*I*Pi*b*g*m*csgn(I*(e*x+d)^n)*csgn(I*c*
(e*x+d)^n)^2*x-1/4*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*g*csgn(I*h)*csgn(
I*h*(j*x+i)^m)^2*x-1/4*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*g*csgn(I*(j*x
+i)^m)*csgn(I*h*(j*x+i)^m)^2*x-1/4*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d
)^n)^2*g*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2*x-1/4*b*Pi^2*csgn(I*(e*x+d)^n)*csg
n(I*c*(e*x+d)^n)^2*g*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2*x-1/4*b*Pi^2*c
sgn(I*c*(e*x+d)^n)^3*g*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)*x-1/
2*I*Pi*b*g*n*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2*x-1/2*I*Pi*b*g*n*csgn(I*(j*x+i
)^m)*csgn(I*h*(j*x+i)^m)^2*x+1/2*I*ln(c)*Pi*b*g*csgn(I*h)*csgn(I*h*(j*x+i)^
m)^2*x-1/2*I/e*ln(e*x+d)*Pi*b*d*g*n*csgn(I*h*(j*x+i)^m)^3+1/4*b*Pi^2*csgn(I
*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*g*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2
*x+1/4*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*g*csgn(I*(j*x
+i)^m)*csgn(I*h*(j*x+i)^m)^2*x+1/4*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*g
*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)*x-1/2*I*Pi*ln(h)*b*g*csgn(
I*c*(e*x+d)^n)^3*x+1/2*I*Pi*a*g*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2*x+1/2*I*Pi*
a*g*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2*x+ln(c)*b*f*x+ln(h)*a*g*x-g*i*m
/j*ln((e*x+d)*j-d*j+e*i)*b*n-1/e*b*d*g*m*n*dilog(((e*x+d)*j-d*j+e*i)/(-d*j+
e*i))-1/e*ln(e*x+d)*b*d*g*m*n-1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*g*x*ln((j*x+
```

```
i)^m)-1/4*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*g*csgn(I*h
*(j*x+i)^m)^3*x+1/2*I*ln(c)*Pi*b*g*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2*
x+a*g*x*ln((j*x+i)^m)+1/2*I*Pi*ln(h)*b*g*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x-
1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*g*m/j*i*ln(j*x+i)-1/2*I*b*Pi*csgn(I*c)*csg
n(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*g*x*ln((j*x+i)^m)-1/j*b*g*i*m*n*dilog(((
j*x+i)*e+d*j-e*i)/(d*j-e*i))-1/e*b*d*g*m*n*ln(e*x+d)*ln(((e*x+d)*j-d*j+e*i)
/(-d*j+e*i))+1/2*I*Pi*b*g*m*csgn(I*c*(e*x+d)^n)^3*x+1/2*I*Pi*b*g*n*csgn(I*h
*(j*x+i)^m)^3*x+1/2*I*Pi*ln(h)*b*g*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*
x-1/2*I*Pi*a*g*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)*x-1/2*I*b*Pi
*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*g*m/j*i*ln(j*x+i)-1/2*I/e*
ln(e*x+d)*Pi*b*d*g*n*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)-1/2*I*
Pi*b*f*csgn(I*c*(e*x+d)^n)^3*x+(b*x*g*ln((j*x+i)^m)+1/2*b*(-I*Pi*g*j*x*csgn
(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)+I*Pi*g*j*x*csgn(I*h)*csgn(I*h*(
j*x+i)^m)^2+I*Pi*g*j*x*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2-I*Pi*g*j*x*c
sgn(I*h*(j*x+i)^m)^3+2*g*i*m*ln(j*x+i)+2*ln(h)*g*j*x-2*x*g*m*j+2*f*j*x)/j)*
ln((e*x+d)^n)+1/4*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*g*csgn(I*h*(j*x+i)
^m)^3*x+1/4*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*g*csgn(I*h*(j*x+
i)^m)^3*x-1/2*I*ln(c)*Pi*b*g*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m
)*x-1/2*I*Pi*ln(h)*b*g*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*x+1/
2*I*Pi*b*g*m*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*x+1/2*I*Pi*b*g
*n*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)*x+1/2*I*Pi*b*f*csgn(I*(e
*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*x+a*g*m/j*i*ln(j*x+i)+1/e*b*d*g*m*n+b*f/e*n*
d*ln(e*x+d)+1/2*I/e*ln(e*x+d)*Pi*b*d*g*n*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2+1/
2*I/e*ln(e*x+d)*Pi*b*d*g*n*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2+1/2*I*b*
Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*g*m/j*i*ln(j*x+i)-n*b*g*ln((j*x+i)^m)*x+
b*ln(c)*g*x*ln((j*x+i)^m)+2*b*g*m*n*x-ln(c)*b*g*m*x-ln(h)*b*g*n*x+ln(c)*ln(
h)*b*g*x-1/2*I*Pi*b*f*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*x+1/2
*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*g*x*ln((j*x+i)^m)+1/4*b*Pi^2*csgn(I
*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*g*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j
*x+i)^m)*x-1/2*I*ln(c)*Pi*b*g*csgn(I*h*(j*x+i)^m)^3*x+b*ln(c)*g*m/j*i*ln(j*
x+i)+1/e*ln(e*x+d)*ln(h)*b*d*g*n+1/e*n*b*g*ln((j*x+i)^m)*d*ln(e*x+d)-a*g*m*
x-b*f*n*x+1/4*b*Pi^2*csgn(I*c*(e*x+d)^n)^3*g*csgn(I*(j*x+i)^m)*csgn(I*h*(j*
x+i)^m)^2*x+1/2*I*Pi*b*f*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x+1/4*b*Pi^2*csgn(
I*c*(e*x+d)^n)^3*g*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2*x-1/2*I*Pi*a*g*csgn(I*h*
(j*x+i)^m)^3*x-1/4*b*Pi^2*csgn(I*c*(e*x+d)^n)^3*g*csgn(I*h*(j*x+i)^m)^3*x+1
/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*g*m/j*i*ln(j*x+i)-1/4*b*P
i^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*g*csgn(I*h)*csgn(I*(j*x
+i)^m)*csgn(I*h*(j*x+i)^m)*x
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-befn\left(\frac{x}{e}-\frac{d\log\left(ex+d\right)}{e^2}\right)-agjm\left(\frac{x}{j}-\frac{i\log\left(jx+i\right)}{j^2}\right)+bfx\log\left(\left(ex+d\right)^n c\right)+agx\log\left(\left(jx+i\right)^m h\right)+afx-bg\left(\frac{ei}{\ldots}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m)),x, algorithm="maxim
a")
```

```
[Out] -b*e*f*n*(x/e - d*log(e*x + d)/e^2) - a*g*j*m*(x/j - i*log(j*x + i)/j^2) +
b*f*x*log((e*x + d)^n*c) + a*g*x*log((j*x + i)^m*h) + a*f*x - b*g*((e*i*m*n
*log(e*x + d)*log(j*x + i) - (e*i*m*log(j*x + i) - (j*m - j*log(h))*e*x)*lo
g((e*x + d)^n) - (d*j*n*log(e*x + d) + e*j*x*log((e*x + d)^n) - (e*j*n - e*
j*log(c))*x)*log((j*x + i)^m))/(e*j) + integrate(-(d*e*i*log(c)*log(h) - ((
j*m - j*log(h))*e^2*log(c) - (2*j*m*n - j*n*log(h))*e^2)*x^2 + (d*e*j*m*n +
 (i*m*n - i*n*log(h))*e^2 + (e^2*i*log(h) - (j*m - j*log(h))*d*e)*log(c))*x
 + (d*e*i*m*n - d^2*j*m*n + (e^2*i*m*n - d*e*j*m*n)*x)*log(e*x + d))/(e^2*j
*x^2 + d*e*i + (e^2*i + d*e*j)*x), x))
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \left(a + b \ln\left(c \left(d + e x\right)^{n}\right)\right) \left(f + g \ln\left(h \left(i + j x\right)^{m}\right)\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))*(f + g*log(h*(i + j*x)^m)),x)
[Out] int((a + b*log(c*(d + e*x)^n))*(f + g*log(h*(i + j*x)^m)), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))*(f+g*ln(h*(j*x+i)**m)),x)
[Out] Timed out
```

3.390 $\int \frac{(a+b\log(c(d+ex)^n))(f+g\log(h(i+jx)^m))}{x}\,dx$

Optimal. Leaf size=637

$$f\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)+ag\log\left(-\frac{jx}{i}\right)\log\left(h(i+jx)^m\right)+agm\text{Li}_2\left(\frac{jx}{i}+1\right)-bg\log\left(-\frac{ex}{d}\right)\log\left(c(d+\right.$$

```
[Out] f*ln(-e*x/d)*(a+b*ln(c*(e*x+d)^n))+b*g*m*n*ln(-e*x/d)*ln(e*x+d)*ln(j*x+i)-b
*g*m*ln(-j*x/i)*(n*ln(e*x+d)-ln(c*(e*x+d)^n))*ln(j*x+i)+1/2*b*g*m*n*(ln(-e*
x/d)+ln((-d*j+e*i)/e/(j*x+i))-ln(-(-d*j+e*i)*x/d/(j*x+i)))*ln(d*(j*x+i)/i/(
e*x+d))^2-1/2*b*g*m*n*(ln(-e*x/d)-ln(-j*x/i))*(ln(e*x+d)+ln(d*(j*x+i)/i/(e*
x+d)))^2-b*g*ln(-e*x/d)*ln(c*(e*x+d)^n)*(m*ln(j*x+i)-ln(h*(j*x+i)^m))+a*g*l
n(-j*x/i)*ln(h*(j*x+i)^m)+b*f*n*polylog(2,1+e*x/d)+b*g*m*n*(ln(j*x+i)-ln(d*
(j*x+i)/i/(e*x+d)))*polylog(2,1+e*x/d)-b*g*n*(m*ln(j*x+i)-ln(h*(j*x+i)^m))*
polylog(2,1+e*x/d)+b*g*m*n*ln(d*(j*x+i)/i/(e*x+d))*polylog(2,i*(e*x+d)/d/(j
*x+i))-b*g*m*n*ln(d*(j*x+i)/i/(e*x+d))*polylog(2,j*(e*x+d)/e/(j*x+i))+a*g*m
*polylog(2,1+j*x/i)-b*g*m*(n*ln(e*x+d)-ln(c*(e*x+d)^n))*polylog(2,1+j*x/i)+
b*g*m*n*(ln(e*x+d)+ln(d*(j*x+i)/i/(e*x+d)))*polylog(2,1+j*x/i)-b*g*m*n*poly
log(3,1+e*x/d)+b*g*m*n*polylog(3,i*(e*x+d)/d/(j*x+i))-b*g*m*n*polylog(3,j*(
e*x+d)/e/(j*x+i))-b*g*m*n*polylog(3,1+j*x/i)
```

Rubi [A] time = 0.43, antiderivative size = 637, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 5, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}} = 0.156$, Rules used = {2438, 2394, 2315, 2437, 2435}

$$agm\text{PolyLog}\left(2,\frac{jx}{i}+1\right)-bgm\text{PolyLog}\left(2,\frac{jx}{i}+1\right)\left(n\log(d+ex)-\log\left(c(d+ex)^n\right)\right)+bfn\text{PolyLog}\left(2,\frac{ex}{d}+1\right.$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]))/x,x]
```

```
[Out] f*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]) + b*g*m*n*Log[-((e*x)/d)]*Log[
d + e*x]*Log[i + j*x] - b*g*m*Log[-((j*x)/i)]*(n*Log[d + e*x] - Log[c*(d +
e*x)^n])*Log[i + j*x] + (b*g*m*n*(Log[-((e*x)/d)] + Log[(e*i - d*j)/(e*(i +
 j*x))] - Log[-(((e*i - d*j)*x)/(d*(i + j*x)))])*Log[(d*(i + j*x))/(i*(d +
e*x))]^2)/2 - (b*g*m*n*(Log[-((e*x)/d)] - Log[-((j*x)/i)])*(Log[d + e*x] +
Log[(d*(i + j*x))/(i*(d + e*x))])^2)/2 - b*g*Log[-((e*x)/d)]*Log[c*(d + e*x
)^n]*(m*Log[i + j*x] - Log[h*(i + j*x)^m]) + a*g*Log[-((j*x)/i)]*Log[h*(i +
 j*x)^m] + b*f*n*PolyLog[2, 1 + (e*x)/d] + b*g*m*n*(Log[i + j*x] - Log[(d*(
i + j*x))/(i*(d + e*x))])*PolyLog[2, 1 + (e*x)/d] - b*g*n*(m*Log[i + j*x] -
 Log[h*(i + j*x)^m])*PolyLog[2, 1 + (e*x)/d] + b*g*m*n*Log[(d*(i + j*x))/(i
*(d + e*x))]*PolyLog[2, (i*(d + e*x))/(d*(i + j*x))] - b*g*m*n*Log[(d*(i +
j*x))/(i*(d + e*x))]*PolyLog[2, (j*(d + e*x))/(e*(i + j*x))] + a*g*m*PolyLo
g[2, 1 + (j*x)/i] - b*g*m*(n*Log[d + e*x] - Log[c*(d + e*x)^n])*PolyLog[2,
1 + (j*x)/i] + b*g*m*n*(Log[d + e*x] + Log[(d*(i + j*x))/(i*(d + e*x))])*Po
lyLog[2, 1 + (j*x)/i] - b*g*m*n*PolyLog[3, 1 + (e*x)/d] + b*g*m*n*PolyLog[3
, (i*(d + e*x))/(d*(i + j*x))] - b*g*m*n*PolyLog[3, (j*(d + e*x))/(e*(i + j
*x))] - b*g*m*n*PolyLog[3, 1 + (j*x)/i]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
```

```
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2435

```
Int[(Log[(a_) + (b_.)*(x_)]*Log[(c_) + (d_.)*(x_)])/(x_), x_Symbol] :> Simp
[Log[-((b*x)/a)]*Log[a + b*x]*Log[c + d*x], x] + (Simp[(1*(Log[-((b*x)/a)]
- Log[-(((b*c - a*d)*x)/(a*(c + d*x)))] + Log[(b*c - a*d)/(b*(c + d*x))])*L
og[(a*(c + d*x))/(c*(a + b*x))]^2)/2, x] - Simp[(1*(Log[-((b*x)/a)] - Log[-
((d*x)/c)])*(Log[a + b*x] + Log[(a*(c + d*x))/(c*(a + b*x))])^2)/2, x] + Si
mp[(Log[c + d*x] - Log[(a*(c + d*x))/(c*(a + b*x))])*PolyLog[2, 1 + (b*x)/a
], x] + Simp[(Log[a + b*x] + Log[(a*(c + d*x))/(c*(a + b*x))])*PolyLog[2, 1
 + (d*x)/c], x] + Simp[Log[(a*(c + d*x))/(c*(a + b*x))]*PolyLog[2, (c*(a +
b*x))/(a*(c + d*x))], x] - Simp[Log[(a*(c + d*x))/(c*(a + b*x))]*PolyLog[2,
 (d*(a + b*x))/(b*(c + d*x))], x] - Simp[PolyLog[3, 1 + (b*x)/a], x] - Simp
[PolyLog[3, 1 + (d*x)/c], x] + Simp[PolyLog[3, (c*(a + b*x))/(a*(c + d*x))]
, x] - Simp[PolyLog[3, (d*(a + b*x))/(b*(c + d*x))], x]) /; FreeQ[{a, b, c,
 d}, x] && NeQ[b*c - a*d, 0]
```

Rule 2437

```
Int[(Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*Log[(h_.)*((i_.) + (j_.)*(x_))^(m
_.)])/(x_), x_Symbol] :> Dist[m, Int[(Log[i + j*x]*Log[c*(d + e*x)^n])/x, x
], x] - Dist[m*Log[i + j*x] - Log[h*(i + j*x)^m], Int[Log[c*(d + e*x)^n]/x,
 x], x] /; FreeQ[{c, d, e, h, i, j, m, n}, x] && NeQ[e*i - d*j, 0] && NeQ[i
 + j*x, h*(i + j*x)^m]
```

Rule 2438

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*(Log[(h_.)*((i_.)
 + (j_.)*(x_))^(m_.)]*(g_.) + (f_)))/(x_), x_Symbol] :> Dist[f, Int[(a + b*
Log[c*(d + e*x)^n])/x, x], x] + Dist[g, Int[(Log[h*(i + j*x)^m]*(a + b*Log[
c*(d + e*x)^n]))/x, x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, j, m, n}, x
] && NeQ[e*i - d*j, 0]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\left(f+g\log\left(h(390+jx)^m\right)\right)}{x}\,dx = f\int \frac{a+b\log\left(c(d+ex)^n\right)}{x}\,dx + g\int \frac{\left(a+b\log\left(c(d+\right.\right.}{}$$

$$= f\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)+(ag)\int \frac{\log\left(h(\right.}{}$$

$$= f\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)+ag\log\left(-\frac{jx}{390}\right)$$

$$= f\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)-bg\log\left(-\frac{ex}{d}\right)\mathrm{lo}$$

$$= -bgm\log(390)\log(x)\left(n\log(d+ex)-\log\left(c(d+ex)^{\right.}\right.$$

$$= -bgm\log(390)\log(x)\left(n\log(d+ex)-\log\left(c(d+ex)^{\right.}\right.$$

Mathematica [A] time = 0.30, size = 605, normalized size = 0.95

$$\log(x)\left(a+b\log\left(c(d+ex)^n\right)-bn\log(d+ex)\right)\left(f+g\log\left(h(i+jx)^m\right)-gm\log(i+jx)\right)+agm\left(\log(x)\left(\log(i+jx\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]))/x,x]
```

```
[Out] Log[x]*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*(f - g*m*Log[i + j*x]
+ g*Log[h*(i + j*x)^m]) + b*n*(f - g*m*Log[i + j*x] + g*Log[h*(i + j*x)^m])
*(Log[x]*(Log[d + e*x] - Log[1 + (e*x)/d]) - PolyLog[2, -((e*x)/d)]) + a*g*
m*(Log[x]*(Log[i + j*x] - Log[1 + (j*x)/i]) - PolyLog[2, -((j*x)/i)]) + b*g
*m*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n])*(Log[x]*(Log[i + j*x] - Log[1 +
 (j*x)/i]) - PolyLog[2, -((j*x)/i)]) + b*g*m*n*(Log[-((e*x)/d)]*Log[d + e*x
]*Log[i + j*x] + (Log[(d*(i + j*x))/(i*(d + e*x))]^2*(Log[-((e*x)/d)] + Log
[(-(e*i) + d*j)/(j*(d + e*x))] - Log[(e*i*x - d*j*x)/(d*i + e*i*x)]))/2 + (
-Log[-((e*x)/d)] + Log[-((j*x)/i)])*Log[(d*(i + j*x))/(i*(d + e*x))]*Log[1
+ (j*x)/i] + ((Log[-((e*x)/d)] - Log[-((j*x)/i)])*Log[1 + (j*x)/i]*(-2*Log[
d + e*x] + Log[1 + (j*x)/i]))/2 + (Log[i + j*x] - Log[(d*(i + j*x))/(i*(d +
 e*x))])*PolyLog[2, 1 + (e*x)/d] + Log[(d*(i + j*x))/(i*(d + e*x))]*(-PolyL
og[2, (d*(i + j*x))/(i*(d + e*x))] + PolyLog[2, (e*(i + j*x))/(j*(d + e*x))
]) + (Log[d + e*x] + Log[(d*(i + j*x))/(i*(d + e*x))])*PolyLog[2, 1 + (j*x)
/i] - PolyLog[3, 1 + (e*x)/d] + PolyLog[3, (d*(i + j*x))/(i*(d + e*x))] - P
olyLog[3, (e*(i + j*x))/(j*(d + e*x))] - PolyLog[3, 1 + (j*x)/i])
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{bf\log\left((ex+d)^{n}c\right)+af+\left(bg\log\left((ex+d)^{n}c\right)+ag\right)\log\left(\left(jx+i\right)^{m}h\right)}{x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m))/x,x, algorithm="fri
cas")
```

```
[Out] integral((b*f*log((e*x + d)^n*c) + a*f + (b*g*log((e*x + d)^n*c) + a*g)*log
((j*x + i)^m*h))/x, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(b\log\left((ex+d)^{n}c\right)+a\right)\left(g\log\left(\left(jx+i\right)^{m}h\right)+f\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m))/x,x, algorithm="gia
c")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*(g*log((j*x + i)^m*h) + f)/x, x)
```

maple [F] time = 1.53, size = 0, normalized size = 0.00

$$\int\frac{\left(b\ln\left(c\left(ex+d\right)^{n}\right)+a\right)\left(g\ln\left(h\left(jx+i\right)^{m}\right)+f\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)*(f+g*ln(h*(j*x+i)^m))/x,x)
```

```
[Out] int((b*ln(c*(e*x+d)^n)+a)*(f+g*ln(h*(j*x+i)^m))/x,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$af\log(x)+\int\frac{\left(g\log(h)+f\right)b\log\left((ex+d)^{n}\right)+\left(g\log(h)+f\right)b\log(c)+ag\log(h)+\left(bg\log\left((ex+d)^{n}\right)+bg\,\mathrm{l}\cdots\right.}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m))/x,x, algorithm="max
ima")
```

```
[Out] a*f*log(x) + integrate(((g*log(h) + f)*b*log((e*x + d)^n) + (g*log(h) + f)*
b*log(c) + a*g*log(h) + (b*g*log((e*x + d)^n) + b*g*log(c) + a*g)*log((j*x
+ i)^m))/x, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)\,\left(f+g\,\ln\left(h\,{\left(i+j\,x\right)}^m\right)\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*log(c*(d + e*x)^n))*(f + g*log(h*(i + j*x)^m)))/x,x)
```

```
[Out] int(((a + b*log(c*(d + e*x)^n))*(f + g*log(h*(i + j*x)^m)))/x, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))*(f+g*ln(h*(j*x+i)**m))/x,x)
```

```
[Out] Timed out
```

3.391 $\int \frac{(a+b\log(c(d+ex)^n))(f+g\log(h(i+jx)^m))}{x^2}\,dx$

Optimal. Leaf size=270

$$-\frac{(a+b\log(c(d+ex)^n))(f+g\log(h(i+jx)^m))}{x}+\frac{gjm\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{i}-\frac{gjm\log\left(\frac{e(i+jx)}{ei-dj}\right)(a\cdots}{\cdots}$$

```
[Out] g*j*m*ln(-e*x/d)*(a+b*ln(c*(e*x+d)^n))/i-g*j*m*(a+b*ln(c*(e*x+d)^n))*ln(e*(
j*x+i)/(-d*j+e*i))/i+b*e*n*ln(-j*x/i)*(f+g*ln(h*(j*x+i)^m))/d-b*e*n*ln(-j*(
e*x+d)/(-d*j+e*i))*(f+g*ln(h*(j*x+i)^m))/d-(a+b*ln(c*(e*x+d)^n))*(f+g*ln(h*
(j*x+i)^m))/x-b*g*j*m*n*polylog(2,-j*(e*x+d)/(-d*j+e*i))/i+b*g*j*m*n*polylo
g(2,1+e*x/d)/i-b*e*g*m*n*polylog(2,e*(j*x+i)/(-d*j+e*i))/d+b*e*g*m*n*polylo
g(2,1+j*x/i)/d
```

Rubi [A] time = 0.33, antiderivative size = 270, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 9, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}} = 0.281$, Rules used = {2439, 36, 29, 31, 2416, 2394, 2315, 2393, 2391}

$$-\frac{bgjmn\text{PolyLog}\left(2,-\frac{j(d+ex)}{ei-dj}\right)}{i}+\frac{bgjmn\text{PolyLog}\left(2,\frac{ex}{d}+1\right)}{i}-\frac{begmn\text{PolyLog}\left(2,\frac{e(i+jx)}{ei-dj}\right)}{d}+\frac{begmn\text{PolyLog}\left(2,\frac{jx}{i}\cdots\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]))/x^2,x]
```

```
[Out] (g*j*m*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]))/i - (g*j*m*(a + b*Log[c*
(d + e*x)^n])*Log[(e*(i + j*x))/(e*i - d*j)])/i + (b*e*n*Log[-((j*x)/i)]*(f
 + g*Log[h*(i + j*x)^m]))/d - (b*e*n*Log[-((j*(d + e*x))/(e*i - d*j))]*(f +
 g*Log[h*(i + j*x)^m]))/d - ((a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j
*x)^m]))/x - (b*g*j*m*n*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])/i + (b*g*
j*m*n*PolyLog[2, 1 + (e*x)/d])/i - (b*e*g*m*n*PolyLog[2, (e*(i + j*x))/(e*i
 - d*j)])/d + (b*e*g*m*n*PolyLog[2, 1 + (j*x)/i])/d
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2439

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*(x_)^(r_.), x_Symbol] :> Simp[(x^
(r + 1)*(a + b*Log[c*(d + e*x)^n])^p*(f + g*Log[h*(i + j*x)^m]))/(r + 1), x
] + (-Dist[(g*j*m)/(r + 1), Int[(x^(r + 1)*(a + b*Log[c*(d + e*x)^n])^p)/(i
 + j*x), x], x] - Dist[(b*e*n*p)/(r + 1), Int[(x^(r + 1)*(a + b*Log[c*(d +
e*x)^n])^(p - 1)*(f + g*Log[h*(i + j*x)^m]))/(d + e*x), x], x]) /; FreeQ[{a
, b, c, d, e, f, g, h, i, j, m, n}, x] && IGtQ[p, 0] && IntegerQ[r] && (EqQ
[p, 1] || GtQ[r, 0]) && NeQ[r, -1]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\left(f+g\log\left(h(391+jx)^m\right)\right)}{x^2}\,dx = -\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\left(f+g\log\left(h(391+jx)^m\right)\right)}{x} +$$

$$= -\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\left(f+g\log\left(h(391+jx)^m\right)\right)}{x} +$$

$$= -\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\left(f+g\log\left(h(391+jx)^m\right)\right)}{x} +$$

$$= \frac{1}{391}gjm\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right) - \frac{1}{391}gjm$$

$$= \frac{1}{391}gjm\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right) - \frac{1}{391}gjm$$

$$= \frac{1}{391}gjm\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right) - \frac{1}{391}gjm$$

Mathematica [A] time = 0.23, size = 476, normalized size = 1.76

$$-\frac{adfi+adgi\log\left(h(i+jx)^m\right)-adgjmx\log\left(-\frac{jx}{i}\right)+adgjmx\log(i+jx)+bdfi\log\left(c(d+ex)^n\right)+bdgi\log\left(c(d\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]))/x^2,x]
```

```
[Out] -((a*d*f*i - b*e*f*i*n*x*Log[x] - a*d*g*j*m*x*Log[-((j*x)/i)] + b*e*f*i*n*x
*Log[d + e*x] - b*d*g*j*m*n*x*Log[-((e*x)/d)]*Log[d + e*x] + b*d*g*j*m*n*x*
Log[-((j*x)/i)]*Log[d + e*x] + b*d*f*i*Log[c*(d + e*x)^n] - b*d*g*j*m*x*Log
[-((j*x)/i)]*Log[c*(d + e*x)^n] + a*d*g*j*m*x*Log[i + j*x] - b*e*g*i*m*n*x*
Log[d + e*x]*Log[i + j*x] - b*d*g*j*m*n*x*Log[d + e*x]*Log[i + j*x] + b*e*g
*i*m*n*x*Log[(j*(d + e*x))/(-(e*i) + d*j)]*Log[i + j*x] + b*d*g*j*m*x*Log[c
*(d + e*x)^n]*Log[i + j*x] + b*d*g*j*m*n*x*Log[d + e*x]*Log[(e*(i + j*x))/(
e*i - d*j)] + a*d*g*i*Log[h*(i + j*x)^m] - b*e*g*i*n*x*Log[x]*Log[h*(i + j*
x)^m] + b*e*g*i*n*x*Log[d + e*x]*Log[h*(i + j*x)^m] + b*d*g*i*Log[c*(d + e*
x)^n]*Log[h*(i + j*x)^m] + b*e*g*i*m*n*x*Log[x]*Log[1 + (j*x)/i] + b*e*g*i*
m*n*x*PolyLog[2, -((j*x)/i)] + b*d*g*j*m*n*x*PolyLog[2, (j*(d + e*x))/(-(e*
i) + d*j)] - b*d*g*j*m*n*x*PolyLog[2, 1 + (e*x)/d] + b*e*g*i*m*n*x*PolyLog[
2, (e*(i + j*x))/(e*i - d*j)])/(d*i*x))
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{bf\log\left((ex+d)^nc\right)+af+\left(bg\log\left((ex+d)^nc\right)+ag\right)\log\left(\left(jx+i\right)^mh\right)}{x^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m))/x^2,x, algorithm="f
ricas")
```

```
[Out] integral((b*f*log((e*x + d)^n*c) + a*f + (b*g*log((e*x + d)^n*c) + a*g)*log
((j*x + i)^m*h))/x^2, x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m))/x^2,x, algorithm="g
iac")
```

```
[Out] Timed out
```

maple [F] time = 2.60, size = 0, normalized size = 0.00

$$\int\frac{\left(b\ln\left(c\left(ex+d\right)^n\right)+a\right)\left(g\ln\left(h\left(jx+i\right)^m\right)+f\right)}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)*(g*ln(h*(j*x+i)^m)+f)/x^2,x)
```

```
[Out] int((b*ln(c*(e*x+d)^n)+a)*(g*ln(h*(j*x+i)^m)+f)/x^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-befn\left(\frac{\log\left(ex+d\right)}{d}-\frac{\log(x)}{d}\right)-agjm\left(\frac{\log\left(jx+i\right)}{i}-\frac{\log(x)}{i}\right)+bg\int\frac{\left(\log\left((ex+d)^n\right)+\log(c)\right)\log\left(\left(jx+i\right)^m\right)}{x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m))/x^2,x, algorithm="m
axima")
```

```
[Out] -b*e*f*n*(log(e*x + d)/d - log(x)/d) - a*g*j*m*(log(j*x + i)/i - log(x)/i)
+ b*g*integrate(((log((e*x + d)^n) + log(c))*log((j*x + i)^m) + log((e*x +
d)^n)*log(h) + log(c)*log(h))/x^2, x) - b*f*log((e*x + d)^n*c)/x - a*g*log(
(j*x + i)^m*h)/x - a*f/x
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)\,\left(f+g\,\ln\left(h\,{\left(i+j\,x\right)}^m\right)\right)}{x^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*log(c*(d + e*x)^n))*(f + g*log(h*(i + j*x)^m)))/x^2,x)
```

```
[Out] int(((a + b*log(c*(d + e*x)^n))*(f + g*log(h*(i + j*x)^m)))/x^2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))*(f+g*ln(h*(j*x+i)**m))/x**2,x)
```

```
[Out] Timed out
```

3.392 $\int \frac{\left(a+b\log(c(d+ex)^n)\right)\left(f+g\log\left(h(i+jx)^m\right)\right)}{x^3}\,dx$

Optimal. Leaf size=421

$$-\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\left(f+g\log\left(h(i+jx)^m\right)\right)}{2x^2}-\frac{gj^2m\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{2i^2}+\frac{gj^2m\log\left(\frac{e(i+jx)}{ei-dj}\right)\left(\right.}{}$$

```
[Out] b*e*g*j*m*n*ln(x)/d/i-1/2*b*e*g*j*m*n*ln(e*x+d)/d/i-1/2*g*j*m*(a+b*ln(c*(e*
x+d)^n))/i/x-1/2*g*j^2*m*ln(-e*x/d)*(a+b*ln(c*(e*x+d)^n))/i^2-1/2*b*e*g*j*m
*n*ln(j*x+i)/d/i+1/2*g*j^2*m*(a+b*ln(c*(e*x+d)^n))*ln(e*(j*x+i)/(-d*j+e*i))
/i^2-1/2*b*e*n*(f+g*ln(h*(j*x+i)^m))/d/x-1/2*b*e^2*n*ln(-j*x/i)*(f+g*ln(h*(
j*x+i)^m))/d^2+1/2*b*e^2*n*ln(-j*(e*x+d)/(-d*j+e*i))*(f+g*ln(h*(j*x+i)^m))/
d^2-1/2*(a+b*ln(c*(e*x+d)^n))*(f+g*ln(h*(j*x+i)^m))/x^2+1/2*b*g*j^2*m*n*pol
ylog(2,-j*(e*x+d)/(-d*j+e*i))/i^2-1/2*b*g*j^2*m*n*polylog(2,1+e*x/d)/i^2+1/
2*b*e^2*g*m*n*polylog(2,e*(j*x+i)/(-d*j+e*i))/d^2-1/2*b*e^2*g*m*n*polylog(2
,1+j*x/i)/d^2
```

Rubi [A] time = 0.46, antiderivative size = 421, normalized size of antiderivative = 1.00, number of steps used = 23, number of rules used = 11, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.344, Rules used = {2439, 44, 2416, 2395, 36, 29, 31, 2394, 2315, 2393, 2391}

$$\frac{be^2gmn\text{PolyLog}\left(2,\frac{e(i+jx)}{ei-dj}\right)}{2d^2}-\frac{be^2gmn\text{PolyLog}\left(2,\frac{jx}{i}+1\right)}{2d^2}+\frac{bgj^2mn\text{PolyLog}\left(2,-\frac{j(d+ex)}{ei-dj}\right)}{2i^2}-\frac{bgj^2mn\text{PolyLog}\left(2,\right.}{2i^2}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]))/x^3,x]
```

```
[Out] (b*e*g*j*m*n*Log[x])/(d*i) - (b*e*g*j*m*n*Log[d + e*x])/(2*d*i) - (g*j*m*(a
 + b*Log[c*(d + e*x)^n]))/(2*i*x) - (g*j^2*m*Log[-((e*x)/d)]*(a + b*Log[c*(
d + e*x)^n]))/(2*i^2) - (b*e*g*j*m*n*Log[i + j*x])/(2*d*i) + (g*j^2*m*(a +
b*Log[c*(d + e*x)^n])*Log[(e*(i + j*x))/(e*i - d*j)])/(2*i^2) - (b*e*n*(f +
 g*Log[h*(i + j*x)^m]))/(2*d*x) - (b*e^2*n*Log[-((j*x)/i)]*(f + g*Log[h*(i
+ j*x)^m]))/(2*d^2) + (b*e^2*n*Log[-((j*(d + e*x))/(e*i - d*j))]*(f + g*Log
[h*(i + j*x)^m]))/(2*d^2) - ((a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j
*x)^m]))/(2*x^2) + (b*g*j^2*m*n*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])/(
2*i^2) - (b*g*j^2*m*n*PolyLog[2, 1 + (e*x)/d])/(2*i^2) + (b*e^2*g*m*n*PolyL
og[2, (e*(i + j*x))/(e*i - d*j)])/(2*d^2) - (b*e^2*g*m*n*PolyLog[2, 1 + (j*
x)/i])/(2*d^2)
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2439

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*(x_)^(r_.), x_Symbol] :> Simp[(x^
(r + 1)*(a + b*Log[c*(d + e*x)^n])^p*(f + g*Log[h*(i + j*x)^m]))/(r + 1), x
] + (-Dist[(g*j*m)/(r + 1), Int[(x^(r + 1)*(a + b*Log[c*(d + e*x)^n])^p)/(i
 + j*x), x], x] - Dist[(b*e*n*p)/(r + 1), Int[(x^(r + 1)*(a + b*Log[c*(d +
e*x)^n])^(p - 1)*(f + g*Log[h*(i + j*x)^m]))/(d + e*x), x], x]) /; FreeQ[{a
, b, c, d, e, f, g, h, i, j, m, n}, x] && IGtQ[p, 0] && IntegerQ[r] && (EqQ
[p, 1] || GtQ[r, 0]) && NeQ[r, -1]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\left(f+g\log\left(h(392+jx)^m\right)\right)}{x^3}\,dx = -\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\left(f+g\log\left(h(392+jx)^m\right)\right.}{2x^2}$$

$$= -\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\left(f+g\log\left(h(392+jx)^m\right)\right.}{2x^2}$$

$$= -\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\left(f+g\log\left(h(392+jx)^m\right)\right.}{2x^2}$$

$$= -\frac{gjm\left(a+b\log\left(c(d+ex)^n\right)\right)}{784x} - \frac{gj^2m\log\left(-\frac{ex}{d}\right)\left(a\right.}{30}$$

$$= -\frac{gjm\left(a+b\log\left(c(d+ex)^n\right)\right)}{784x} - \frac{gj^2m\log\left(-\frac{ex}{d}\right)\left(a\right.}{30}$$

$$= \frac{begjmn\log(x)}{392d} - \frac{begjmn\log(d+ex)}{784d} - \frac{gjm\left(a+b\right.}{}$$

Mathematica [A] time = 0.35, size = 765, normalized size = 1.82

$$-\frac{\left(a+b\left(\log\left(c(d+ex)^n\right)-n\log(d+ex)\right)\right)\left(f+g\left(\log\left(h(i+jx)^m\right)-m\log(i+jx)\right)\right)}{2x^2}+\frac{1}{2}agm\left(\frac{j^2(i+jx)}{i^3\left(1-\frac{i+jx}{i}\right)}-\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]))/x^3,x]
```

```
[Out] -1/2*(b*e^2*n*Log[x]*(f + g*(-(m*Log[i + j*x]) + Log[h*(i + j*x)^m])))/d^2
+ (b*e^2*n*Log[d + e*x]*(f + g*(-(m*Log[i + j*x]) + Log[h*(i + j*x)^m])))/(
2*d^2) - (b*n*Log[d + e*x]*(f + g*(-(m*Log[i + j*x]) + Log[h*(i + j*x)^m]))
)/(2*x^2) - ((a + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n]))*(f + g*(-(m*L
og[i + j*x]) + Log[h*(i + j*x)^m])))/(2*x^2) - (e*(b*f*n + b*g*n*(-(m*Log[i
 + j*x]) + Log[h*(i + j*x)^m])))/(2*d*x) + (a*g*m*((j^2*(i + j*x))/(i^3*(1
- (i + j*x)/i)) - ((j^2*(i + j*x)^2)/(i^4*(1 - (i + j*x)/i)^2) + (2*j^2*(i
+ j*x))/(i^3*(1 - (i + j*x)/i)))*Log[i + j*x] - (j^2*Log[1 - (i + j*x)/i])/
i^2))/2 + (b*g*m*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n])*((j^2*(i + j*x))/
(i^3*(1 - (i + j*x)/i)) - ((j^2*(i + j*x)^2)/(i^4*(1 - (i + j*x)/i)^2) + (2
*j^2*(i + j*x))/(i^3*(1 - (i + j*x)/i)))*Log[i + j*x] - (j^2*Log[1 - (i + j
*x)/i])/i^2))/2 + (b*g*m*n*(-((Log[d + e*x]*Log[i + j*x])/x^2) + j*(((e*Log
[x])/d - (e*Log[d + e*x])/d - Log[d + e*x]/x)/i - (j*(Log[-((e*x)/d)]*Log[d
 + e*x] + PolyLog[2, (d + e*x)/d]))/i^2 + (j^2*((Log[d + e*x]*Log[(e*(i + j
*x))/(e*i - d*j)])/j + PolyLog[2, (j*(d + e*x))/(-(e*i) + d*j)]/j))/i^2) +
e*(((j*Log[x])/i - (j*Log[i + j*x])/i - Log[i + j*x]/x)/d - (e*(Log[x]*(Log
[i + j*x] - Log[1 + (j*x)/i]) - PolyLog[2, -((j*x)/i)]))/d^2 + (e^2*((Log[(
j*(d + e*x))/(-(e*i) + d*j)]*Log[i + j*x])/e + PolyLog[2, (e*(i + j*x))/(e*
i - d*j)]/e))/d^2)))/2
```

fricas [F] time = 0.49, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{bf\log\left((ex+d)^n c\right)+af+\left(bg\log\left((ex+d)^n c\right)+ag\right)\log\left((jx+i)^m h\right)}{x^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m))/x^3,x, algorithm="f
ricas")
```

```
[Out] integral((b*f*log((e*x + d)^n*c) + a*f + (b*g*log((e*x + d)^n*c) + a*g)*log
((j*x + i)^m*h))/x^3, x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m))/x^3,x, algorithm="g
iac")
```

```
[Out] Timed out
```

maple [F] time = 1.59, size = 0, normalized size = 0.00

$$\int \frac{\left(b \ln \left(c \left(ex+d\right)^{n}\right)+a\right) \left(g \ln \left(h \left(jx+i\right)^{m}\right)+f\right)}{x^{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)*(g*ln(h*(j*x+i)^m)+f)/x^3,x)
```

```
[Out] int((b*ln(c*(e*x+d)^n)+a)*(g*ln(h*(j*x+i)^m)+f)/x^3,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{2}\, befn\left(\frac{e\log\left(ex+d\right)}{d^{2}}-\frac{e\log(x)}{d^{2}}-\frac{1}{dx}\right)+\frac{1}{2}\, agjm\left(\frac{j\log\left(jx+i\right)}{i^{2}}-\frac{j\log(x)}{i^{2}}-\frac{1}{ix}\right)+bg\int\frac{\left(\log\left(\left(ex+d\right)^{n}\right)+\log(c)\right)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m))/x^3,x, algorithm="m
axima")
```

```
[Out] 1/2*b*e*f*n*(e*log(e*x + d)/d^2 - e*log(x)/d^2 - 1/(d*x)) + 1/2*a*g*j*m*(j*
log(j*x + i)/i^2 - j*log(x)/i^2 - 1/(i*x)) + b*g*integrate(((log((e*x + d)^
n) + log(c))*log((j*x + i)^m) + log((e*x + d)^n)*log(h) + log(c)*log(h))/x^
3, x) - 1/2*b*f*log((e*x + d)^n*c)/x^2 - 1/2*a*g*log((j*x + i)^m*h)/x^2 - 1
/2*a*f/x^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)\,\left(f+g\,\ln\left(h\,{\left(i+j\,x\right)}^m\right)\right)}{x^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*log(c*(d + e*x)^n))*(f + g*log(h*(i + j*x)^m)))/x^3,x)
```

```
[Out] int(((a + b*log(c*(d + e*x)^n))*(f + g*log(h*(i + j*x)^m)))/x^3, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))*(f+g*ln(h*(j*x+i)**m))/x**3,x)
```

```
[Out] Timed out
```

3.393 $\int x\left(a+b\log\left(c(d+ex)^n\right)\right)^2\left(f+g\log\left(h(i+jx)^m\right)\right)$

Optimal. Leaf size=1210

$$-\frac{1}{4}gmn^2x^2b^2+\frac{fn^2(d+ex)^2b^2}{4e^2}-\frac{gmn^2(d+ex)^2b^2}{8e^2}+\frac{d^2fn^2\log^2(d+ex)b^2}{2e^2}-\frac{2dfn^2xb^2}{e}+\frac{15dgmn^2xb^2}{4e}+\frac{7gimn^2x}{4j}$$

```
[Out] -2*a*b*d*g*m*n*x/e-3/2*a*b*g*i*m*n*x/j+1/2*b^2*d^2*f*n^2*ln(e*x+d)^2/e^2+1/
4*b*g*m*n*x^2*(a+b*ln(c*(e*x+d)^n))-1/2*b*f*n*(e*x+d)^2*(a+b*ln(c*(e*x+d)^n
))/e^2+1/2*d*g*m*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^2/e^2+1/2*d^2*g*m*(a+b*ln(c*
(e*x+d)^n))^2*ln(e*(j*x+i)/(-d*j+e*i))/e^2-1/2*g*i^2*m*(a+b*ln(c*(e*x+d)^n)
)^2*ln(e*(j*x+i)/(-d*j+e*i))/j^2-1/2*b*g*n*x^2*(a+b*ln(c*(e*x+d)^n))*ln(h*(
j*x+i)^m)+1/2*x^2*(a+b*ln(c*(e*x+d)^n))^2*(f+g*ln(h*(j*x+i)^m))+b*d*g*i*m*n
*(a+b*ln(c*(e*x+d)^n))*ln(e*(j*x+i)/(-d*j+e*i))/e/j+15/4*b^2*d*g*m*n^2*x/e+
7/4*b^2*g*i*m*n^2*x/j+1/2*b^2*g*i^2*m*n^2*polylog(2,-j*(e*x+d)/(-d*j+e*i))/
j^2+3/2*b^2*d^2*g*m*n^2*polylog(2,e*(j*x+i)/(-d*j+e*i))/e^2-1/4*b^2*g*m*n^2
*x^2+1/4*b^2*f*n^2*(e*x+d)^2/e^2-1/4*g*m*(e*x+d)^2*(a+b*ln(c*(e*x+d)^n))^2/
e^2+1/4*b^2*g*n^2*x^2*ln(h*(j*x+i)^m)-1/2*d^2*g*(a+b*ln(c*(e*x+d)^n))^2*ln(
h*(j*x+i)^m)/e^2-2*b^2*d*g*m*n*(e*x+d)*ln(c*(e*x+d)^n)/e^2+1/2*b*g*i^2*m*n*
(a+b*ln(c*(e*x+d)^n))*ln(e*(j*x+i)/(-d*j+e*i))/j^2-3/2*b^2*d*g*n^2*(j*x+i)*
ln(h*(j*x+i)^m)/e/j+b*d*g*n*x*(a+b*ln(c*(e*x+d)^n))*ln(h*(j*x+i)^m)/e+b*d^2
*g*m*n*(a+b*ln(c*(e*x+d)^n))*polylog(2,-j*(e*x+d)/(-d*j+e*i))/e^2-b*g*i^2*m
*n*(a+b*ln(c*(e*x+d)^n))*polylog(2,-j*(e*x+d)/(-d*j+e*i))/j^2-1/4*b^2*d^2*g
*m*n^2*ln(e*x+d)/e^2+2*b*d*f*n*(e*x+d)*(a+b*ln(c*(e*x+d)^n))/e^2+1/4*b*g*m*
n*(e*x+d)^2*(a+b*ln(c*(e*x+d)^n))/e^2+1/2*g*i*m*(e*x+d)*(a+b*ln(c*(e*x+d)^n
))^2/e/j-1/4*b^2*g*i^2*m*n^2*ln(j*x+i)/j^2+3/2*b^2*d^2*g*n^2*ln(-j*(e*x+d)/
(-d*j+e*i))*ln(h*(j*x+i)^m)/e^2-b*d^2*f*n*ln(e*x+d)*(a+b*ln(c*(e*x+d)^n))/e
^2-b^2*d^2*g*m*n^2*polylog(3,-j*(e*x+d)/(-d*j+e*i))/e^2+b^2*g*i^2*m*n^2*pol
ylog(3,-j*(e*x+d)/(-d*j+e*i))/j^2-3/2*b^2*g*i*m*n*(e*x+d)*ln(c*(e*x+d)^n)/e
/j+b^2*d*g*i*m*n^2*polylog(2,-j*(e*x+d)/(-d*j+e*i))/e/j-2*b^2*d*f*n^2*x/e-1
/8*b^2*g*m*n^2*(e*x+d)^2/e^2
```

Rubi [A] time = 2.79, antiderivative size = 1179, normalized size of antiderivative = 0.97, number of steps used = 73, number of rules used = 27, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.844, Rules used = {2439, 2416, 2389, 2296, 2295, 2401, 2390, 2305, 2304, 2396, 2433, 2374, 6589, 6742, 2411, 43, 2334, 12, 14, 2301, 2430, 2394, 2393, 2391, 2395, 2375, 2317}

$$-\frac{1}{4}gmn^2x^2b^2+\frac{fn^2(d+ex)^2b^2}{4e^2}-\frac{gmn^2(d+ex)^2b^2}{8e^2}+\frac{d^2fn^2\log^2(d+ex)b^2}{2e^2}-\frac{2dfn^2xb^2}{e}+\frac{15dgmn^2xb^2}{4e}+\frac{7gimn^2x}{4j}$$

Antiderivative was successfully verified.

```
[In] Int[x*(a + b*Log[c*(d + e*x)^n])^2*(f + g*Log[h*(i + j*x)^m]),x]
```

```
[Out] (-2*a*b*d*g*m*n*x)/e - (3*a*b*g*i*m*n*x)/(2*j) - (2*b^2*d*f*n^2*x)/e + (15*
b^2*d*g*m*n^2*x)/(4*e) + (7*b^2*g*i*m*n^2*x)/(4*j) - (b^2*g*m*n^2*x^2)/4 +
(b^2*f*n^2*(d + e*x)^2)/(4*e^2) - (b^2*g*m*n^2*(d + e*x)^2)/(8*e^2) - (b^2*
d^2*g*m*n^2*Log[d + e*x])/(4*e^2) + (b^2*d^2*f*n^2*Log[d + e*x]^2)/(2*e^2)
 - (2*b^2*d*g*m*n*(d + e*x)*Log[c*(d + e*x)^n])/e^2 - (3*b^2*g*i*m*n*(d + e*
x)*Log[c*(d + e*x)^n])/(2*e*j) + (b*g*m*n*x^2*(a + b*Log[c*(d + e*x)^n]))/4
 + (b*g*m*n*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n]))/(4*e^2) + (b*f*n*((4*d*
(d + e*x))/e^2 - (d + e*x)^2/e^2 - (2*d^2*Log[d + e*x])/e^2)*(a + b*Log[c*(
d + e*x)^n]))/2 + (d*g*m*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(2*e^2) +
(g*i*m*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(2*e*j) - (g*m*(d + e*x)^2*(
a + b*Log[c*(d + e*x)^n])^2)/(4*e^2) - (b^2*g*i^2*m*n^2*Log[i + j*x])/(4*j^
2) + (b*g*i^2*m*n*(a + b*Log[c*(d + e*x)^n])*Log[(e*(i + j*x))/(e*i - d*j)]
)/(2*j^2) + (b*d*g*i*m*n*(a + b*Log[c*(d + e*x)^n])*Log[(e*(i + j*x))/(e*i
```

```
- d*j)])/(e*j) + (d^2*g*m*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(i + j*x))/(e
*i - d*j)])/(2*e^2) - (g*i^2*m*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(i + j*x
))/(e*i - d*j)])/(2*j^2) + (b^2*g*n^2*x^2*Log[h*(i + j*x)^m])/4 - (3*b^2*d*
g*n^2*(i + j*x)*Log[h*(i + j*x)^m])/(2*e*j) + (3*b^2*d^2*g*n^2*Log[-((j*(d
+ e*x))/(e*i - d*j))]*Log[h*(i + j*x)^m])/(2*e^2) + (b*d*g*n*x*(a + b*Log[c
*(d + e*x)^n])*Log[h*(i + j*x)^m])/e - (b*g*n*x^2*(a + b*Log[c*(d + e*x)^n]
)*Log[h*(i + j*x)^m])/2 - (d^2*g*(a + b*Log[c*(d + e*x)^n])^2*Log[h*(i + j*
x)^m])/(2*e^2) + (x^2*(a + b*Log[c*(d + e*x)^n])^2*(f + g*Log[h*(i + j*x)^m
]))/2 + (b^2*g*i^2*m*n^2*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])/(2*j^2)
+ (b^2*d*g*i*m*n^2*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])/(e*j) + (b*d^2
*g*m*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])
/e^2 - (b*g*i^2*m*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((j*(d + e*x))/(
e*i - d*j))])/j^2 + (3*b^2*d^2*g*m*n^2*PolyLog[2, (e*(i + j*x))/(e*i - d*j)
])/(2*e^2) - (b^2*d^2*g*m*n^2*PolyLog[3, -((j*(d + e*x))/(e*i - d*j))])/e^2
 + (b^2*g*i^2*m*n^2*PolyLog[3, -((j*(d + e*x))/(e*i - d*j))])/j^2
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
```

```
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2334

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*(x_)^(m_.)*((d_) + (e_.)*(x_)^(r_
.))^(q_.), x_Symbol] :> With[{u = IntHide[x^m*(d + e*x^r)^q, x]}, Simp[u*(a
 + b*Log[c*x^n]), x] - Dist[b*n, Int[SimplifyIntegrand[u/x, x], x], x]] /;
FreeQ[{a, b, c, d, e, n, r}, x] && IGtQ[q, 0] && IntegerQ[m] &&  !(EqQ[q, 1
] && EqQ[m, -1])
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2375

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m
- 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2430

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)), x_Symbol] :> Simp[x*(a + b*Log[c
*(d + e*x)^n])^p*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[g*j*m, Int[(x*(a +
 b*Log[c*(d + e*x)^n])^p)/(i + j*x), x], x] - Dist[b*e*n*p, Int[(x*(a + b*L
og[c*(d + e*x)^n])^(p - 1)*(f + g*Log[h*(i + j*x)^m]))/(d + e*x), x], x]) /
; FreeQ[{a, b, c, d, e, f, g, h, i, j, m, n}, x] && IGtQ[p, 0]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
```

```
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2439

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*(x_)^(r_.), x_Symbol] :> Simp[(x^
(r + 1)*(a + b*Log[c*(d + e*x)^n])^p*(f + g*Log[h*(i + j*x)^m]))/(r + 1), x
] + (-Dist[(g*j*m)/(r + 1), Int[(x^(r + 1)*(a + b*Log[c*(d + e*x)^n])^p)/(i
 + j*x), x], x] - Dist[(b*e*n*p)/(r + 1), Int[(x^(r + 1)*(a + b*Log[c*(d +
e*x)^n])^(p - 1)*(f + g*Log[h*(i + j*x)^m]))/(d + e*x), x], x]) /; FreeQ[{a
, b, c, d, e, f, g, h, i, j, m, n}, x] && IGtQ[p, 0] && IntegerQ[r] && (EqQ
[p, 1] || GtQ[r, 0]) && NeQ[r, -1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int x\left(a+b\log\left(c(d+ex)^n\right)\right)^2\left(f+g\log\left(h(393+jx)^m\right)\right)dx=\frac{1}{2}x^2\left(a+b\log\left(c(d+ex)^n\right)\right)^2\left(f+g\log\left(h(393+jx\right.\right.$$

$$=\frac{1}{2}x^2\left(a+b\log\left(c(d+ex)^n\right)\right)^2\left(f+g\log\left(h(393+jx\right.\right.$$

$$=\frac{1}{2}x^2\left(a+b\log\left(c(d+ex)^n\right)\right)^2\left(f+g\log\left(h(393+jx\right.\right.$$

$$=-\frac{154449gm\left(a+b\log\left(c(d+ex)^n\right)\right)^2\log\left(\frac{e(393+jx)}{393e-dj}\right)}{2j^2}$$

$$=\frac{1}{2}bfn\left(\frac{4d(d+ex)}{e^2}-\frac{(d+ex)^2}{e^2}-\frac{2d^2\log(d+ex)}{e^2}\right)($$

$$=-\frac{393abgmnx}{j}+\frac{1}{2}bfn\left(\frac{4d(d+ex)}{e^2}-\frac{(d+ex)^2}{e^2}-\right.$$

$$=-\frac{393abgmnx}{j}+\frac{393b^2gmn^2x}{j}-\frac{393b^2gmn(d+ex)}{ej}$$

$$=-\frac{abdgmnx}{e}-\frac{393abgmnx}{j}-\frac{2b^2dfn^2x}{e}+\frac{393b^2gm}{j}$$

$$=-\frac{2abdgmnx}{e}-\frac{1179abgmnx}{2j}-\frac{2b^2dfn^2x}{e}+\frac{b^2dgm}{e}$$

$$=-\frac{2abdgmnx}{e}-\frac{1179abgmnx}{2j}-\frac{2b^2dfn^2x}{e}+\frac{5b^2dg}{2}$$

$$=-\frac{2abdgmnx}{e}-\frac{1179abgmnx}{2j}-\frac{2b^2dfn^2x}{e}+\frac{15b^2d}{4}$$

<u>**Mathematica**</u> [A] time = 1.37, size = 2067, normalized size = 1.71

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[x*(a + b*Log[c*(d + e*x)^n])^2*(f + g*Log[h*(i + j*x)^m]),x]
```

```
[Out] (-8*a*b*d*e*g*i*j*m*n + 4*b^2*d*e*g*i*j*m*n^2 + 8*b^2*d^2*g*j^2*m*n^2 + 4*a
^2*e^2*g*i*j*m*x + 8*a*b*d*e*f*j^2*n*x - 12*a*b*e^2*g*i*j*m*n*x - 12*a*b*d*
e*g*j^2*m*n*x - 12*b^2*d*e*f*j^2*n^2*x + 14*b^2*e^2*g*i*j*m*n^2*x + 28*b^2*
d*e*g*j^2*m*n^2*x + 4*a^2*e^2*f*j^2*x^2 - 2*a^2*e^2*g*j^2*m*x^2 - 4*a*b*e^2
```

```
*f*j^2*n*x^2 + 4*a*b*e^2*g*j^2*m*n*x^2 + 2*b^2*e^2*f*j^2*n^2*x^2 - 3*b^2*e^
2*g*j^2*m*n^2*x^2 - 8*a*b*d^2*f*j^2*n*Log[d + e*x] + 8*a*b*d*e*g*i*j*m*n*Lo
g[d + e*x] + 4*a*b*d^2*g*j^2*m*n*Log[d + e*x] + 12*b^2*d^2*f*j^2*n^2*Log[d
+ e*x] - 4*b^2*d*e*g*i*j*m*n^2*Log[d + e*x] - 16*b^2*d^2*g*j^2*m*n^2*Log[d
+ e*x] + 4*b^2*d^2*f*j^2*n^2*Log[d + e*x]^2 - 4*b^2*d*e*g*i*j*m*n^2*Log[d +
 e*x]^2 - 2*b^2*d^2*g*j^2*m*n^2*Log[d + e*x]^2 - 8*b^2*d*e*g*i*j*m*n*Log[c*
(d + e*x)^n] + 8*a*b*e^2*g*i*j*m*x*Log[c*(d + e*x)^n] + 8*b^2*d*e*f*j^2*n*x
*Log[c*(d + e*x)^n] - 12*b^2*e^2*g*i*j*m*n*x*Log[c*(d + e*x)^n] - 12*b^2*d*
e*g*j^2*m*n*x*Log[c*(d + e*x)^n] + 8*a*b*e^2*f*j^2*x^2*Log[c*(d + e*x)^n] -
 4*a*b*e^2*g*j^2*m*x^2*Log[c*(d + e*x)^n] - 4*b^2*e^2*f*j^2*n*x^2*Log[c*(d
+ e*x)^n] + 4*b^2*e^2*g*j^2*m*n*x^2*Log[c*(d + e*x)^n] - 8*b^2*d^2*f*j^2*n*
Log[d + e*x]*Log[c*(d + e*x)^n] + 8*b^2*d*e*g*i*j*m*n*Log[d + e*x]*Log[c*(d
 + e*x)^n] + 4*b^2*d^2*g*j^2*m*n*Log[d + e*x]*Log[c*(d + e*x)^n] + 4*b^2*e^
2*g*i*j*m*x*Log[c*(d + e*x)^n]^2 + 4*b^2*e^2*f*j^2*x^2*Log[c*(d + e*x)^n]^2
 - 2*b^2*e^2*g*j^2*m*x^2*Log[c*(d + e*x)^n]^2 - 4*a^2*e^2*g*i^2*m*Log[i + j
*x] + 4*a*b*e^2*g*i^2*m*n*Log[i + j*x] + 8*a*b*d*e*g*i*j*m*n*Log[i + j*x] -
 2*b^2*e^2*g*i^2*m*n^2*Log[i + j*x] - 12*b^2*d*e*g*i*j*m*n^2*Log[i + j*x] +
 8*a*b*e^2*g*i^2*m*n*Log[d + e*x]*Log[i + j*x] - 4*b^2*e^2*g*i^2*m*n^2*Log[
d + e*x]*Log[i + j*x] - 8*b^2*d*e*g*i*j*m*n^2*Log[d + e*x]*Log[i + j*x] - 4
*b^2*e^2*g*i^2*m*n^2*Log[d + e*x]^2*Log[i + j*x] - 8*a*b*e^2*g*i^2*m*Log[c*
(d + e*x)^n]*Log[i + j*x] + 4*b^2*e^2*g*i^2*m*n*Log[c*(d + e*x)^n]*Log[i +
j*x] + 8*b^2*d*e*g*i*j*m*n*Log[c*(d + e*x)^n]*Log[i + j*x] + 8*b^2*e^2*g*i^
2*m*n*Log[d + e*x]*Log[c*(d + e*x)^n]*Log[i + j*x] - 4*b^2*e^2*g*i^2*m*Log[
c*(d + e*x)^n]^2*Log[i + j*x] - 8*a*b*e^2*g*i^2*m*n*Log[d + e*x]*Log[(e*(i
+ j*x))/(e*i - d*j)] + 8*a*b*d^2*g*j^2*m*n*Log[d + e*x]*Log[(e*(i + j*x))/(
e*i - d*j)] + 4*b^2*e^2*g*i^2*m*n^2*Log[d + e*x]*Log[(e*(i + j*x))/(e*i - d
*j)] + 8*b^2*d*e*g*i*j*m*n^2*Log[d + e*x]*Log[(e*(i + j*x))/(e*i - d*j)] -
12*b^2*d^2*g*j^2*m*n^2*Log[d + e*x]*Log[(e*(i + j*x))/(e*i - d*j)] + 4*b^2*
e^2*g*i^2*m*n^2*Log[d + e*x]^2*Log[(e*(i + j*x))/(e*i - d*j)] - 4*b^2*d^2*g
*j^2*m*n^2*Log[d + e*x]^2*Log[(e*(i + j*x))/(e*i - d*j)] - 8*b^2*e^2*g*i^2*
m*n*Log[d + e*x]*Log[c*(d + e*x)^n]*Log[(e*(i + j*x))/(e*i - d*j)] + 8*b^2*
d^2*g*j^2*m*n*Log[d + e*x]*Log[c*(d + e*x)^n]*Log[(e*(i + j*x))/(e*i - d*j)
] + 8*a*b*d*e*g*j^2*n*x*Log[h*(i + j*x)^m] - 12*b^2*d*e*g*j^2*n^2*x*Log[h*(
i + j*x)^m] + 4*a^2*e^2*g*j^2*x^2*Log[h*(i + j*x)^m] - 4*a*b*e^2*g*j^2*n*x^
2*Log[h*(i + j*x)^m] + 2*b^2*e^2*g*j^2*n^2*x^2*Log[h*(i + j*x)^m] - 8*a*b*d
^2*g*j^2*n*Log[d + e*x]*Log[h*(i + j*x)^m] + 12*b^2*d^2*g*j^2*n^2*Log[d + e
*x]*Log[h*(i + j*x)^m] + 4*b^2*d^2*g*j^2*n^2*Log[d + e*x]^2*Log[h*(i + j*x)
^m] + 8*b^2*d*e*g*j^2*n*x*Log[c*(d + e*x)^n]*Log[h*(i + j*x)^m] + 8*a*b*e^2
*g*j^2*x^2*Log[c*(d + e*x)^n]*Log[h*(i + j*x)^m] - 4*b^2*e^2*g*j^2*n*x^2*Lo
g[c*(d + e*x)^n]*Log[h*(i + j*x)^m] - 8*b^2*d^2*g*j^2*n*Log[d + e*x]*Log[c*
(d + e*x)^n]*Log[h*(i + j*x)^m] + 4*b^2*e^2*g*j^2*x^2*Log[c*(d + e*x)^n]^2*
Log[h*(i + j*x)^m] - 4*b*g*(e*i - d*j)*m*n*(2*a*(e*i + d*j) - b*(e*i + 3*d*
j)*n + 2*b*(e*i + d*j)*Log[c*(d + e*x)^n])*PolyLog[2, (j*(d + e*x))/(-(e*i)
 + d*j)] + 8*b^2*g*(e^2*i^2 - d^2*j^2)*m*n^2*PolyLog[3, (j*(d + e*x))/(-(e*
i) + d*j)])/(8*e^2*j^2)
```

fricas [F] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(b^2 fx \log\left((ex+d)^n c\right)^2 + 2\,abfx\log\left((ex+d)^n c\right) + a^2 fx + \left(b^2 gx\log\left((ex+d)^n c\right)^2 + 2\,abgx\log\left((ex\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))^2*(f+g*log(h*(j*x+i)^m)),x, algorithm="f
ricas")
```

```
[Out] integral(b^2*f*x*log((e*x + d)^n*c)^2 + 2*a*b*f*x*log((e*x + d)^n*c) + a^2*
f*x + (b^2*g*x*log((e*x + d)^n*c)^2 + 2*a*b*g*x*log((e*x + d)^n*c) + a^2*g*
x)*log((j*x + i)^m*h), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b\log\left((ex+d)^{n}c\right)+a\right)^{2}\left(g\log\left(\left(jx+i\right)^{m}h\right)+f\right)x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))^2*(f+g*log(h*(j*x+i)^m)),x, algorithm="g
iac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2*(g*log((j*x + i)^m*h) + f)*x, x)
```

maple [F] time = 8.62, size = 0, normalized size = 0.00

$$\int \left(b\ln\left(c\left(ex+d\right)^{n}\right)+a\right)^{2}\left(g\ln\left(h\left(jx+i\right)^{m}\right)+f\right)x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(b*ln(c*(e*x+d)^n)+a)^2*(g*ln(h*(j*x+i)^m)+f),x)
```

```
[Out] int(x*(b*ln(c*(e*x+d)^n)+a)^2*(g*ln(h*(j*x+i)^m)+f),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))^2*(f+g*log(h*(j*x+i)^m)),x, algorithm="m
axima")
```

```
[Out] 1/2*b^2*f*x^2*log((e*x + d)^n*c)^2 - 1/2*a*b*e*f*n*(2*d^2*log(e*x + d)/e^3
+ (e*x^2 - 2*d*x)/e^2) - 1/4*a^2*g*j*m*(2*i^2*log(j*x + i)/j^3 + (j*x^2 - 2
*i*x)/j^2) + a*b*f*x^2*log((e*x + d)^n*c) + 1/2*a^2*g*x^2*log((j*x + i)^m*h
) + 1/2*a^2*f*x^2 - 1/4*(2*e*n*(2*d^2*log(e*x + d)/e^3 + (e*x^2 - 2*d*x)/e^
2)*log((e*x + d)^n*c) - (e^2*x^2 + 2*d^2*log(e*x + d)^2 - 6*d*e*x + 6*d^2*l
og(e*x + d))*n^2/e^2)*b^2*f + 1/4*((2*b^2*e^2*g*i*j*m*x - 2*b^2*e^2*g*i^2*m
*log(j*x + i) - (j^2*m - 2*j^2*log(h))*b^2*e^2*g*x^2)*log((e*x + d)^n)^2 +
(2*b^2*d^2*g*j^2*n^2*log(e*x + d)^2 + 2*b^2*e^2*g*j^2*x^2*log((e*x + d)^n)^
2 - (2*(e^2*g*j^2*n - 2*e^2*g*j^2*log(c))*a*b - (e^2*g*j^2*n^2 - 2*e^2*g*j^
2*n*log(c) + 2*e^2*g*j^2*log(c)^2)*b^2)*x^2 + 2*(2*a*b*d*e*g*j^2*n - (3*d*e
*g*j^2*n^2 - 2*d*e*g*j^2*n*log(c))*b^2)*x - 2*(2*a*b*d^2*g*j^2*n - (3*d^2*g
*j^2*n^2 - 2*d^2*g*j^2*n*log(c))*b^2)*log(e*x + d) + 2*(2*b^2*d*e*g*j^2*n*x
 - 2*b^2*d^2*g*j^2*n*log(e*x + d) + (2*a*b*e^2*g*j^2 - (e^2*g*j^2*n - 2*e^2
*g*j^2*log(c))*b^2)*x^2)*log((e*x + d)^n))*log((j*x + i)^m))/(e^2*j^2) + in
tegrate(1/4*((2*(e^3*g*j^3*m*n - 2*(j^3*m - 2*j^3*log(h))*e^3*g*log(c))*a*b
 - (e^3*g*j^3*m*n^2 - 2*e^3*g*j^3*m*n*log(c) + 2*(j^3*m - 2*j^3*log(h))*e^3
*g*log(c)^2)*b^2)*x^3 - (2*(d*e^2*g*j^3*m*n - 2*(2*e^3*g*i*j^2*log(h) - (j^
3*m - 2*j^3*log(h))*d*e^2*g)*log(c))*a*b - (5*d*e^2*g*j^3*m*n^2 - 2*d*e^2*g
*j^3*m*n*log(c) + 2*(2*e^3*g*i*j^2*log(h) - (j^3*m - 2*j^3*log(h))*d*e^2*g)
*log(c)^2)*b^2)*x^2 - 2*(b^2*d^2*e*g*j^3*m*n^2*x + b^2*d^3*g*j^3*m*n^2)*log
(e*x + d)^2 - 2*(2*(d^2*e*g*j^3*m*n - 2*d*e^2*g*i*j^2*log(c)*log(h))*a*b -
(3*d^2*e*g*j^3*m*n^2 - 2*d^2*e*g*j^3*m*n*log(c) + 2*d*e^2*g*i*j^2*log(c)^2*
log(h))*b^2)*x + 2*(2*a*b*d^3*g*j^3*m*n - (3*d^3*g*j^3*m*n^2 - 2*d^3*g*j^3*
m*n*log(c))*b^2 + (2*a*b*d^2*e*g*j^3*m*n - (3*d^2*e*g*j^3*m*n^2 - 2*d^2*e*g
*j^3*m*n*log(c))*b^2)*x)*log(e*x + d) - 2*(2*((j^3*m - 2*j^3*log(h))*a*b*e^
3*g + ((j^3*m - 2*j^3*log(h))*e^3*g*log(c) - (j^3*m*n - j^3*n*log(h))*e^3*g
)*b^2)*x^3 - (2*(2*e^3*g*i*j^2*log(h) - (j^3*m - 2*j^3*log(h))*d*e^2*g)*a*b
 - (d*e^2*g*j^3*m*n + (i*j^2*m*n + 2*i*j^2*n*log(h))*e^3*g - 2*(2*e^3*g*i*j
^2*log(h) - (j^3*m - 2*j^3*log(h))*d*e^2*g)*log(c))*b^2)*x^2 - 2*(2*a*b*d*e
^2*g*i*j^2*log(h) - (e^3*g*i^2*j*m*n + d^2*e*g*j^3*m*n - 2*d*e^2*g*i*j^2*lo
```

```
g(c)*log(h))*b^2)*x - 2*(b^2*d^2*e*g*j^3*m*n*x + b^2*d^3*g*j^3*m*n)*log(e*x
 + d) - 2*(b^2*e^3*g*i^2*j*m*n*x + b^2*e^3*g*i^3*m*n)*log(j*x + i))*log((e*
x + d)^n))/(e^3*j^3*x^2 + d*e^2*i*j^2 + (e^3*i*j^2 + d*e^2*j^3)*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x\left(a+b\,\ln\left(c\,(d+e\,x)^n\right)\right)^2\,\left(f+g\,\ln\left(h\,\left(i+j\,x\right)^m\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a + b*log(c*(d + e*x)^n))^2*(f + g*log(h*(i + j*x)^m)),x)
[Out] int(x*(a + b*log(c*(d + e*x)^n))^2*(f + g*log(h*(i + j*x)^m)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*ln(c*(e*x+d)**n))**2*(f+g*ln(h*(j*x+i)**m)),x)
[Out] Timed out
```

3.394 $\int \left(a+b\log\left(c(d+ex)^n\right)\right)^2 \left(f+g\log\left(h(i+jx)^m\right)\right)\,dx$

Optimal. Leaf size=649

$$x\left(a+b\log\left(c(d+ex)^n\right)\right)^2\left(f+g\log\left(h(i+jx)^m\right)\right)+\frac{df\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{e}-2bgnx\log\left(h(i+jx)^m\right)\left(a+b\log\right.$$

```
[Out] -2*a*b*f*n*x+4*a*b*g*m*n*x+2*b^2*f*n^2*x-6*b^2*g*m*n^2*x-2*b^2*f*n*(e*x+d)*
ln(c*(e*x+d)^n)/e+4*b^2*g*m*n*(e*x+d)*ln(c*(e*x+d)^n)/e+d*f*(a+b*ln(c*(e*x+
d)^n))^2/e-g*m*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^2/e-2*b*g*i*m*n*(a+b*ln(c*(e*x
+d)^n))*ln(e*(j*x+i)/(-d*j+e*i))/j-d*g*m*(a+b*ln(c*(e*x+d)^n))^2*ln(e*(j*x+
i)/(-d*j+e*i))/e+g*i*m*(a+b*ln(c*(e*x+d)^n))^2*ln(e*(j*x+i)/(-d*j+e*i))/j+2
*b^2*g*n^2*(j*x+i)*ln(h*(j*x+i)^m)/j-2*b^2*d*g*n^2*ln(-j*(e*x+d)/(-d*j+e*i)
)*ln(h*(j*x+i)^m)/e-2*b*g*n*x*(a+b*ln(c*(e*x+d)^n))*ln(h*(j*x+i)^m)+d*g*(a+
b*ln(c*(e*x+d)^n))^2*ln(h*(j*x+i)^m)/e+x*(a+b*ln(c*(e*x+d)^n))^2*(f+g*ln(h*
(j*x+i)^m))-2*b^2*g*i*m*n^2*polylog(2,-j*(e*x+d)/(-d*j+e*i))/j-2*b*d*g*m*n*
(a+b*ln(c*(e*x+d)^n))*polylog(2,-j*(e*x+d)/(-d*j+e*i))/e+2*b*g*i*m*n*(a+b*l
n(c*(e*x+d)^n))*polylog(2,-j*(e*x+d)/(-d*j+e*i))/j-2*b^2*d*g*m*n^2*polylog(
2,e*(j*x+i)/(-d*j+e*i))/e+2*b^2*d*g*m*n^2*polylog(3,-j*(e*x+d)/(-d*j+e*i))/
e-2*b^2*g*i*m*n^2*polylog(3,-j*(e*x+d)/(-d*j+e*i))/j
```

Rubi [A] time = 1.48, antiderivative size = 649, normalized size of antiderivative = 1.00, number of steps used = 41, number of rules used = 19, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.613, Rules used = {2430, 2416, 2389, 2296, 2295, 2396, 2433, 2374, 6589, 6742, 2411, 2346, 2301, 43, 2394, 2393, 2391, 2375, 2317}

$$-\frac{2bdgmn\text{PolyLog}\left(2,-\frac{j(d+ex)}{ei-dj}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{e}+\frac{2bgimn\text{PolyLog}\left(2,-\frac{j(d+ex)}{ei-dj}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{j}-2\ldots$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^2*(f + g*Log[h*(i + j*x)^m]),x]
```

```
[Out] -2*a*b*f*n*x + 4*a*b*g*m*n*x + 2*b^2*f*n^2*x - 6*b^2*g*m*n^2*x - (2*b^2*f*n
*(d + e*x)*Log[c*(d + e*x)^n])/e + (4*b^2*g*m*n*(d + e*x)*Log[c*(d + e*x)^n
])/e + (d*f*(a + b*Log[c*(d + e*x)^n])^2)/e - (g*m*(d + e*x)*(a + b*Log[c*(
d + e*x)^n])^2)/e - (2*b*g*i*m*n*(a + b*Log[c*(d + e*x)^n])*Log[(e*(i + j*x
))/(e*i - d*j)])/j - (d*g*m*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(i + j*x))/
(e*i - d*j)])/e + (g*i*m*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(i + j*x))/(e*
i - d*j)])/j + (2*b^2*g*n^2*(i + j*x)*Log[h*(i + j*x)^m])/j - (2*b^2*d*g*n^
2*Log[-((j*(d + e*x))/(e*i - d*j))]*Log[h*(i + j*x)^m])/e - 2*b*g*n*x*(a +
b*Log[c*(d + e*x)^n])*Log[h*(i + j*x)^m] + (d*g*(a + b*Log[c*(d + e*x)^n])^
2*Log[h*(i + j*x)^m])/e + x*(a + b*Log[c*(d + e*x)^n])^2*(f + g*Log[h*(i +
j*x)^m]) - (2*b^2*g*i*m*n^2*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])/j - (
2*b*d*g*m*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((j*(d + e*x))/(e*i - d*
j))])/e + (2*b*g*i*m*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((j*(d + e*x)
)/(e*i - d*j))])/j - (2*b^2*d*g*m*n^2*PolyLog[2, (e*(i + j*x))/(e*i - d*j)]
)/e + (2*b^2*d*g*m*n^2*PolyLog[3, -((j*(d + e*x))/(e*i - d*j))])/e - (2*b^2
*g*i*m*n^2*PolyLog[3, -((j*(d + e*x))/(e*i - d*j))])/j
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2346

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.))
/(x_), x_Symbol] :> Dist[d, Int[((d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p)/x,
 x], x] + Dist[e, Int[(d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p, x], x] /; Fre
eQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0] && GtQ[q, 0] && IntegerQ[2*q]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2375

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m
- 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
```

```
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2430

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)), x_Symbol] :> Simp[x*(a + b*Log[c
*(d + e*x)^n])^p*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[g*j*m, Int[(x*(a +
 b*Log[c*(d + e*x)^n])^p)/(i + j*x), x], x] - Dist[b*e*n*p, Int[(x*(a + b*L
og[c*(d + e*x)^n])^(p - 1)*(f + g*Log[h*(i + j*x)^m]))/(d + e*x), x], x]) /
; FreeQ[{a, b, c, d, e, f, g, h, i, j, m, n}, x] && IGtQ[p, 0]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
```

]

Rubi steps

$$\int \left(a+b\log\left(c(d+ex)^n\right)\right)^2\left(f+g\log\left(h(394+jx)^m\right)\right)dx = x\left(a+b\log\left(c(d+ex)^n\right)\right)^2\left(f+g\log\left(h(394+jx)\right.\right.$$

$$= x\left(a+b\log\left(c(d+ex)^n\right)\right)^2\left(f+g\log\left(h(394+jx)\right.\right.$$

$$= x\left(a+b\log\left(c(d+ex)^n\right)\right)^2\left(f+g\log\left(h(394+jx)\right.\right.$$

$$= \frac{394gm\left(a+b\log\left(c(d+ex)^n\right)\right)^2\log\left(\frac{e(394+jx)}{394e-dj}\right)}{j} + \ldots$$

$$= -\frac{gm(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{e} + \frac{394gm\left(\ldots\right.}{\ldots}$$

$$= -2abfnx + 2abgmnx + \frac{df\left(a+b\log\left(c(d+ex)^n\right)\ldots\right.}{e}$$

$$= -2abfnx + 2abgmnx + 2b^2fn^2x - 2b^2gmn^2x - \ldots$$

$$= -2abfnx + 2abgmnx + 2b^2fn^2x - 2b^2gmn^2x - \ldots$$

$$= -2abfnx + 4abgmnx + 2b^2fn^2x - 2b^2gmn^2x - \ldots$$

$$= -2abfnx + 4abgmnx + 2b^2fn^2x - 4b^2gmn^2x - \ldots$$

$$= -2abfnx + 4abgmnx + 2b^2fn^2x - 6b^2gmn^2x - \ldots$$

Mathematica [B] time = 0.55, size = 1355, normalized size = 2.09

$$\frac{efjxa^2 - egjmxa^2 + egim\log(i+jx)a^2 + egjx\log\left(h(i+jx)^m\right)a^2 - 2bdfjna + 2bdgjmna - 2befjnxa + 4begjm\ldots}{\ldots}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^2*(f + g*Log[h*(i + j*x)^m]),x]
```

```
[Out] (-2*a*b*d*f*j*n + 2*a*b*d*g*j*m*n - 2*b^2*d*g*j*m*n^2 + a^2*e*f*j*x - a^2*e
*g*j*m*x - 2*a*b*e*f*j*n*x + 4*a*b*e*g*j*m*n*x + 2*b^2*e*f*j*n^2*x - 6*b^2*
e*g*j*m*n^2*x + 2*a*b*d*f*j*n*Log[d + e*x] - 2*a*b*d*g*j*m*n*Log[d + e*x] +
 2*b^2*d*g*j*m*n^2*Log[d + e*x] - b^2*d*f*j*n^2*Log[d + e*x]^2 + b^2*d*g*j*
m*n^2*Log[d + e*x]^2 - 2*b^2*d*f*j*n*Log[c*(d + e*x)^n] + 2*b^2*d*g*j*m*n*L
og[c*(d + e*x)^n] + 2*a*b*e*f*j*x*Log[c*(d + e*x)^n] - 2*a*b*e*g*j*m*x*Log[
c*(d + e*x)^n] - 2*b^2*e*f*j*n*x*Log[c*(d + e*x)^n] + 4*b^2*e*g*j*m*n*x*Log
[c*(d + e*x)^n] + 2*b^2*d*f*j*n*Log[d + e*x]*Log[c*(d + e*x)^n] - 2*b^2*d*g
*j*m*n*Log[d + e*x]*Log[c*(d + e*x)^n] + b^2*e*f*j*x*Log[c*(d + e*x)^n]^2 -
 b^2*e*g*j*m*x*Log[c*(d + e*x)^n]^2 + a^2*e*g*i*m*Log[i + j*x] - 2*a*b*e*g*
i*m*n*Log[i + j*x] + 2*a*b*d*g*j*m*n*Log[i + j*x] + 2*b^2*e*g*i*m*n^2*Log[i
 + j*x] - 2*a*b*e*g*i*m*n*Log[d + e*x]*Log[i + j*x] + 2*b^2*e*g*i*m*n^2*Log
[d + e*x]*Log[i + j*x] - 2*b^2*d*g*j*m*n^2*Log[d + e*x]*Log[i + j*x] + b^2*
e*g*i*m*n^2*Log[d + e*x]^2*Log[i + j*x] + 2*a*b*e*g*i*m*Log[c*(d + e*x)^n]*
Log[i + j*x] - 2*b^2*e*g*i*m*n*Log[c*(d + e*x)^n]*Log[i + j*x] + 2*b^2*d*g*
j*m*n*Log[c*(d + e*x)^n]*Log[i + j*x] - 2*b^2*e*g*i*m*n*Log[d + e*x]*Log[c*
(d + e*x)^n]*Log[i + j*x] + b^2*e*g*i*m*Log[c*(d + e*x)^n]^2*Log[i + j*x] +
 2*a*b*e*g*i*m*n*Log[d + e*x]*Log[(e*(i + j*x))/(e*i - d*j)] - 2*a*b*d*g*j*
m*n*Log[d + e*x]*Log[(e*(i + j*x))/(e*i - d*j)] - 2*b^2*e*g*i*m*n^2*Log[d +
 e*x]*Log[(e*(i + j*x))/(e*i - d*j)] + 2*b^2*d*g*j*m*n^2*Log[d + e*x]*Log[(
e*(i + j*x))/(e*i - d*j)] - b^2*e*g*i*m*n^2*Log[d + e*x]^2*Log[(e*(i + j*x)
)/(e*i - d*j)] + b^2*d*g*j*m*n^2*Log[d + e*x]^2*Log[(e*(i + j*x))/(e*i - d*
j)] + 2*b^2*e*g*i*m*n*Log[d + e*x]*Log[c*(d + e*x)^n]*Log[(e*(i + j*x))/(e*
i - d*j)] - 2*b^2*d*g*j*m*n*Log[d + e*x]*Log[c*(d + e*x)^n]*Log[(e*(i + j*x
))/(e*i - d*j)] - 2*a*b*d*g*j*n*Log[h*(i + j*x)^m] + a^2*e*g*j*x*Log[h*(i +
 j*x)^m] - 2*a*b*e*g*j*n*x*Log[h*(i + j*x)^m] + 2*b^2*e*g*j*n^2*x*Log[h*(i
+ j*x)^m] + 2*a*b*d*g*j*n*Log[d + e*x]*Log[h*(i + j*x)^m] - b^2*d*g*j*n^2*L
og[d + e*x]^2*Log[h*(i + j*x)^m] - 2*b^2*d*g*j*n*Log[c*(d + e*x)^n]*Log[h*(
i + j*x)^m] + 2*a*b*e*g*j*x*Log[c*(d + e*x)^n]*Log[h*(i + j*x)^m] - 2*b^2*e
*g*j*n*x*Log[c*(d + e*x)^n]*Log[h*(i + j*x)^m] + 2*b^2*d*g*j*n*Log[d + e*x]
*Log[c*(d + e*x)^n]*Log[h*(i + j*x)^m] + b^2*e*g*j*x*Log[c*(d + e*x)^n]^2*L
og[h*(i + j*x)^m] + 2*b*g*(e*i - d*j)*m*n*(a - b*n + b*Log[c*(d + e*x)^n])*
PolyLog[2, (j*(d + e*x))/(-(e*i) + d*j)] + 2*b^2*g*(-(e*i) + d*j)*m*n^2*Pol
yLog[3, (j*(d + e*x))/(-(e*i) + d*j)])/(e*j)
```

fricas [F] time = 0.49, size = 0, normalized size = 0.00

$$\text{integral}\left(b^2 f \log\left((ex+d)^n c\right)^2 + 2\,abf\log\left((ex+d)^n c\right) + a^2 f + \left(b^2 g \log\left((ex+d)^n c\right)^2 + 2\,abg\log\left((ex+d)^n c\right) + \right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2*(f+g*log(h*(j*x+i)^m)),x, algorithm="fri
cas")
```

```
[Out] integral(b^2*f*log((e*x + d)^n*c)^2 + 2*a*b*f*log((e*x + d)^n*c) + a^2*f +
(b^2*g*log((e*x + d)^n*c)^2 + 2*a*b*g*log((e*x + d)^n*c) + a^2*g)*log((j*x
+ i)^m*h), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b\log\left((ex+d)^n c\right) + a\right)^2 \left(g\log\left((jx+i)^m h\right) + f\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2*(f+g*log(h*(j*x+i)^m)),x, algorithm="gia
c")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2*(g*log((j*x + i)^m*h) + f), x)
```

maple [F] time = 4.71, size = 0, normalized size = 0.00

$$\int \left(b\ln\left(c\,(ex+d)^n\right) + a\right)^2 \left(g\ln\left(h\,(jx+i)^m\right) + f\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)^2*(g*ln(h*(j*x+i)^m)+f),x)
```

```
[Out] int((b*ln(c*(e*x+d)^n)+a)^2*(g*ln(h*(j*x+i)^m)+f),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2*(f+g*log(h*(j*x+i)^m)),x, algorithm="max
ima")
```

```
[Out] -2*a*b*e*f*n*(x/e - d*log(e*x + d)/e^2) - a^2*g*j*m*(x/j - i*log(j*x + i)/j
^2) + b^2*f*x*log((e*x + d)^n*c)^2 + 2*a*b*f*x*log((e*x + d)^n*c) + a^2*g*x
*log((j*x + i)^m*h) - (2*e*n*(x/e - d*log(e*x + d)/e^2)*log((e*x + d)^n*c)
+ (d*log(e*x + d)^2 - 2*e*x + 2*d*log(e*x + d))*n^2/e)*b^2*f + a^2*f*x + ((
b^2*e*g*i*m*log(j*x + i) - (j*m - j*log(h))*b^2*e*g*x)*log((e*x + d)^n)^2 -
 (b^2*d*g*j*n^2*log(e*x + d)^2 - b^2*e*g*j*x*log((e*x + d)^n)^2 + (2*(e*g*j
*n - e*g*j*log(c))*a*b - (2*e*g*j*n^2 - 2*e*g*j*n*log(c) + e*g*j*log(c)^2)*
b^2)*x - 2*(a*b*d*g*j*n - (d*g*j*n^2 - d*g*j*n*log(c))*b^2)*log(e*x + d) -
2*(b^2*d*g*j*n*log(e*x + d) + (a*b*e*g*j - (e*g*j*n - e*g*j*log(c))*b^2)*x)
*log((e*x + d)^n))*log((j*x + i)^m))/(e*j) - integrate(-(b^2*d*e*g*i*j*log(
c)^2*log(h) + 2*a*b*d*e*g*i*j*log(c)*log(h) + (2*(e^2*g*j^2*m*n - (j^2*m -
j^2*log(h))*e^2*g*log(c))*a*b - (2*e^2*g*j^2*m*n^2 - 2*e^2*g*j^2*m*n*log(c)
 + (j^2*m - j^2*log(h))*e^2*g*log(c)^2)*b^2)*x^2 + (b^2*d*e*g*j^2*m*n^2*x +
 b^2*d^2*g*j^2*m*n^2)*log(e*x + d)^2 + (2*(d*e*g*j^2*m*n + (e^2*g*i*j*log(h
) - (j^2*m - j^2*log(h))*d*e*g)*log(c))*a*b - (2*d*e*g*j^2*m*n^2 - 2*d*e*g*
j^2*m*n*log(c) - (e^2*g*i*j*log(h) - (j^2*m - j^2*log(h))*d*e*g)*log(c)^2)*
b^2)*x - 2*(a*b*d^2*g*j^2*m*n - (d^2*g*j^2*m*n^2 - d^2*g*j^2*m*n*log(c))*b^
2 + (a*b*d*e*g*j^2*m*n - (d*e*g*j^2*m*n^2 - d*e*g*j^2*m*n*log(c))*b^2)*x)*l
og(e*x + d) + 2*(b^2*d*e*g*i*j*log(c)*log(h) + a*b*d*e*g*i*j*log(h) - ((j^2
*m - j^2*log(h))*a*b*e^2*g + ((j^2*m - j^2*log(h))*e^2*g*log(c) - (2*j^2*m*
n - j^2*n*log(h))*e^2*g)*b^2)*x^2 + ((e^2*g*i*j*log(h) - (j^2*m - j^2*log(h
))*d*e*g)*a*b + (d*e*g*j^2*m*n + (i*j*m*n - i*j*n*log(h))*e^2*g + (e^2*g*i*
j*log(h) - (j^2*m - j^2*log(h))*d*e*g)*log(c))*b^2)*x - (b^2*d*e*g*j^2*m*n*
x + b^2*d^2*g*j^2*m*n)*log(e*x + d) - (b^2*e^2*g*i*j*m*n*x + b^2*e^2*g*i^2*
m*n)*log(j*x + i))*log((e*x + d)^n))/(e^2*j^2*x^2 + d*e*i*j + (e^2*i*j + d*
e*j^2)*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int {\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^2\,\left(f+g\,\ln\left(h\,{\left(i+j\,x\right)}^m\right)\right) \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^2*(f + g*log(h*(i + j*x)^m)),x)
```

```
[Out] int((a + b*log(c*(d + e*x)^n))^2*(f + g*log(h*(i + j*x)^m)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2*(f+g*ln(h*(j*x+i)**m)),x)
```

```
[Out] Timed out
```

3.395 $\int \frac{(a+b\log(c(d+ex)^n))^2(f+g\log(h(i+jx)^m))}{x}\,dx$

Optimal. Leaf size=37

$$\text{Int}\left(\frac{(a+b\log(c(d+ex)^n))^2(f+g\log(h(i+jx)^m))}{x},x\right)$$

```
[Out] Unintegrable((a+b*ln(c*(e*x+d)^n))^2*(f+g*ln(h*(j*x+i)^m))/x,x)
```

Rubi [A] time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(a+b\log(c(d+ex)^n))^2(f+g\log(h(i+jx)^m))}{x}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[((a + b*Log[c*(d + e*x)^n])^2*(f + g*Log[h*(i + j*x)^m]))/x,x]
[Out] Defer[Int][((a + b*Log[c*(d + e*x)^n])^2*(f + g*Log[h*(i + j*x)^m]))/x, x]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^2(f+g\log(h(395+jx)^m))}{x}\,dx = \int \frac{(a+b\log(c(d+ex)^n))^2(f+g\log(h(395+jx)^m$$

Mathematica [A] time = 0.73, size = 0, normalized size = 0.00

$$\int \frac{(a+b\log(c(d+ex)^n))^2(f+g\log(h(i+jx)^m))}{x}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[((a + b*Log[c*(d + e*x)^n])^2*(f + g*Log[h*(i + j*x)^m]))/x,x]
[Out] Integrate[((a + b*Log[c*(d + e*x)^n])^2*(f + g*Log[h*(i + j*x)^m]))/x, x]
```

fricas [A] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b^2f\log\left((ex+d)^nc\right)^2+2\,abf\log\left((ex+d)^nc\right)+a^2f+\left(b^2g\log\left((ex+d)^nc\right)^2+2\,abg\log\left((ex+d)^nc\right)+}{x}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2*(f+g*log(h*(j*x+i)^m))/x,x, algorithm="f
ricas")
[Out] integral((b^2*f*log((e*x + d)^n*c)^2 + 2*a*b*f*log((e*x + d)^n*c) + a^2*f +
 (b^2*g*log((e*x + d)^n*c)^2 + 2*a*b*g*log((e*x + d)^n*c) + a^2*g)*log((j*x
 + i)^m*h))/x, x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\log\left((ex+d)^nc\right)+a\right)^2\left(g\log\left((jx+i)^mh\right)+f\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2*(f+g*log(h*(j*x+i)^m))/x,x, algorithm="g
iac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2*(g*log((j*x + i)^m*h) + f)/x, x)
```

maple [A] time = 1.96, size = 0, normalized size = 0.00

$$\int \frac{\left(b\ln\left(c\left(ex+d\right)^{n}\right)+a\right)^{2}\left(g\ln\left(h\left(jx+i\right)^{m}\right)+f\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)^2*(g*ln(h*(j*x+i)^m)+f)/x,x)
```

```
[Out] int((b*ln(c*(e*x+d)^n)+a)^2*(g*ln(h*(j*x+i)^m)+f)/x,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$a^{2}f\log(x)+\int \frac{\left(g\log(h)+f\right)b^{2}\log\left(\left(ex+d\right)^{n}\right)^{2}+\left(g\log(h)+f\right)b^{2}\log(c)^{2}+2\left(g\log(h)+f\right)ab\log(c)+a^{2}g\,\mathrm{l}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2*(f+g*log(h*(j*x+i)^m))/x,x, algorithm="m
axima")
```

```
[Out] a^2*f*log(x) + integrate(((g*log(h) + f)*b^2*log((e*x + d)^n)^2 + (g*log(h)
 + f)*b^2*log(c)^2 + 2*(g*log(h) + f)*a*b*log(c) + a^2*g*log(h) + 2*((g*log
(h) + f)*b^2*log(c) + (g*log(h) + f)*a*b)*log((e*x + d)^n) + (b^2*g*log((e*
x + d)^n)^2 + b^2*g*log(c)^2 + 2*a*b*g*log(c) + a^2*g + 2*(b^2*g*log(c) + a
*b*g)*log((e*x + d)^n))*log((j*x + i)^m))/x, x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^2\,\left(f+g\,\ln\left(h\,{\left(i+j\,x\right)}^m\right)\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*log(c*(d + e*x)^n))^2*(f + g*log(h*(i + j*x)^m)))/x,x)
```

```
[Out] int(((a + b*log(c*(d + e*x)^n))^2*(f + g*log(h*(i + j*x)^m)))/x, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2*(f+g*ln(h*(j*x+i)**m))/x,x)
```

```
[Out] Timed out
```

3.396 $\int \frac{(a+b\log(c(d+ex)^n))^2(f+g\log(h(i+jx)^m))}{x^2}\,dx$

Optimal. Leaf size=37

$$\text{Int}\left(\frac{(a+b\log(c(d+ex)^n))^2(f+g\log(h(i+jx)^m))}{x^2},x\right)$$

```
[Out] Unintegrable((a+b*ln(c*(e*x+d)^n))^2*(f+g*ln(h*(j*x+i)^m))/x^2,x)
```

Rubi [A] time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(a+b\log(c(d+ex)^n))^2(f+g\log(h(i+jx)^m))}{x^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[((a + b*Log[c*(d + e*x)^n])^2*(f + g*Log[h*(i + j*x)^m]))/x^2,x]
```

```
[Out] Defer[Int][((a + b*Log[c*(d + e*x)^n])^2*(f + g*Log[h*(i + j*x)^m]))/x^2, x
]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^2(f+g\log(h(396+jx)^m))}{x^2}\,dx = \int \frac{(a+b\log(c(d+ex)^n))^2(f+g\log(h(396+jx)^m}{x^2}$$

Mathematica [A] time = 0.91, size = 0, normalized size = 0.00

$$\int \frac{(a+b\log(c(d+ex)^n))^2(f+g\log(h(i+jx)^m))}{x^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[((a + b*Log[c*(d + e*x)^n])^2*(f + g*Log[h*(i + j*x)^m]))/x^2,x]
```

```
[Out] Integrate[((a + b*Log[c*(d + e*x)^n])^2*(f + g*Log[h*(i + j*x)^m]))/x^2, x]
```

fricas [A] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b^2f\log\left((ex+d)^nc\right)^2+2\,abf\log\left((ex+d)^nc\right)+a^2f+\left(b^2g\log\left((ex+d)^nc\right)^2+2\,abg\log\left((ex+d)^nc\right)+}{x^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2*(f+g*log(h*(j*x+i)^m))/x^2,x, algorithm=
"fricas")
```

```
[Out] integral((b^2*f*log((e*x + d)^n*c)^2 + 2*a*b*f*log((e*x + d)^n*c) + a^2*f +
 (b^2*g*log((e*x + d)^n*c)^2 + 2*a*b*g*log((e*x + d)^n*c) + a^2*g)*log((j*x
 + i)^m*h))/x^2, x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2*(f+g*log(h*(j*x+i)^m))/x^2,x, algorithm=
"giac")
```

```
[Out] Timed out
```

maple [A] time = 1.88, size = 0, normalized size = 0.00

$$\int \frac{\left(b\ln\left(c\left(ex+d\right)^{n}\right)+a\right)^{2}\left(g\ln\left(h\left(jx+i\right)^{m}\right)+f\right)}{x^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)^2*(g*ln(h*(j*x+i)^m)+f)/x^2,x)
```

```
[Out] int((b*ln(c*(e*x+d)^n)+a)^2*(g*ln(h*(j*x+i)^m)+f)/x^2,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-2\,abefn\left(\frac{\log\left(ex+d\right)}{d}-\frac{\log(x)}{d}\right)-\frac{2\,abf\log\left(\left(ex+d\right)^{n}c\right)}{x}-\frac{a^{2}f}{x}+\int\frac{\left(g\log(h)+f\right)b^{2}\log\left(\left(ex+d\right)^{n}\right)^{2}+\left(g\log(\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2*(f+g*log(h*(j*x+i)^m))/x^2,x, algorithm=
"maxima")
```

```
[Out] -2*a*b*e*f*n*(log(e*x + d)/d - log(x)/d) - 2*a*b*f*log((e*x + d)^n*c)/x - a
^2*f/x + integrate(((g*log(h) + f)*b^2*log((e*x + d)^n)^2 + (g*log(h) + f)*
b^2*log(c)^2 + 2*a*b*g*log(c)*log(h) + a^2*g*log(h) + 2*((g*log(h) + f)*b^2
*log(c) + a*b*g*log(h))*log((e*x + d)^n) + (b^2*g*log((e*x + d)^n)^2 + b^2*
g*log(c)^2 + 2*a*b*g*log(c) + a^2*g + 2*(b^2*g*log(c) + a*b*g)*log((e*x + d
)^n))*log((j*x + i)^m))/x^2, x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^2\,\left(f+g\,\ln\left(h\,{\left(i+j\,x\right)}^m\right)\right)}{x^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*log(c*(d + e*x)^n))^2*(f + g*log(h*(i + j*x)^m)))/x^2,x)
```

```
[Out] int(((a + b*log(c*(d + e*x)^n))^2*(f + g*log(h*(i + j*x)^m)))/x^2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2*(f+g*ln(h*(j*x+i)**m))/x**2,x)
```

```
[Out] Timed out
```

3.397 $\int x\left(a+b\log\left(c(d+ex)^n\right)\right)^3\left(f+g\log\left(h(i+jx)^m\right)\right)\,dx$

Optimal. Leaf size=2050

result too large to display

[Out] 12*a*b^2*d*g*m*n^2*x/e+21/4*a*b^2*g*i*m*n^2*x/j-3/8*b^2*g*m*n^2*x^2*(a+b*ln(c*(e*x+d)^n))+3/4*b^2*f*n^2*(e*x+d)^2*(a+b*ln(c*(e*x+d)^n))/e^2-3/4*b*f*n*(e*x+d)^2*(a+b*ln(c*(e*x+d)^n))^2/e^2+1/2*d*g*m*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^3/e^2-6*a*b^2*d*f*n^2*x/e-141/8*b^3*d*g*m*n^3*x/e-45/8*b^3*g*i*m*n^3*x/j-3/4*b^3*g*i^2*m*n^3*polylog(2,-j*(e*x+d)/(-d*j+e*i))/j^2-21/4*b^3*d^2*g*m*n^3*polylog(2,e*(j*x+i)/(-d*j+e*i))/e^2+9/2*b^3*d^2*g*m*n^3*polylog(3,-j*(e*x+d)/(-d*j+e*i))/e^2-3/2*b^3*g*i^2*m*n^3*polylog(3,-j*(e*x+d)/(-d*j+e*i))/j^2+3*b^3*d^2*g*m*n^3*polylog(4,-j*(e*x+d)/(-d*j+e*i))/e^2-3*b^3*g*i^2*m*n^3*polylog(4,-j*(e*x+d)/(-d*j+e*i))/j^2+1/2*x^2*(a+b*ln(c*(e*x+d)^n))^3*(f+g*ln(h*(j*x+i)^m))-9/2*b^3*d*g*i*m*n^3*polylog(2,-j*(e*x+d)/(-d*j+e*i))/e/j-3*b^3*d*g*i*m*n^3*polylog(3,-j*(e*x+d)/(-d*j+e*i))/e/j-9/2*b^2*d*g*i*m*n^2*(a+b*ln(c*(e*x+d)^n))*ln(e*(j*x+i)/(-d*j+e*i))/e/j+3/2*b*d*g*i*m*n*(a+b*ln(c*(e*x+d)^n))^2*ln(e*(j*x+i)/(-d*j+e*i))/e/j+3*b^2*d*g*i*m*n^2*(a+b*ln(c*(e*x+d)^n))*polylog(2,-j*(e*x+d)/(-d*j+e*i))/e/j-1/2*d^2*f*(a+b*ln(c*(e*x+d)^n))^3/e^2-3/8*b^3*f*n^3*(e*x+d)^2/e^2+3/8*b^3*g*m*n^3*x^2-1/4*g*m*(e*x+d)^2*(a+b*ln(c*(e*x+d)^n))^3/e^2-3/8*b^3*g*n^3*x^2*ln(h*(j*x+i)^m)-1/2*d^2*g*(a+b*ln(c*(e*x+d)^n))^3*ln(h*(j*x+i)^m)/e^2+6*b^3*d*f*n^3*x/e+3/8*b^3*g*m*n^3*(e*x+d)^2/e^2+12*b^3*d*g*m*n^2*(e*x+d)*ln(c*(e*x+d)^n)/e^2-15/4*b*d*g*m*n*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^2/e^2+3/8*b^3*d^2*g*m*n^3*ln(e*x+d)/e^2-6*b^3*d*f*n^2*(e*x+d)*ln(c*(e*x+d)^n)/e^2-3/4*b^2*g*m*n^2*(e*x+d)^2*(a+b*ln(c*(e*x+d)^n))/e^2+3*b*d*f*n*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^2/e^2+3/4*b*g*m*n*(e*x+d)^2*(a+b*ln(c*(e*x+d)^n))^2/e^2+1/2*g*i*m*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^3/e/j+3/8*b^3*g*i^2*m*n^3*ln(j*x+i)/j^2-21/4*b^3*d^2*g*n^3*ln(-j*(e*x+d)/(-d*j+e*i))*ln(h*(j*x+i)^m)/e^2+9/4*b*d^2*g*n*(a+b*ln(c*(e*x+d)^n))^2*ln(h*(j*x+i)^m)/e^2-3/4*b^2*g*i^2*m*n^2*(a+b*ln(c*(e*x+d)^n))*ln(e*(j*x+i)/(-d*j+e*i))/j^2-9/4*b*d^2*g*m*n*(a+b*ln(c*(e*x+d)^n))^2*ln(e*(j*x+i)/(-d*j+e*i))/e^2+3/4*b*g*i^2*m*n*(a+b*ln(c*(e*x+d)^n))^2*ln(e*(j*x+i)/(-d*j+e*i))/j^2+21/4*b^3*d*g*n^3*(j*x+i)*ln(h*(j*x+i)^m)/e/j-9/2*b^2*d*g*n^2*x*(a+b*ln(c*(e*x+d)^n))*ln(h*(j*x+i)^m)/e+3/2*b*d*g*n*x*(a+b*ln(c*(e*x+d)^n))^2*ln(h*(j*x+i)^m)/e-9/2*b^2*d^2*g*m*n^2*(a+b*ln(c*(e*x+d)^n))*polylog(2,-j*(e*x+d)/(-d*j+e*i))/e^2+3/2*b^2*g*i^2*m*n^2*(a+b*ln(c*(e*x+d)^n))*polylog(2,-j*(e*x+d)/(-d*j+e*i))/j^2+3/2*b*d^2*g*m*n*(a+b*ln(c*(e*x+d)^n))^2*polylog(2,-j*(e*x+d)/(-d*j+e*i))/e^2-3/2*b*g*i^2*m*n*(a+b*ln(c*(e*x+d)^n))^2*polylog(2,-j*(e*x+d)/(-d*j+e*i))/j^2-3*b^2*d^2*g*m*n^2*(a+b*ln(c*(e*x+d)^n))*polylog(3,-j*(e*x+d)/(-d*j+e*i))/e^2+3*b^2*g*i^2*m*n^2*(a+b*ln(c*(e*x+d)^n))*polylog(3,-j*(e*x+d)/(-d*j+e*i))/j^2+21/4*b^3*g*i*m*n^2*(e*x+d)*ln(c*(e*x+d)^n)/e/j-9/4*b*g*i*m*n*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^2/e/j+1/2*d^2*g*m*(a+b*ln(c*(e*x+d)^n))^3*ln(e*(j*x+i)/(-d*j+e*i))/e^2-1/2*g*i^2*m*(a+b*ln(c*(e*x+d)^n))^3*ln(e*(j*x+i)/(-d*j+e*i))/j^2+3/4*b^2*g*n^2*x^2*(a+b*ln(c*(e*x+d)^n))*ln(h*(j*x+i)^m)-3/4*b*g*n*x^2*(a+b*ln(c*(e*x+d)^n))^2*ln(h*(j*x+i)^m)

Rubi [A] time = 6.89, antiderivative size = 2050, normalized size of antiderivative = 1.00, number of steps used = 148, number of rules used = 32, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 1.000, Rules used = {2439, 2416, 2389, 2296, 2295, 2401, 2390, 2305, 2304, 2396, 2433, 2374, 2383, 6589, 6742, 2411, 2346, 2302, 30, 2330, 2430, 2301, 43, 2394, 2393, 2391, 2375, 2317, 2334, 12, 14, 2395}

result too large to display

Antiderivative was successfully verified.

[In] Int[x*(a + b*Log[c*(d + e*x)^n])^3*(f + g*Log[h*(i + j*x)^m]),x]

[Out] (-6*a*b^2*d*f*n^2*x)/e + (12*a*b^2*d*g*m*n^2*x)/e + (21*a*b^2*g*i*m*n^2*x)/(4*j) + (6*b^3*d*f*n^3*x)/e - (141*b^3*d*g*m*n^3*x)/(8*e) - (45*b^3*g*i*m*n

```
^3*x)/(8*j) + (3*b^3*g*m*n^3*x^2)/8 - (3*b^3*f*n^3*(d + e*x)^2)/(8*e^2) + (
3*b^3*g*m*n^3*(d + e*x)^2)/(8*e^2) + (3*b^3*d^2*g*m*n^3*Log[d + e*x])/(8*e^
2) - (6*b^3*d*f*n^2*(d + e*x)*Log[c*(d + e*x)^n])/e^2 + (12*b^3*d*g*m*n^2*(
d + e*x)*Log[c*(d + e*x)^n])/e^2 + (21*b^3*g*i*m*n^2*(d + e*x)*Log[c*(d + e
*x)^n])/(4*e*j) - (3*b^2*g*m*n^2*x^2*(a + b*Log[c*(d + e*x)^n]))/8 + (3*b^2
*f*n^2*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n]))/(4*e^2) - (3*b^2*g*m*n^2*(d
+ e*x)^2*(a + b*Log[c*(d + e*x)^n]))/(4*e^2) + (3*b*d*f*n*(d + e*x)*(a + b*
Log[c*(d + e*x)^n])^2)/e^2 - (15*b*d*g*m*n*(d + e*x)*(a + b*Log[c*(d + e*x)
^n])^2)/(4*e^2) - (9*b*g*i*m*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(4*e
*j) - (3*b*f*n*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n])^2)/(4*e^2) + (3*b*g*m
*n*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n])^2)/(4*e^2) - (d^2*f*(a + b*Log[c*
(d + e*x)^n])^3)/(2*e^2) + (d*g*m*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^3)/(
2*e^2) + (g*i*m*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^3)/(2*e*j) - (g*m*(d +
 e*x)^2*(a + b*Log[c*(d + e*x)^n])^3)/(4*e^2) + (3*b^3*g*i^2*m*n^3*Log[i +
j*x])/(8*j^2) - (3*b^2*g*i^2*m*n^2*(a + b*Log[c*(d + e*x)^n])*Log[(e*(i + j
*x))/(e*i - d*j)])/(4*j^2) - (9*b^2*d*g*i*m*n^2*(a + b*Log[c*(d + e*x)^n])*
Log[(e*(i + j*x))/(e*i - d*j)])/(2*e*j) - (9*b*d^2*g*m*n*(a + b*Log[c*(d +
e*x)^n])^2*Log[(e*(i + j*x))/(e*i - d*j)])/(4*e^2) + (3*b*g*i^2*m*n*(a + b*
Log[c*(d + e*x)^n])^2*Log[(e*(i + j*x))/(e*i - d*j)])/(4*j^2) + (3*b*d*g*i*
m*n*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(i + j*x))/(e*i - d*j)])/(2*e*j) +
(d^2*g*m*(a + b*Log[c*(d + e*x)^n])^3*Log[(e*(i + j*x))/(e*i - d*j)])/(2*e^
2) - (g*i^2*m*(a + b*Log[c*(d + e*x)^n])^3*Log[(e*(i + j*x))/(e*i - d*j)])/
(2*j^2) - (3*b^3*g*n^3*x^2*Log[h*(i + j*x)^m])/8 + (21*b^3*d*g*n^3*(i + j*x
)*Log[h*(i + j*x)^m])/(4*e*j) - (21*b^3*d^2*g*n^3*Log[-((j*(d + e*x))/(e*i
- d*j))]*Log[h*(i + j*x)^m])/(4*e^2) - (9*b^2*d*g*n^2*x*(a + b*Log[c*(d + e
*x)^n])*Log[h*(i + j*x)^m])/(2*e) + (3*b^2*g*n^2*x^2*(a + b*Log[c*(d + e*x)
^n])*Log[h*(i + j*x)^m])/4 + (9*b*d^2*g*n*(a + b*Log[c*(d + e*x)^n])^2*Log[
h*(i + j*x)^m])/(4*e^2) + (3*b*d*g*n*x*(a + b*Log[c*(d + e*x)^n])^2*Log[h*(
i + j*x)^m])/(2*e) - (3*b*g*n*x^2*(a + b*Log[c*(d + e*x)^n])^2*Log[h*(i + j
*x)^m])/4 - (d^2*g*(a + b*Log[c*(d + e*x)^n])^3*Log[h*(i + j*x)^m])/(2*e^2)
 + (x^2*(a + b*Log[c*(d + e*x)^n])^3*(f + g*Log[h*(i + j*x)^m]))/2 - (3*b^3
*g*i^2*m*n^3*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])/(4*j^2) - (9*b^3*d*g
*i*m*n^3*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])/(2*e*j) - (9*b^2*d^2*g*m
*n^2*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])/(
2*e^2) + (3*b^2*g*i^2*m*n^2*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((j*(d +
 e*x))/(e*i - d*j))])/(2*j^2) + (3*b^2*d*g*i*m*n^2*(a + b*Log[c*(d + e*x)^n
])*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])/(e*j) + (3*b*d^2*g*m*n*(a + b*
Log[c*(d + e*x)^n])^2*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])/(2*e^2) - (
3*b*g*i^2*m*n*(a + b*Log[c*(d + e*x)^n])^2*PolyLog[2, -((j*(d + e*x))/(e*i
- d*j))])/(2*j^2) - (21*b^3*d^2*g*m*n^3*PolyLog[2, (e*(i + j*x))/(e*i - d*j
)])/(4*e^2) + (9*b^3*d^2*g*m*n^3*PolyLog[3, -((j*(d + e*x))/(e*i - d*j))])/
(2*e^2) - (3*b^3*g*i^2*m*n^3*PolyLog[3, -((j*(d + e*x))/(e*i - d*j))])/(2*j
^2) - (3*b^3*d*g*i*m*n^3*PolyLog[3, -((j*(d + e*x))/(e*i - d*j))])/(e*j) -
(3*b^2*d^2*g*m*n^2*(a + b*Log[c*(d + e*x)^n])*PolyLog[3, -((j*(d + e*x))/(e
*i - d*j))])/e^2 + (3*b^2*g*i^2*m*n^2*(a + b*Log[c*(d + e*x)^n])*PolyLog[3,
 -((j*(d + e*x))/(e*i - d*j))])/j^2 + (3*b^3*d^2*g*m*n^3*PolyLog[4, -((j*(d
 + e*x))/(e*i - d*j))])/e^2 - (3*b^3*g*i^2*m*n^3*PolyLog[4, -((j*(d + e*x))
/(e*i - d*j))])/j^2
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2330

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_)^(r_.))^(
q_.), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*x^n])^p, (d + e*x
^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n, p, q, r}, x]
```

```
&& IntegerQ[q] && (GtQ[q, 0] || (IGtQ[p, 0] && IntegerQ[r]))
```

Rule 2334

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*(x_)^(m_.)*((d_) + (e_.)*(x_)^(r_
.))^(q_.), x_Symbol] :> With[{u = IntHide[x^m*(d + e*x^r)^q, x]}, Simp[u*(a
 + b*Log[c*x^n]), x] - Dist[b*n, Int[SimplifyIntegrand[u/x, x], x], x]] /;
FreeQ[{a, b, c, d, e, n, r}, x] && IGtQ[q, 0] && IntegerQ[m] &&  !(EqQ[q, 1
] && EqQ[m, -1])
```

Rule 2346

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.))
/(x_), x_Symbol] :> Dist[d, Int[((d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p)/x,
 x], x] + Dist[e, Int[(d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p, x], x] /; Fre
eQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0] && GtQ[q, 0] && IntegerQ[2*q]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2375

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m
- 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2383

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^p)/q
, x] - Dist[(b*n*p)/q, Int[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^(p - 1
))/x, x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2430

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)), x_Symbol] :> Simp[x*(a + b*Log[c
*(d + e*x)^n])^p*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[g*j*m, Int[(x*(a +
 b*Log[c*(d + e*x)^n])^p)/(i + j*x), x], x] - Dist[b*e*n*p, Int[(x*(a + b*L
og[c*(d + e*x)^n])^(p - 1)*(f + g*Log[h*(i + j*x)^m]))/(d + e*x), x], x]) /
; FreeQ[{a, b, c, d, e, f, g, h, i, j, m, n}, x] && IGtQ[p, 0]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2439

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*(x_)^(r_.), x_Symbol] :> Simp[(x^
(r + 1)*(a + b*Log[c*(d + e*x)^n])^p*(f + g*Log[h*(i + j*x)^m]))/(r + 1), x
] + (-Dist[(g*j*m)/(r + 1), Int[(x^(r + 1)*(a + b*Log[c*(d + e*x)^n])^p)/(i
 + j*x), x], x] - Dist[(b*e*n*p)/(r + 1), Int[(x^(r + 1)*(a + b*Log[c*(d +
e*x)^n])^(p - 1)*(f + g*Log[h*(i + j*x)^m]))/(d + e*x), x], x]) /; FreeQ[{a
, b, c, d, e, f, g, h, i, j, m, n}, x] && IGtQ[p, 0] && IntegerQ[r] && (EqQ
[p, 1] || GtQ[r, 0]) && NeQ[r, -1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int x\left(a+b\log\left(c(d+ex)^n\right)\right)^3\left(f+g\log\left(h(397+jx)^m\right)\right)\,dx=\frac{1}{2}x^2\left(a+b\log\left(c(d+ex)^n\right)\right)^3\left(f+g\log\left(h(397+jx\right.\right.$$

$$=\frac{1}{2}x^2\left(a+b\log\left(c(d+ex)^n\right)\right)^3\left(f+g\log\left(h(397+jx\right.\right.$$

$$=\frac{1}{2}x^2\left(a+b\log\left(c(d+ex)^n\right)\right)^3\left(f+g\log\left(h(397+jx\right.\right.$$

$$=-\frac{157609gm\left(a+b\log\left(c(d+ex)^n\right)\right)^3\log\left(\frac{e(397+jx)}{397e-dj}\right)}{2j^2}$$

$$=\frac{397gm(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{2ej}-\frac{157609g}{}$$

$$=-\frac{1191bgmn(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2ej}+\frac{397}{}$$

$$=\frac{1191ab^2gmn^2x}{j}+\frac{3bdfn(d+ex)\left(a+b\log\left(c(d+e\right.\right.}{2e^2}$$

$$=-\frac{3ab^2dfn^2x}{e}+\frac{1191ab^2gmn^2x}{j}-\frac{1191b^3gmn^3x}{j}+$$

$$=-\frac{6ab^2dfn^2x}{e}+\frac{3ab^2dgmn^2x}{e}+\frac{1191ab^2gmn^2x}{j}+$$

$$=-\frac{6ab^2dfn^2x}{e}+\frac{3ab^2dgmn^2x}{e}+\frac{1191ab^2gmn^2x}{j}+$$

$$=-\frac{6ab^2dfn^2x}{e}+\frac{6ab^2dgmn^2x}{e}+\frac{3573ab^2gmn^2x}{2j}+$$

$$=-\frac{6ab^2dfn^2x}{e}+\frac{21ab^2dgmn^2x}{2e}+\frac{8337ab^2gmn^2x}{4j}+$$

$$=-\frac{6ab^2dfn^2x}{e}+\frac{12ab^2dgmn^2x}{e}+\frac{8337ab^2gmn^2x}{4j}+$$

$$=-\frac{6ab^2dfn^2x}{e}+\frac{12ab^2dgmn^2x}{e}+\frac{8337ab^2gmn^2x}{4j}+$$

Mathematica [B] time = 3.79, size = 4971, normalized size = 2.42

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[x*(a + b*Log[c*(d + e*x)^n])^3*(f + g*Log[h*(i + j*x)^m]),x]
```

```
[Out] (-12*a^2*b*d*e*g*i*j*m*n + 12*a*b^2*d*e*g*i*j*m*n^2 + 24*a*b^2*d^2*g*j^2*m*
n^2 - 6*b^3*d*e*g*i*j*m*n^3 - 36*b^3*d^2*g*j^2*m*n^3 + 4*a^3*e^2*g*i*j*m*x
+ 12*a^2*b*d*e*f*j^2*n*x - 18*a^2*b*e^2*g*i*j*m*n*x - 18*a^2*b*d*e*g*j^2*m*
n*x - 36*a*b^2*d*e*f*j^2*n^2*x + 42*a*b^2*e^2*g*i*j*m*n^2*x + 84*a*b^2*d*e*
g*j^2*m*n^2*x + 42*b^3*d*e*f*j^2*n^3*x - 45*b^3*e^2*g*i*j*m*n^3*x - 135*b^3
*d*e*g*j^2*m*n^3*x + 4*a^3*e^2*f*j^2*x^2 - 2*a^3*e^2*g*j^2*m*x^2 - 6*a^2*b*
e^2*f*j^2*n*x^2 + 6*a^2*b*e^2*g*j^2*m*n*x^2 + 6*a*b^2*e^2*f*j^2*n^2*x^2 - 9
*a*b^2*e^2*g*j^2*m*n^2*x^2 - 3*b^3*e^2*f*j^2*n^3*x^2 + 6*b^3*e^2*g*j^2*m*n^
3*x^2 - 12*a^2*b*d^2*f*j^2*n*Log[d + e*x] + 12*a^2*b*d*e*g*i*j*m*n*Log[d +
e*x] + 6*a^2*b*d^2*g*j^2*m*n*Log[d + e*x] + 36*a*b^2*d^2*f*j^2*n^2*Log[d +
e*x] - 12*a*b^2*d*e*g*i*j*m*n^2*Log[d + e*x] - 48*a*b^2*d^2*g*j^2*m*n^2*Log
[d + e*x] - 42*b^3*d^2*f*j^2*n^3*Log[d + e*x] + 30*b^3*d*e*g*i*j*m*n^3*Log[
d + e*x] + 69*b^3*d^2*g*j^2*m*n^3*Log[d + e*x] + 12*a*b^2*d^2*f*j^2*n^2*Log
[d + e*x]^2 - 12*a*b^2*d*e*g*i*j*m*n^2*Log[d + e*x]^2 - 6*a*b^2*d^2*g*j^2*m
*n^2*Log[d + e*x]^2 - 18*b^3*d^2*f*j^2*n^3*Log[d + e*x]^2 + 6*b^3*d*e*g*i*j
*m*n^3*Log[d + e*x]^2 + 24*b^3*d^2*g*j^2*m*n^3*Log[d + e*x]^2 - 4*b^3*d^2*f
*j^2*n^3*Log[d + e*x]^3 + 4*b^3*d*e*g*i*j*m*n^3*Log[d + e*x]^3 + 2*b^3*d^2*
g*j^2*m*n^3*Log[d + e*x]^3 - 24*a*b^2*d*e*g*i*j*m*n*Log[c*(d + e*x)^n] + 12
*b^3*d*e*g*i*j*m*n^2*Log[c*(d + e*x)^n] + 24*b^3*d^2*g*j^2*m*n^2*Log[c*(d +
 e*x)^n] + 12*a^2*b*e^2*g*i*j*m*x*Log[c*(d + e*x)^n] + 24*a*b^2*d*e*f*j^2*n
*x*Log[c*(d + e*x)^n] - 36*a*b^2*e^2*g*i*j*m*n*x*Log[c*(d + e*x)^n] - 36*a*
b^2*d*e*g*j^2*m*n*x*Log[c*(d + e*x)^n] - 36*b^3*d*e*f*j^2*n^2*x*Log[c*(d +
e*x)^n] + 42*b^3*e^2*g*i*j*m*n^2*x*Log[c*(d + e*x)^n] + 84*b^3*d*e*g*j^2*m*
n^2*x*Log[c*(d + e*x)^n] + 12*a^2*b*e^2*f*j^2*x^2*Log[c*(d + e*x)^n] - 6*a^
2*b*e^2*g*j^2*m*x^2*Log[c*(d + e*x)^n] - 12*a*b^2*e^2*f*j^2*n*x^2*Log[c*(d
+ e*x)^n] + 12*a*b^2*e^2*g*j^2*m*n*x^2*Log[c*(d + e*x)^n] + 6*b^3*e^2*f*j^2
*n^2*x^2*Log[c*(d + e*x)^n] - 9*b^3*e^2*g*j^2*m*n^2*x^2*Log[c*(d + e*x)^n]
- 24*a*b^2*d^2*f*j^2*n*Log[d + e*x]*Log[c*(d + e*x)^n] + 24*a*b^2*d*e*g*i*j
*m*n*Log[d + e*x]*Log[c*(d + e*x)^n] + 12*a*b^2*d^2*g*j^2*m*n*Log[d + e*x]*
Log[c*(d + e*x)^n] + 36*b^3*d^2*f*j^2*n^2*Log[d + e*x]*Log[c*(d + e*x)^n] -
 12*b^3*d*e*g*i*j*m*n^2*Log[d + e*x]*Log[c*(d + e*x)^n] - 48*b^3*d^2*g*j^2*
m*n^2*Log[d + e*x]*Log[c*(d + e*x)^n] + 12*b^3*d^2*f*j^2*n^2*Log[d + e*x]^2
*Log[c*(d + e*x)^n] - 12*b^3*d*e*g*i*j*m*n^2*Log[d + e*x]^2*Log[c*(d + e*x)
^n] - 6*b^3*d^2*g*j^2*m*n^2*Log[d + e*x]^2*Log[c*(d + e*x)^n] - 12*b^3*d*e*
g*i*j*m*n*Log[c*(d + e*x)^n]^2 + 12*a*b^2*e^2*g*i*j*m*x*Log[c*(d + e*x)^n]^
2 + 12*b^3*d*e*f*j^2*n*x*Log[c*(d + e*x)^n]^2 - 18*b^3*e^2*g*i*j*m*n*x*Log[
c*(d + e*x)^n]^2 - 18*b^3*d*e*g*j^2*m*n*x*Log[c*(d + e*x)^n]^2 + 12*a*b^2*e
^2*f*j^2*x^2*Log[c*(d + e*x)^n]^2 - 6*a*b^2*e^2*g*j^2*m*x^2*Log[c*(d + e*x)
^n]^2 - 6*b^3*e^2*f*j^2*n*x^2*Log[c*(d + e*x)^n]^2 + 6*b^3*e^2*g*j^2*m*n*x^
2*Log[c*(d + e*x)^n]^2 - 12*b^3*d^2*f*j^2*n*Log[d + e*x]*Log[c*(d + e*x)^n]
^2 + 12*b^3*d*e*g*i*j*m*n*Log[d + e*x]*Log[c*(d + e*x)^n]^2 + 6*b^3*d^2*g*j
^2*m*n*Log[d + e*x]*Log[c*(d + e*x)^n]^2 + 4*b^3*e^2*g*i*j*m*x*Log[c*(d + e
*x)^n]^3 + 4*b^3*e^2*f*j^2*x^2*Log[c*(d + e*x)^n]^3 - 2*b^3*e^2*g*j^2*m*x^2
*Log[c*(d + e*x)^n]^3 - 4*a^3*e^2*g*i^2*m*Log[i + j*x] + 6*a^2*b*e^2*g*i^2*
m*n*Log[i + j*x] + 12*a^2*b*d*e*g*i*j*m*n*Log[i + j*x] - 6*a*b^2*e^2*g*i^2*
m*n^2*Log[i + j*x] - 36*a*b^2*d*e*g*i*j*m*n^2*Log[i + j*x] + 3*b^3*e^2*g*i^
2*m*n^3*Log[i + j*x] + 42*b^3*d*e*g*i*j*m*n^3*Log[i + j*x] + 12*a^2*b*e^2*g
*i^2*m*n*Log[d + e*x]*Log[i + j*x] - 12*a*b^2*e^2*g*i^2*m*n^2*Log[d + e*x]*
Log[i + j*x] - 24*a*b^2*d*e*g*i*j*m*n^2*Log[d + e*x]*Log[i + j*x] + 6*b^3*e
^2*g*i^2*m*n^3*Log[d + e*x]*Log[i + j*x] + 36*b^3*d*e*g*i*j*m*n^3*Log[d + e
*x]*Log[i + j*x] - 12*a*b^2*e^2*g*i^2*m*n^2*Log[d + e*x]^2*Log[i + j*x] + 6
*b^3*e^2*g*i^2*m*n^3*Log[d + e*x]^2*Log[i + j*x] + 12*b^3*d*e*g*i*j*m*n^3*L
```

og[d + e*x]^2*Log[i + j*x] + 4*b^3*e^2*g*i^2*m*n^3*Log[d + e*x]^3*Log[i + j
*x] - 12*a^2*b*e^2*g*i^2*m*Log[c*(d + e*x)^n]*Log[i + j*x] + 12*a*b^2*e^2*g
*i^2*m*n*Log[c*(d + e*x)^n]*Log[i + j*x] + 24*a*b^2*d*e*g*i*j*m*n*Log[c*(d
+ e*x)^n]*Log[i + j*x] - 6*b^3*e^2*g*i^2*m*n^2*Log[c*(d + e*x)^n]*Log[i + j
*x] - 36*b^3*d*e*g*i*j*m*n^2*Log[c*(d + e*x)^n]*Log[i + j*x] + 24*a*b^2*e^2
*g*i^2*m*n*Log[d + e*x]*Log[c*(d + e*x)^n]*Log[i + j*x] - 12*b^3*e^2*g*i^2*
m*n^2*Log[d + e*x]*Log[c*(d + e*x)^n]*Log[i + j*x] - 24*b^3*d*e*g*i*j*m*n^2
*Log[d + e*x]*Log[c*(d + e*x)^n]*Log[i + j*x] - 12*b^3*e^2*g*i^2*m*n^2*Log[
d + e*x]^2*Log[c*(d + e*x)^n]*Log[i + j*x] - 12*a*b^2*e^2*g*i^2*m*Log[c*(d
+ e*x)^n]^2*Log[i + j*x] + 6*b^3*e^2*g*i^2*m*n*Log[c*(d + e*x)^n]^2*Log[i +
 j*x] + 12*b^3*d*e*g*i*j*m*n*Log[c*(d + e*x)^n]^2*Log[i + j*x] + 12*b^3*e^2
*g*i^2*m*n*Log[d + e*x]*Log[c*(d + e*x)^n]^2*Log[i + j*x] - 4*b^3*e^2*g*i^2
*m*Log[c*(d + e*x)^n]^3*Log[i + j*x] - 12*a^2*b*e^2*g*i^2*m*n*Log[d + e*x]*
Log[(e*(i + j*x))/(e*i - d*j)] + 12*a^2*b*d^2*g*j^2*m*n*Log[d + e*x]*Log[(e
*(i + j*x))/(e*i - d*j)] + 12*a*b^2*e^2*g*i^2*m*n^2*Log[d + e*x]*Log[(e*(i
+ j*x))/(e*i - d*j)] + 24*a*b^2*d*e*g*i*j*m*n^2*Log[d + e*x]*Log[(e*(i + j*
x))/(e*i - d*j)] - 36*a*b^2*d^2*g*j^2*m*n^2*Log[d + e*x]*Log[(e*(i + j*x))/
(e*i - d*j)] - 6*b^3*e^2*g*i^2*m*n^3*Log[d + e*x]*Log[(e*(i + j*x))/(e*i -
d*j)] - 36*b^3*d*e*g*i*j*m*n^3*Log[d + e*x]*Log[(e*(i + j*x))/(e*i - d*j)]
+ 42*b^3*d^2*g*j^2*m*n^3*Log[d + e*x]*Log[(e*(i + j*x))/(e*i - d*j)] + 12*a
*b^2*e^2*g*i^2*m*n^2*Log[d + e*x]^2*Log[(e*(i + j*x))/(e*i - d*j)] - 12*a*b
^2*d^2*g*j^2*m*n^2*Log[d + e*x]^2*Log[(e*(i + j*x))/(e*i - d*j)] - 6*b^3*e^
2*g*i^2*m*n^3*Log[d + e*x]^2*Log[(e*(i + j*x))/(e*i - d*j)] - 12*b^3*d*e*g*
i*j*m*n^3*Log[d + e*x]^2*Log[(e*(i + j*x))/(e*i - d*j)] + 18*b^3*d^2*g*j^2*
m*n^3*Log[d + e*x]^2*Log[(e*(i + j*x))/(e*i - d*j)] - 4*b^3*e^2*g*i^2*m*n^3
*Log[d + e*x]^3*Log[(e*(i + j*x))/(e*i - d*j)] + 4*b^3*d^2*g*j^2*m*n^3*Log[
d + e*x]^3*Log[(e*(i + j*x))/(e*i - d*j)] - 24*a*b^2*e^2*g*i^2*m*n*Log[d +
e*x]*Log[c*(d + e*x)^n]*Log[(e*(i + j*x))/(e*i - d*j)] + 24*a*b^2*d^2*g*j^2
*m*n*Log[d + e*x]*Log[c*(d + e*x)^n]*Log[(e*(i + j*x))/(e*i - d*j)] + 12*b^
3*e^2*g*i^2*m*n^2*Log[d + e*x]*Log[c*(d + e*x)^n]*Log[(e*(i + j*x))/(e*i -
d*j)] + 24*b^3*d*e*g*i*j*m*n^2*Log[d + e*x]*Log[c*(d + e*x)^n]*Log[(e*(i +
j*x))/(e*i - d*j)] - 36*b^3*d^2*g*j^2*m*n^2*Log[d + e*x]*Log[c*(d + e*x)^n]
Log[(e(i + j*x))/(e*i - d*j)] + 12*b^3*e^2*g*i^2*m*n^2*Log[d + e*x]^2*Log
[c*(d + e*x)^n]*Log[(e*(i + j*x))/(e*i - d*j)] - 12*b^3*d^2*g*j^2*m*n^2*Log
[d + e*x]^2*Log[c*(d + e*x)^n]*Log[(e*(i + j*x))/(e*i - d*j)] - 12*b^3*e^2*
g*i^2*m*n*Log[d + e*x]*Log[c*(d + e*x)^n]^2*Log[(e*(i + j*x))/(e*i - d*j)]
+ 12*b^3*d^2*g*j^2*m*n*Log[d + e*x]*Log[c*(d + e*x)^n]^2*Log[(e*(i + j*x))/
(e*i - d*j)] + 12*a^2*b*d*e*g*j^2*n*x*Log[h*(i + j*x)^m] - 36*a*b^2*d*e*g*j
^2*n^2*x*Log[h*(i + j*x)^m] + 42*b^3*d*e*g*j^2*n^3*x*Log[h*(i + j*x)^m] + 4
*a^3*e^2*g*j^2*x^2*Log[h*(i + j*x)^m] - 6*a^2*b*e^2*g*j^2*n*x^2*Log[h*(i +
j*x)^m] + 6*a*b^2*e^2*g*j^2*n^2*x^2*Log[h*(i + j*x)^m] - 3*b^3*e^2*g*j^2*n^
3*x^2*Log[h*(i + j*x)^m] - 12*a^2*b*d^2*g*j^2*n*Log[d + e*x]*Log[h*(i + j*x
)^m] + 36*a*b^2*d^2*g*j^2*n^2*Log[d + e*x]*Log[h*(i + j*x)^m] - 42*b^3*d^2*
g*j^2*n^3*Log[d + e*x]*Log[h*(i + j*x)^m] + 12*a*b^2*d^2*g*j^2*n^2*Log[d +
e*x]^2*Log[h*(i + j*x)^m] - 18*b^3*d^2*g*j^2*n^3*Log[d + e*x]^2*Log[h*(i +
j*x)^m] - 4*b^3*d^2*g*j^2*n^3*Log[d + e*x]^3*Log[h*(i + j*x)^m] + 24*a*b^2*
d*e*g*j^2*n*x*Log[c*(d + e*x)^n]*Log[h*(i + j*x)^m] - 36*b^3*d*e*g*j^2*n^2*
x*Log[c*(d + e*x)^n]*Log[h*(i + j*x)^m] + 12*a^2*b*e^2*g*j^2*x^2*Log[c*(d +
 e*x)^n]*Log[h*(i + j*x)^m] - 12*a*b^2*e^2*g*j^2*n*x^2*Log[c*(d + e*x)^n]*L
og[h*(i + j*x)^m] + 6*b^3*e^2*g*j^2*n^2*x^2*Log[c*(d + e*x)^n]*Log[h*(i + j
*x)^m] - 24*a*b^2*d^2*g*j^2*n*Log[d + e*x]*Log[c*(d + e*x)^n]*Log[h*(i + j*
x)^m] + 36*b^3*d^2*g*j^2*n^2*Log[d + e*x]*Log[c*(d + e*x)^n]*Log[h*(i + j*x
)^m] + 12*b^3*d^2*g*j^2*n^2*Log[d + e*x]^2*Log[c*(d + e*x)^n]*Log[h*(i + j*
x)^m] + 12*b^3*d*e*g*j^2*n*x*Log[c*(d + e*x)^n]^2*Log[h*(i + j*x)^m] + 12*a
*b^2*e^2*g*j^2*x^2*Log[c*(d + e*x)^n]^2*Log[h*(i + j*x)^m] - 6*b^3*e^2*g*j^
2*n*x^2*Log[c*(d + e*x)^n]^2*Log[h*(i + j*x)^m] - 12*b^3*d^2*g*j^2*n*Log[d
+ e*x]*Log[c*(d + e*x)^n]^2*Log[h*(i + j*x)^m] + 4*b^3*e^2*g*j^2*x^2*Log[c*
(d + e*x)^n]^3*Log[h*(i + j*x)^m] - 6*b*g*(e*i - d*j)*m*n*(2*a^2*(e*i + d*j
) - 2*a*b*(e*i + 3*d*j)*n + b^2*(e*i + 7*d*j)*n^2 - 2*b*(-2*a*(e*i + d*j) +

```
b*(e*i + 3*d*j)*n)*Log[c*(d + e*x)^n] + 2*b^2*(e*i + d*j)*Log[c*(d + e*x)^
n]^2)*PolyLog[2, (j*(d + e*x))/(-(e*i) + d*j)] + 12*b^2*g*(e*i - d*j)*m*n^2
*(2*a*(e*i + d*j) - b*(e*i + 3*d*j)*n + 2*b*(e*i + d*j)*Log[c*(d + e*x)^n])
*PolyLog[3, (j*(d + e*x))/(-(e*i) + d*j)] - 24*b^3*e^2*g*i^2*m*n^3*PolyLog[
4, (j*(d + e*x))/(-(e*i) + d*j)] + 24*b^3*d^2*g*j^2*m*n^3*PolyLog[4, (j*(d
+ e*x))/(-(e*i) + d*j)])/(8*e^2*j^2)
```

fricas [F] time = 0.47, size = 0, normalized size = 0.00

$$\text{integral}\left(b^3 f x \log\left((ex+d)^n c\right)^3 + 3\,ab^2 f x \log\left((ex+d)^n c\right)^2 + 3\,a^2 b f x \log\left((ex+d)^n c\right) + a^3 f x + \left(b^3 g x \log\left((e\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))^3*(f+g*log(h*(j*x+i)^m)),x, algorithm="f
ricas")
```

```
[Out] integral(b^3*f*x*log((e*x + d)^n*c)^3 + 3*a*b^2*f*x*log((e*x + d)^n*c)^2 +
3*a^2*b*f*x*log((e*x + d)^n*c) + a^3*f*x + (b^3*g*x*log((e*x + d)^n*c)^3 +
3*a*b^2*g*x*log((e*x + d)^n*c)^2 + 3*a^2*b*g*x*log((e*x + d)^n*c) + a^3*g*x
)*log((j*x + i)^m*h), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b \log\left((ex+d)^n c\right) + a\right)^3 \left(g \log\left((jx+i)^m h\right) + f\right) x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))^3*(f+g*log(h*(j*x+i)^m)),x, algorithm="g
iac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^3*(g*log((j*x + i)^m*h) + f)*x, x)
```

maple [F] time = 4.02, size = 0, normalized size = 0.00

$$\int \left(b \ln\left(c\,(ex+d)^n\right) + a\right)^3 \left(g \ln\left(h\,(jx+i)^m\right) + f\right) x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(b*ln(c*(e*x+d)^n)+a)^3*(g*ln(h*(j*x+i)^m)+f),x)
```

```
[Out] int(x*(b*ln(c*(e*x+d)^n)+a)^3*(g*ln(h*(j*x+i)^m)+f),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))^3*(f+g*log(h*(j*x+i)^m)),x, algorithm="m
axima")
```

```
[Out] 1/2*b^3*f*x^2*log((e*x + d)^n*c)^3 + 3/2*a*b^2*f*x^2*log((e*x + d)^n*c)^2 -
 3/4*a^2*b*e*f*n*(2*d^2*log(e*x + d)/e^3 + (e*x^2 - 2*d*x)/e^2) - 1/4*a^3*g
*j*m*(2*i^2*log(j*x + i)/j^3 + (j*x^2 - 2*i*x)/j^2) + 3/2*a^2*b*f*x^2*log((
e*x + d)^n*c) + 1/2*a^3*g*x^2*log((j*x + i)^m*h) + 1/2*a^3*f*x^2 - 3/4*(2*e
*n*(2*d^2*log(e*x + d)/e^3 + (e*x^2 - 2*d*x)/e^2)*log((e*x + d)^n*c) - (e^2
*x^2 + 2*d^2*log(e*x + d)^2 - 6*d*e*x + 6*d^2*log(e*x + d))*n^2/e^2)*a*b^2*
f - 1/8*(6*e*n*(2*d^2*log(e*x + d)/e^3 + (e*x^2 - 2*d*x)/e^2)*log((e*x + d)
^n*c)^2 + e*n*((4*d^2*log(e*x + d)^3 + 3*e^2*x^2 + 18*d^2*log(e*x + d)^2 -
42*d*e*x + 42*d^2*log(e*x + d))*n^2/e^3 - 6*(e^2*x^2 + 2*d^2*log(e*x + d)^2
 - 6*d*e*x + 6*d^2*log(e*x + d))*n*log((e*x + d)^n*c)/e^3))*b^3*f + 1/8*(2*
```

```
(2*b^3*e^2*g*i*j*m*x - 2*b^3*e^2*g*i^2*m*log(j*x + i) - (j^2*m - 2*j^2*log(
h))*b^3*e^2*g*x^2)*log((e*x + d)^n)^3 - (4*b^3*d^2*g*j^2*n^3*log(e*x + d)^3
 - 4*b^3*e^2*g*j^2*x^2*log((e*x + d)^n)^3 + (6*(e^2*g*j^2*n - 2*e^2*g*j^2*l
og(c))*a^2*b - 6*(e^2*g*j^2*n^2 - 2*e^2*g*j^2*n*log(c) + 2*e^2*g*j^2*log(c)
^2)*a*b^2 + (3*e^2*g*j^2*n^3 - 6*e^2*g*j^2*n^2*log(c) + 6*e^2*g*j^2*n*log(c
)^2 - 4*e^2*g*j^2*log(c)^3)*b^3)*x^2 - 6*(2*a*b^2*d^2*g*j^2*n^2 - (3*d^2*g*
j^2*n^3 - 2*d^2*g*j^2*n^2*log(c))*b^3)*log(e*x + d)^2 - 6*(2*b^3*d*e*g*j^2*
n*x - 2*b^3*d^2*g*j^2*n*log(e*x + d) + (2*a*b^2*e^2*g*j^2 - (e^2*g*j^2*n -
2*e^2*g*j^2*log(c))*b^3)*x^2)*log((e*x + d)^n)^2 - 6*(2*a^2*b*d*e*g*j^2*n -
 2*(3*d*e*g*j^2*n^2 - 2*d*e*g*j^2*n*log(c))*a*b^2 + (7*d*e*g*j^2*n^3 - 6*d*
e*g*j^2*n^2*log(c) + 2*d*e*g*j^2*n*log(c)^2)*b^3)*x + 6*(2*a^2*b*d^2*g*j^2*
n - 2*(3*d^2*g*j^2*n^2 - 2*d^2*g*j^2*n*log(c))*a*b^2 + (7*d^2*g*j^2*n^3 - 6
*d^2*g*j^2*n^2*log(c) + 2*d^2*g*j^2*n*log(c)^2)*b^3)*log(e*x + d) - 6*(2*b^
3*d^2*g*j^2*n^2*log(e*x + d)^2 + (2*a^2*b*e^2*g*j^2 - 2*(e^2*g*j^2*n - 2*e^
2*g*j^2*log(c))*a*b^2 + (e^2*g*j^2*n^2 - 2*e^2*g*j^2*n*log(c) + 2*e^2*g*j^2
*log(c)^2)*b^3)*x^2 + 2*(2*a*b^2*d*e*g*j^2*n - (3*d*e*g*j^2*n^2 - 2*d*e*g*j
^2*n*log(c))*b^3)*x - 2*(2*a*b^2*d^2*g*j^2*n - (3*d^2*g*j^2*n^2 - 2*d^2*g*j
^2*n*log(c))*b^3)*log(e*x + d))*log((e*x + d)^n))*log((j*x + i)^m))/(e^2*j^
2) + integrate(1/8*((6*(e^3*g*j^3*m*n - 2*(j^3*m - 2*j^3*log(h))*e^3*g*log(
c))*a^2*b - 6*(e^3*g*j^3*m*n^2 - 2*e^3*g*j^3*m*n*log(c) + 2*(j^3*m - 2*j^3*
log(h))*e^3*g*log(c)^2)*a*b^2 + (3*e^3*g*j^3*m*n^3 - 6*e^3*g*j^3*m*n^2*log(
c) + 6*e^3*g*j^3*m*n*log(c)^2 - 4*(j^3*m - 2*j^3*log(h))*e^3*g*log(c)^3)*b^
3)*x^3 + 4*(b^3*d^2*e*g*j^3*m*n^3*x + b^3*d^3*g*j^3*m*n^3)*log(e*x + d)^3 -
 (6*(d*e^2*g*j^3*m*n - 2*(2*e^3*g*i*j^2*log(h) - (j^3*m - 2*j^3*log(h))*d*e
^2*g)*log(c))*a^2*b - 6*(5*d*e^2*g*j^3*m*n^2 - 2*d*e^2*g*j^3*m*n*log(c) + 2
*(2*e^3*g*i*j^2*log(h) - (j^3*m - 2*j^3*log(h))*d*e^2*g)*log(c)^2)*a*b^2 +
(39*d*e^2*g*j^3*m*n^3 - 30*d*e^2*g*j^3*m*n^2*log(c) + 6*d*e^2*g*j^3*m*n*log
(c)^2 - 4*(2*e^3*g*i*j^2*log(h) - (j^3*m - 2*j^3*log(h))*d*e^2*g)*log(c)^3)
*b^3)*x^2 - 6*(2*a*b^2*d^3*g*j^3*m*n^2 - (3*d^3*g*j^3*m*n^3 - 2*d^3*g*j^3*m
*n^2*log(c))*b^3 + (2*a*b^2*d^2*e*g*j^3*m*n^2 - (3*d^2*e*g*j^3*m*n^3 - 2*d^
2*e*g*j^3*m*n^2*log(c))*b^3)*x)*log(e*x + d)^2 - 6*(2*((j^3*m - 2*j^3*log(h
))*a*b^2*e^3*g + ((j^3*m - 2*j^3*log(h))*e^3*g*log(c) - (j^3*m*n - j^3*n*lo
g(h))*e^3*g)*b^3)*x^3 - (2*(2*e^3*g*i*j^2*log(h) - (j^3*m - 2*j^3*log(h))*d
*e^2*g)*a*b^2 - (d*e^2*g*j^3*m*n + (i*j^2*m*n + 2*i*j^2*n*log(h))*e^3*g - 2
*(2*e^3*g*i*j^2*log(h) - (j^3*m - 2*j^3*log(h))*d*e^2*g)*log(c))*b^3)*x^2 -
 2*(2*a*b^2*d*e^2*g*i*j^2*log(h) - (e^3*g*i^2*j*m*n + d^2*e*g*j^3*m*n - 2*d
*e^2*g*i*j^2*log(c)*log(h))*b^3)*x - 2*(b^3*d^2*e*g*j^3*m*n*x + b^3*d^3*g*j
^3*m*n)*log(e*x + d) - 2*(b^3*e^3*g*i^2*j*m*n*x + b^3*e^3*g*i^3*m*n)*log(j*
x + i))*log((e*x + d)^n)^2 - 2*(6*(d^2*e*g*j^3*m*n - 2*d*e^2*g*i*j^2*log(c)
*log(h))*a^2*b - 6*(3*d^2*e*g*j^3*m*n^2 - 2*d^2*e*g*j^3*m*n*log(c) + 2*d*e^
2*g*i*j^2*log(c)^2*log(h))*a*b^2 + (21*d^2*e*g*j^3*m*n^3 - 18*d^2*e*g*j^3*m
*n^2*log(c) + 6*d^2*e*g*j^3*m*n*log(c)^2 - 4*d*e^2*g*i*j^2*log(c)^3*log(h))
*b^3)*x + 6*(2*a^2*b*d^3*g*j^3*m*n - 2*(3*d^3*g*j^3*m*n^2 - 2*d^3*g*j^3*m*n
*log(c))*a*b^2 + (7*d^3*g*j^3*m*n^3 - 6*d^3*g*j^3*m*n^2*log(c) + 2*d^3*g*j^
3*m*n*log(c)^2)*b^3 + (2*a^2*b*d^2*e*g*j^3*m*n - 2*(3*d^2*e*g*j^3*m*n^2 - 2
*d^2*e*g*j^3*m*n*log(c))*a*b^2 + (7*d^2*e*g*j^3*m*n^3 - 6*d^2*e*g*j^3*m*n^2
*log(c) + 2*d^2*e*g*j^3*m*n*log(c)^2)*b^3)*x)*log(e*x + d) - 6*((2*(j^3*m -
 2*j^3*log(h))*a^2*b*e^3*g - 2*(e^3*g*j^3*m*n - 2*(j^3*m - 2*j^3*log(h))*e^
3*g*log(c))*a*b^2 + (e^3*g*j^3*m*n^2 - 2*e^3*g*j^3*m*n*log(c) + 2*(j^3*m -
2*j^3*log(h))*e^3*g*log(c)^2)*b^3)*x^3 - (2*(2*e^3*g*i*j^2*log(h) - (j^3*m
- 2*j^3*log(h))*d*e^2*g)*a^2*b - 2*(d*e^2*g*j^3*m*n - 2*(2*e^3*g*i*j^2*log(
h) - (j^3*m - 2*j^3*log(h))*d*e^2*g)*log(c))*a*b^2 + (5*d*e^2*g*j^3*m*n^2 -
 2*d*e^2*g*j^3*m*n*log(c) + 2*(2*e^3*g*i*j^2*log(h) - (j^3*m - 2*j^3*log(h)
)*d*e^2*g)*log(c)^2)*b^3)*x^2 + 2*(b^3*d^2*e*g*j^3*m*n^2*x + b^3*d^3*g*j^3*
m*n^2)*log(e*x + d)^2 - 2*(2*a^2*b*d*e^2*g*i*j^2*log(h) - 2*(d^2*e*g*j^3*m*
n - 2*d*e^2*g*i*j^2*log(c)*log(h))*a*b^2 + (3*d^2*e*g*j^3*m*n^2 - 2*d^2*e*g
*j^3*m*n*log(c) + 2*d*e^2*g*i*j^2*log(c)^2*log(h))*b^3)*x - 2*(2*a*b^2*d^3*
g*j^3*m*n - (3*d^3*g*j^3*m*n^2 - 2*d^3*g*j^3*m*n*log(c))*b^3 + (2*a*b^2*d^2
*e*g*j^3*m*n - (3*d^2*e*g*j^3*m*n^2 - 2*d^2*e*g*j^3*m*n*log(c))*b^3)*x)*log
```

```
(e*x + d))*log((e*x + d)^n))/(e^3*j^3*x^2 + d*e^2*i*j^2 + (e^3*i*j^2 + d*e^
2*j^3)*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x\left(a+b\ln\left(c\left(d+ex\right)^n\right)\right)^3\left(f+g\ln\left(h\left(i+jx\right)^m\right)\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a + b*log(c*(d + e*x)^n))^3*(f + g*log(h*(i + j*x)^m)),x)
[Out] int(x*(a + b*log(c*(d + e*x)^n))^3*(f + g*log(h*(i + j*x)^m)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*ln(c*(e*x+d)**n))**3*(f+g*ln(h*(j*x+i)**m)),x)
[Out] Timed out
```

3.398 $\int \left(a+b\log\left(c(d+ex)^n\right)\right)^3 \left(f+g\log\left(h(i+jx)^m\right)\right) dx$

Optimal. Leaf size=1147

$$-6fn^3xb^3+24gmn^3xb^3+\frac{6fn^2(d+ex)\log\left(c(d+ex)^n\right)b^3}{e}-\frac{18gmn^2(d+ex)\log\left(c(d+ex)^n\right)b^3}{e}-\frac{6gn^3(i+jx)\log\left(h\right.}{j}$$

```
[Out] 6*b^3*g*i*m*n^3*polylog(2,-j*(e*x+d)/(-d*j+e*i))/j+6*b^3*d*g*m*n^3*polylog(
2,e*(j*x+i)/(-d*j+e*i))/e-6*b^3*d*g*m*n^3*polylog(3,-j*(e*x+d)/(-d*j+e*i))/
e+6*b^3*g*i*m*n^3*polylog(3,-j*(e*x+d)/(-d*j+e*i))/j-6*b^3*d*g*m*n^3*polylo
g(4,-j*(e*x+d)/(-d*j+e*i))/e+6*b^3*g*i*m*n^3*polylog(4,-j*(e*x+d)/(-d*j+e*i
))/j+x*(a+b*ln(c*(e*x+d)^n))^3*(f+g*ln(h*(j*x+i)^m))-6*b^3*f*n^3*x+d*f*(a+b
*ln(c*(e*x+d)^n))^3/e+6*a*b^2*f*n^2*x+24*b^3*g*m*n^3*x-g*m*(e*x+d)*(a+b*ln(
c*(e*x+d)^n))^3/e+d*g*(a+b*ln(c*(e*x+d)^n))^3*ln(h*(j*x+i)^m)/e-18*a*b^2*g*
m*n^2*x-18*b^3*g*m*n^2*(e*x+d)*ln(c*(e*x+d)^n)/e+6*b*g*m*n*(e*x+d)*(a+b*ln(
c*(e*x+d)^n))^2/e+6*b^3*d*g*n^3*ln(-j*(e*x+d)/(-d*j+e*i))*ln(h*(j*x+i)^m)/e
-3*b*d*g*n*(a+b*ln(c*(e*x+d)^n))^2*ln(h*(j*x+i)^m)/e+6*b^2*g*i*m*n^2*(a+b*l
n(c*(e*x+d)^n))*ln(e*(j*x+i)/(-d*j+e*i))/j+3*b*d*g*m*n*(a+b*ln(c*(e*x+d)^n)
)^2*ln(e*(j*x+i)/(-d*j+e*i))/e-3*b*g*i*m*n*(a+b*ln(c*(e*x+d)^n))^2*ln(e*(j*
x+i)/(-d*j+e*i))/j+6*b^2*d*g*m*n^2*(a+b*ln(c*(e*x+d)^n))*polylog(2,-j*(e*x+
d)/(-d*j+e*i))/e-6*b^2*g*i*m*n^2*(a+b*ln(c*(e*x+d)^n))*polylog(2,-j*(e*x+d)
/(-d*j+e*i))/j-3*b*d*g*m*n*(a+b*ln(c*(e*x+d)^n))^2*polylog(2,-j*(e*x+d)/(-d
*j+e*i))/e+3*b*g*i*m*n*(a+b*ln(c*(e*x+d)^n))^2*polylog(2,-j*(e*x+d)/(-d*j+e
*i))/j+6*b^2*d*g*m*n^2*(a+b*ln(c*(e*x+d)^n))*polylog(3,-j*(e*x+d)/(-d*j+e*i
))/e-6*b^2*g*i*m*n^2*(a+b*ln(c*(e*x+d)^n))*polylog(3,-j*(e*x+d)/(-d*j+e*i))
/j-d*g*m*(a+b*ln(c*(e*x+d)^n))^3*ln(e*(j*x+i)/(-d*j+e*i))/e+g*i*m*(a+b*ln(c
*(e*x+d)^n))^3*ln(e*(j*x+i)/(-d*j+e*i))/j+6*b^3*f*n^2*(e*x+d)*ln(c*(e*x+d)^
n)/e-3*b*f*n*(e*x+d)*(a+b*ln(c*(e*x+d)^n))^2/e-6*b^3*g*n^3*(j*x+i)*ln(h*(j*
x+i)^m)/j+6*b^2*g*n^2*x*(a+b*ln(c*(e*x+d)^n))*ln(h*(j*x+i)^m)-3*b*g*n*x*(a+
b*ln(c*(e*x+d)^n))^2*ln(h*(j*x+i)^m)
```

Rubi [A] time = 3.12, antiderivative size = 1147, normalized size of antiderivative = 1.00, number of steps used = 64, number of rules used = 22, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.710, Rules used = {2430, 2416, 2389, 2296, 2295, 2396, 2433, 2374, 2383, 6589, 6742, 2411, 2346, 2302, 30, 2301, 43, 2394, 2393, 2391, 2375, 2317}

$$-6fn^3xb^3+24gmn^3xb^3+\frac{6fn^2(d+ex)\log\left(c(d+ex)^n\right)b^3}{e}-\frac{18gmn^2(d+ex)\log\left(c(d+ex)^n\right)b^3}{e}-\frac{6gn^3(i+jx)\log\left(h\right.}{j}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^3*(f + g*Log[h*(i + j*x)^m]),x]
```

```
[Out] 6*a*b^2*f*n^2*x - 18*a*b^2*g*m*n^2*x - 6*b^3*f*n^3*x + 24*b^3*g*m*n^3*x + (
6*b^3*f*n^2*(d + e*x)*Log[c*(d + e*x)^n])/e - (18*b^3*g*m*n^2*(d + e*x)*Log
[c*(d + e*x)^n])/e - (3*b*f*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/e + (
6*b*g*m*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/e + (d*f*(a + b*Log[c*(d
+ e*x)^n])^3)/e - (g*m*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^3)/e + (6*b^2*g
*i*m*n^2*(a + b*Log[c*(d + e*x)^n])*Log[(e*(i + j*x))/(e*i - d*j)])/j + (3*
b*d*g*m*n*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(i + j*x))/(e*i - d*j)])/e -
(3*b*g*i*m*n*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(i + j*x))/(e*i - d*j)])/j
 - (d*g*m*(a + b*Log[c*(d + e*x)^n])^3*Log[(e*(i + j*x))/(e*i - d*j)])/e +
(g*i*m*(a + b*Log[c*(d + e*x)^n])^3*Log[(e*(i + j*x))/(e*i - d*j)])/j - (6*
b^3*g*n^3*(i + j*x)*Log[h*(i + j*x)^m])/j + (6*b^3*d*g*n^3*Log[-((j*(d + e*
x))/(e*i - d*j))]*Log[h*(i + j*x)^m])/e + 6*b^2*g*n^2*x*(a + b*Log[c*(d + e
*x)^n])*Log[h*(i + j*x)^m] - (3*b*d*g*n*(a + b*Log[c*(d + e*x)^n])^2*Log[h*
(i + j*x)^m])/e - 3*b*g*n*x*(a + b*Log[c*(d + e*x)^n])^2*Log[h*(i + j*x)^m]
 + (d*g*(a + b*Log[c*(d + e*x)^n])^3*Log[h*(i + j*x)^m])/e + x*(a + b*Log[c
```

```
*(d + e*x)^n])^3*(f + g*Log[h*(i + j*x)^m]) + (6*b^3*g*i*m*n^3*PolyLog[2, -
((j*(d + e*x))/(e*i - d*j))])/j + (6*b^2*d*g*m*n^2*(a + b*Log[c*(d + e*x)^n
])*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])/e - (6*b^2*g*i*m*n^2*(a + b*Lo
g[c*(d + e*x)^n])*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])/j - (3*b*d*g*m*
n*(a + b*Log[c*(d + e*x)^n])^2*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])/e
+ (3*b*g*i*m*n*(a + b*Log[c*(d + e*x)^n])^2*PolyLog[2, -((j*(d + e*x))/(e*i
 - d*j))])/j + (6*b^3*d*g*m*n^3*PolyLog[2, (e*(i + j*x))/(e*i - d*j)])/e -
(6*b^3*d*g*m*n^3*PolyLog[3, -((j*(d + e*x))/(e*i - d*j))])/e + (6*b^3*g*i*m
*n^3*PolyLog[3, -((j*(d + e*x))/(e*i - d*j))])/j + (6*b^2*d*g*m*n^2*(a + b*
Log[c*(d + e*x)^n])*PolyLog[3, -((j*(d + e*x))/(e*i - d*j))])/e - (6*b^2*g*
i*m*n^2*(a + b*Log[c*(d + e*x)^n])*PolyLog[3, -((j*(d + e*x))/(e*i - d*j))]
)/j - (6*b^3*d*g*m*n^3*PolyLog[4, -((j*(d + e*x))/(e*i - d*j))])/e + (6*b^3
*g*i*m*n^3*PolyLog[4, -((j*(d + e*x))/(e*i - d*j))])/j
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2346

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.))
/(x_), x_Symbol] :> Dist[d, Int[((d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p)/x,
 x], x] + Dist[e, Int[(d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p, x], x] /; Fre
```

```
eQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0] && GtQ[q, 0] && IntegerQ[2*q]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2375

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m
- 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2383

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^p)/q
, x] - Dist[(b*n*p)/q, Int[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^(p - 1
))/x, x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2430

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)), x_Symbol] :> Simp[x*(a + b*Log[c
*(d + e*x)^n])^p*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[g*j*m, Int[(x*(a +
 b*Log[c*(d + e*x)^n])^p)/(i + j*x), x], x] - Dist[b*e*n*p, Int[(x*(a + b*L
og[c*(d + e*x)^n])^(p - 1)*(f + g*Log[h*(i + j*x)^m]))/(d + e*x), x], x]) /
; FreeQ[{a, b, c, d, e, f, g, h, i, j, m, n}, x] && IGtQ[p, 0]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \left(a+b\log\left(c(d+ex)^n\right)\right)^3 \left(f+g\log\left(h(398+jx)^m\right)\right)\,dx = x\left(a+b\log\left(c(d+ex)^n\right)\right)^3\left(f+g\log\left(h(398+jx)^m\right)\right)$$

$$= x\left(a+b\log\left(c(d+ex)^n\right)\right)^3\left(f+g\log\left(h(398+jx)^m\right)\right)$$

$$= x\left(a+b\log\left(c(d+ex)^n\right)\right)^3\left(f+g\log\left(h(398+jx)^m\right)\right)$$

$$= \frac{398gm\left(a+b\log\left(c(d+ex)^n\right)\right)^3\log\left(\frac{e(398+jx)}{398e-dj}\right)}{j} + x\left(a\right.$$

$$= -\frac{gm(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{e} + \frac{398gm\left(a+\right.}{}$$

$$= -\frac{3bfn(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{e} + \frac{3bgmn(d}{}$$

$$= 6ab^2fn^2x - 6ab^2gmn^2x - \frac{3bfn(d+ex)\left(a+b\log\left(c\right.\right.}{e}$$

$$= 6ab^2fn^2x - 6ab^2gmn^2x - 6b^3fn^3x + 6b^3gmn^3x +$$

$$= 6ab^2fn^2x - 6ab^2gmn^2x - 6b^3fn^3x + 6b^3gmn^3x +$$

$$= 6ab^2fn^2x - 6ab^2gmn^2x - 6b^3fn^3x + 6b^3gmn^3x +$$

$$= 6ab^2fn^2x - 12ab^2gmn^2x - 6b^3fn^3x + 6b^3gmn^3x +$$

$$= 6ab^2fn^2x - 18ab^2gmn^2x - 6b^3fn^3x + 12b^3gmn^3x +$$

$$= 6ab^2fn^2x - 18ab^2gmn^2x - 6b^3fn^3x + 18b^3gmn^3x +$$

$$= 6ab^2fn^2x - 18ab^2gmn^2x - 6b^3fn^3x + 24b^3gmn^3x +$$

Mathematica [B] time = 1.13, size = 3163, normalized size = 2.76

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^3*(f + g*Log[h*(i + j*x)^m]),x]
```

```
[Out] (-3*a^2*b*d*f*j*n + 3*a^2*b*d*g*j*m*n - 6*a*b^2*d*g*j*m*n^2 + 6*b^3*d*g*j*m
*n^3 + a^3*e*f*j*x - a^3*e*g*j*m*x - 3*a^2*b*e*f*j*n*x + 6*a^2*b*e*g*j*m*n*
x + 6*a*b^2*e*f*j*n^2*x - 18*a*b^2*e*g*j*m*n^2*x - 6*b^3*e*f*j*n^3*x + 24*b
^3*e*g*j*m*n^3*x + 3*a^2*b*d*f*j*n*Log[d + e*x] - 3*a^2*b*d*g*j*m*n*Log[d +
 e*x] + 6*a*b^2*d*g*j*m*n^2*Log[d + e*x] + 6*b^3*d*f*j*n^3*Log[d + e*x] - 1
2*b^3*d*g*j*m*n^3*Log[d + e*x] - 3*a*b^2*d*f*j*n^2*Log[d + e*x]^2 + 3*a*b^2
*d*g*j*m*n^2*Log[d + e*x]^2 - 3*b^3*d*g*j*m*n^3*Log[d + e*x]^2 + b^3*d*f*j*
n^3*Log[d + e*x]^3 - b^3*d*g*j*m*n^3*Log[d + e*x]^3 - 6*a*b^2*d*f*j*n*Log[c
*(d + e*x)^n] + 6*a*b^2*d*g*j*m*n*Log[c*(d + e*x)^n] - 6*b^3*d*g*j*m*n^2*Lo
g[c*(d + e*x)^n] + 3*a^2*b*e*f*j*x*Log[c*(d + e*x)^n] - 3*a^2*b*e*g*j*m*x*L
og[c*(d + e*x)^n] - 6*a*b^2*e*f*j*n*x*Log[c*(d + e*x)^n] + 12*a*b^2*e*g*j*m
*n*x*Log[c*(d + e*x)^n] + 6*b^3*e*f*j*n^2*x*Log[c*(d + e*x)^n] - 18*b^3*e*g
*j*m*n^2*x*Log[c*(d + e*x)^n] + 6*a*b^2*d*f*j*n*Log[d + e*x]*Log[c*(d + e*x
)^n] - 6*a*b^2*d*g*j*m*n*Log[d + e*x]*Log[c*(d + e*x)^n] + 6*b^3*d*g*j*m*n^
2*Log[d + e*x]*Log[c*(d + e*x)^n] - 3*b^3*d*f*j*n^2*Log[d + e*x]^2*Log[c*(d
 + e*x)^n] + 3*b^3*d*g*j*m*n^2*Log[d + e*x]^2*Log[c*(d + e*x)^n] - 3*b^3*d*
f*j*n*Log[c*(d + e*x)^n]^2 + 3*b^3*d*g*j*m*n*Log[c*(d + e*x)^n]^2 + 3*a*b^2
*e*f*j*x*Log[c*(d + e*x)^n]^2 - 3*a*b^2*e*g*j*m*x*Log[c*(d + e*x)^n]^2 - 3*
b^3*e*f*j*n*x*Log[c*(d + e*x)^n]^2 + 6*b^3*e*g*j*m*n*x*Log[c*(d + e*x)^n]^2
 + 3*b^3*d*f*j*n*Log[d + e*x]*Log[c*(d + e*x)^n]^2 - 3*b^3*d*g*j*m*n*Log[d
+ e*x]*Log[c*(d + e*x)^n]^2 + b^3*e*f*j*x*Log[c*(d + e*x)^n]^3 - b^3*e*g*j*
m*x*Log[c*(d + e*x)^n]^3 + a^3*e*g*i*m*Log[i + j*x] - 3*a^2*b*e*g*i*m*n*Log
[i + j*x] + 3*a^2*b*d*g*j*m*n*Log[i + j*x] + 6*a*b^2*e*g*i*m*n^2*Log[i + j*
x] - 6*b^3*e*g*i*m*n^3*Log[i + j*x] - 3*a^2*b*e*g*i*m*n*Log[d + e*x]*Log[i
+ j*x] + 6*a*b^2*e*g*i*m*n^2*Log[d + e*x]*Log[i + j*x] - 6*a*b^2*d*g*j*m*n^
2*Log[d + e*x]*Log[i + j*x] - 6*b^3*e*g*i*m*n^3*Log[d + e*x]*Log[i + j*x] +
 3*a*b^2*e*g*i*m*n^2*Log[d + e*x]^2*Log[i + j*x] - 3*b^3*e*g*i*m*n^3*Log[d
+ e*x]^2*Log[i + j*x] + 3*b^3*d*g*j*m*n^3*Log[d + e*x]^2*Log[i + j*x] - b^3
*e*g*i*m*n^3*Log[d + e*x]^3*Log[i + j*x] + 3*a^2*b*e*g*i*m*Log[c*(d + e*x)^
n]*Log[i + j*x] - 6*a*b^2*e*g*i*m*n*Log[c*(d + e*x)^n]*Log[i + j*x] + 6*a*b
^2*d*g*j*m*n*Log[c*(d + e*x)^n]*Log[i + j*x] + 6*b^3*e*g*i*m*n^2*Log[c*(d +
 e*x)^n]*Log[i + j*x] - 6*a*b^2*e*g*i*m*n*Log[d + e*x]*Log[c*(d + e*x)^n]*L
og[i + j*x] + 6*b^3*e*g*i*m*n^2*Log[d + e*x]*Log[c*(d + e*x)^n]*Log[i + j*x
] - 6*b^3*d*g*j*m*n^2*Log[d + e*x]*Log[c*(d + e*x)^n]*Log[i + j*x] + 3*b^3*
e*g*i*m*n^2*Log[d + e*x]^2*Log[c*(d + e*x)^n]*Log[i + j*x] + 3*a*b^2*e*g*i*
m*Log[c*(d + e*x)^n]^2*Log[i + j*x] - 3*b^3*e*g*i*m*n*Log[c*(d + e*x)^n]^2*
Log[i + j*x] + 3*b^3*d*g*j*m*n*Log[c*(d + e*x)^n]^2*Log[i + j*x] - 3*b^3*e*
g*i*m*n*Log[d + e*x]*Log[c*(d + e*x)^n]^2*Log[i + j*x] + b^3*e*g*i*m*Log[c*
(d + e*x)^n]^3*Log[i + j*x] + 3*a^2*b*e*g*i*m*n*Log[d + e*x]*Log[(e*(i + j*
x))/(e*i - d*j)] - 3*a^2*b*d*g*j*m*n*Log[d + e*x]*Log[(e*(i + j*x))/(e*i -
d*j)] - 6*a*b^2*e*g*i*m*n^2*Log[d + e*x]*Log[(e*(i + j*x))/(e*i - d*j)] + 6
*a*b^2*d*g*j*m*n^2*Log[d + e*x]*Log[(e*(i + j*x))/(e*i - d*j)] + 6*b^3*e*g*
i*m*n^3*Log[d + e*x]*Log[(e*(i + j*x))/(e*i - d*j)] - 6*b^3*d*g*j*m*n^3*Log
[d + e*x]*Log[(e*(i + j*x))/(e*i - d*j)] - 3*a*b^2*e*g*i*m*n^2*Log[d + e*x]
^2*Log[(e*(i + j*x))/(e*i - d*j)] + 3*a*b^2*d*g*j*m*n^2*Log[d + e*x]^2*Log[
(e*(i + j*x))/(e*i - d*j)] + 3*b^3*e*g*i*m*n^3*Log[d + e*x]^2*Log[(e*(i + j
*x))/(e*i - d*j)] - 3*b^3*d*g*j*m*n^3*Log[d + e*x]^2*Log[(e*(i + j*x))/(e*i
 - d*j)] + b^3*e*g*i*m*n^3*Log[d + e*x]^3*Log[(e*(i + j*x))/(e*i - d*j)] -
b^3*d*g*j*m*n^3*Log[d + e*x]^3*Log[(e*(i + j*x))/(e*i - d*j)] + 6*a*b^2*e*g
*i*m*n*Log[d + e*x]*Log[c*(d + e*x)^n]*Log[(e*(i + j*x))/(e*i - d*j)] - 6*a
*b^2*d*g*j*m*n*Log[d + e*x]*Log[c*(d + e*x)^n]*Log[(e*(i + j*x))/(e*i - d*j
)] - 6*b^3*e*g*i*m*n^2*Log[d + e*x]*Log[c*(d + e*x)^n]*Log[(e*(i + j*x))/(e
```

```
*i - d*j)] + 6*b^3*d*g*j*m*n^2*Log[d + e*x]*Log[c*(d + e*x)^n]*Log[(e*(i +
j*x))/(e*i - d*j)] - 3*b^3*e*g*i*m*n^2*Log[d + e*x]^2*Log[c*(d + e*x)^n]*Lo
g[(e*(i + j*x))/(e*i - d*j)] + 3*b^3*d*g*j*m*n^2*Log[d + e*x]^2*Log[c*(d +
e*x)^n]*Log[(e*(i + j*x))/(e*i - d*j)] + 3*b^3*e*g*i*m*n*Log[d + e*x]*Log[c
*(d + e*x)^n]^2*Log[(e*(i + j*x))/(e*i - d*j)] - 3*b^3*d*g*j*m*n*Log[d + e*
x]*Log[c*(d + e*x)^n]^2*Log[(e*(i + j*x))/(e*i - d*j)] - 3*a^2*b*d*g*j*n*Lo
g[h*(i + j*x)^m] + a^3*e*g*j*x*Log[h*(i + j*x)^m] - 3*a^2*b*e*g*j*n*x*Log[h
*(i + j*x)^m] + 6*a*b^2*e*g*j*n^2*x*Log[h*(i + j*x)^m] - 6*b^3*e*g*j*n^3*x*
Log[h*(i + j*x)^m] + 3*a^2*b*d*g*j*n*Log[d + e*x]*Log[h*(i + j*x)^m] + 6*b^
3*d*g*j*n^3*Log[d + e*x]*Log[h*(i + j*x)^m] - 3*a*b^2*d*g*j*n^2*Log[d + e*x
]^2*Log[h*(i + j*x)^m] + b^3*d*g*j*n^3*Log[d + e*x]^3*Log[h*(i + j*x)^m] -
6*a*b^2*d*g*j*n*Log[c*(d + e*x)^n]*Log[h*(i + j*x)^m] + 3*a^2*b*e*g*j*x*Log
[c*(d + e*x)^n]*Log[h*(i + j*x)^m] - 6*a*b^2*e*g*j*n*x*Log[c*(d + e*x)^n]*L
og[h*(i + j*x)^m] + 6*b^3*e*g*j*n^2*x*Log[c*(d + e*x)^n]*Log[h*(i + j*x)^m]
 + 6*a*b^2*d*g*j*n*Log[d + e*x]*Log[c*(d + e*x)^n]*Log[h*(i + j*x)^m] - 3*b
^3*d*g*j*n^2*Log[d + e*x]^2*Log[c*(d + e*x)^n]*Log[h*(i + j*x)^m] - 3*b^3*d
*g*j*n*Log[c*(d + e*x)^n]^2*Log[h*(i + j*x)^m] + 3*a*b^2*e*g*j*x*Log[c*(d +
 e*x)^n]^2*Log[h*(i + j*x)^m] - 3*b^3*e*g*j*n*x*Log[c*(d + e*x)^n]^2*Log[h*
(i + j*x)^m] + 3*b^3*d*g*j*n*Log[d + e*x]*Log[c*(d + e*x)^n]^2*Log[h*(i + j
*x)^m] + b^3*e*g*j*x*Log[c*(d + e*x)^n]^3*Log[h*(i + j*x)^m] + 3*b*g*(e*i -
 d*j)*m*n*(a^2 - 2*a*b*n + 2*b^2*n^2 + 2*b*(a - b*n)*Log[c*(d + e*x)^n] + b
^2*Log[c*(d + e*x)^n]^2)*PolyLog[2, (j*(d + e*x))/(-(e*i) + d*j)] - 6*b^2*g
*(e*i - d*j)*m*n^2*(a - b*n + b*Log[c*(d + e*x)^n])*PolyLog[3, (j*(d + e*x)
)/(-(e*i) + d*j)] + 6*b^3*e*g*i*m*n^3*PolyLog[4, (j*(d + e*x))/(-(e*i) + d*
j)] - 6*b^3*d*g*j*m*n^3*PolyLog[4, (j*(d + e*x))/(-(e*i) + d*j)])/(e*j)
```

fricas [F] time = 0.47, size = 0, normalized size = 0.00

$$\text{integral}\left(b^3 f \log\left(\left(ex+d\right)^n c\right)^3 + 3\,ab^2 f \log\left(\left(ex+d\right)^n c\right)^2 + 3\,a^2 bf \log\left(\left(ex+d\right)^n c\right) + a^3 f + \left(b^3 g \log\left(\left(ex+d\right)^n c\right)\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3*(f+g*log(h*(j*x+i)^m)),x, algorithm="fri
cas")
```

```
[Out] integral(b^3*f*log((e*x + d)^n*c)^3 + 3*a*b^2*f*log((e*x + d)^n*c)^2 + 3*a^
2*b*f*log((e*x + d)^n*c) + a^3*f + (b^3*g*log((e*x + d)^n*c)^3 + 3*a*b^2*g*
log((e*x + d)^n*c)^2 + 3*a^2*b*g*log((e*x + d)^n*c) + a^3*g)*log((j*x + i)^
m*h), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b \log\left(\left(ex+d\right)^n c\right) + a\right)^3 \left(g \log\left(\left(jx+i\right)^m h\right) + f\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3*(f+g*log(h*(j*x+i)^m)),x, algorithm="gia
c")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^3*(g*log((j*x + i)^m*h) + f), x)
```

maple [F] time = 9.76, size = 0, normalized size = 0.00

$$\int \left(b \ln\left(c \left(ex+d\right)^{n}\right) + a\right)^{3} \left(g \ln\left(h \left(jx+i\right)^{m}\right) + f\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)^3*(g*ln(h*(j*x+i)^m)+f),x)
```

```
[Out] int((b*ln(c*(e*x+d)^n)+a)^3*(g*ln(h*(j*x+i)^m)+f),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3*(f+g*log(h*(j*x+i)^m)),x, algorithm="max
ima")
```

```
[Out] b^3*f*x*log((e*x + d)^n*c)^3 - 3*a^2*b*e*f*n*(x/e - d*log(e*x + d)/e^2) - a
^3*g*j*m*(x/j - i*log(j*x + i)/j^2) + 3*a*b^2*f*x*log((e*x + d)^n*c)^2 + 3*
a^2*b*f*x*log((e*x + d)^n*c) + a^3*g*x*log((j*x + i)^m*h) - 3*(2*e*n*(x/e -
 d*log(e*x + d)/e^2)*log((e*x + d)^n*c) + (d*log(e*x + d)^2 - 2*e*x + 2*d*l
og(e*x + d))*n^2/e)*a*b^2*f - (3*e*n*(x/e - d*log(e*x + d)/e^2)*log((e*x +
d)^n*c)^2 - e*n*((d*log(e*x + d)^3 + 3*d*log(e*x + d)^2 - 6*e*x + 6*d*log(e
*x + d))*n^2/e^2 - 3*(d*log(e*x + d)^2 - 2*e*x + 2*d*log(e*x + d))*n*log((e
*x + d)^n*c)/e^2))*b^3*f + a^3*f*x + ((b^3*e*g*i*m*log(j*x + i) - (j*m - j*
log(h))*b^3*e*g*x)*log((e*x + d)^n)^3 + (b^3*d*g*j*n^3*log(e*x + d)^3 + b^3
*e*g*j*x*log((e*x + d)^n)^3 - 3*(a*b^2*d*g*j*n^2 - (d*g*j*n^3 - d*g*j*n^2*l
og(c))*b^3)*log(e*x + d)^2 + 3*(b^3*d*g*j*n*log(e*x + d) + (a*b^2*e*g*j - (
e*g*j*n - e*g*j*log(c))*b^3)*x)*log((e*x + d)^n)^2 - (3*(e*g*j*n - e*g*j*lo
g(c))*a^2*b - 3*(2*e*g*j*n^2 - 2*e*g*j*n*log(c) + e*g*j*log(c)^2)*a*b^2 + (
6*e*g*j*n^3 - 6*e*g*j*n^2*log(c) + 3*e*g*j*n*log(c)^2 - e*g*j*log(c)^3)*b^3
)*x + 3*(a^2*b*d*g*j*n - 2*(d*g*j*n^2 - d*g*j*n*log(c))*a*b^2 + (2*d*g*j*n^
3 - 2*d*g*j*n^2*log(c) + d*g*j*n*log(c)^2)*b^3)*log(e*x + d) - 3*(b^3*d*g*j
*n^2*log(e*x + d)^2 - (a^2*b*e*g*j - 2*(e*g*j*n - e*g*j*log(c))*a*b^2 + (2*
e*g*j*n^2 - 2*e*g*j*n*log(c) + e*g*j*log(c)^2)*b^3)*x - 2*(a*b^2*d*g*j*n -
(d*g*j*n^2 - d*g*j*n*log(c))*b^3)*log(e*x + d))*log((e*x + d)^n))*log((j*x
+ i)^m))/(e*j) - integrate(-(b^3*d*e*g*i*j*log(c)^3*log(h) + 3*a*b^2*d*e*g*
i*j*log(c)^2*log(h) + 3*a^2*b*d*e*g*i*j*log(c)*log(h) - (b^3*d*e*g*j^2*m*n^
3*x + b^3*d^2*g*j^2*m*n^3)*log(e*x + d)^3 + (3*(e^2*g*j^2*m*n - (j^2*m - j^
2*log(h))*e^2*g*log(c))*a^2*b - 3*(2*e^2*g*j^2*m*n^2 - 2*e^2*g*j^2*m*n*log(
c) + (j^2*m - j^2*log(h))*e^2*g*log(c)^2)*a*b^2 + (6*e^2*g*j^2*m*n^3 - 6*e^
2*g*j^2*m*n^2*log(c) + 3*e^2*g*j^2*m*n*log(c)^2 - (j^2*m - j^2*log(h))*e^2*
g*log(c)^3)*b^3)*x^2 + 3*(a*b^2*d^2*g*j^2*m*n^2 - (d^2*g*j^2*m*n^3 - d^2*g*
j^2*m*n^2*log(c))*b^3 + (a*b^2*d*e*g*j^2*m*n^2 - (d*e*g*j^2*m*n^3 - d*e*g*j
^2*m*n^2*log(c))*b^3)*x)*log(e*x + d)^2 + 3*(b^3*d*e*g*i*j*log(c)*log(h) +
a*b^2*d*e*g*i*j*log(h) - ((j^2*m - j^2*log(h))*a*b^2*e^2*g + ((j^2*m - j^2*
log(h))*e^2*g*log(c) - (2*j^2*m*n - j^2*n*log(h))*e^2*g)*b^3)*x^2 + ((e^2*g
*i*j*log(h) - (j^2*m - j^2*log(h))*d*e*g)*a*b^2 + (d*e*g*j^2*m*n + (i*j*m*n
 - i*j*n*log(h))*e^2*g + (e^2*g*i*j*log(h) - (j^2*m - j^2*log(h))*d*e*g)*lo
g(c))*b^3)*x - (b^3*d*e*g*j^2*m*n*x + b^3*d^2*g*j^2*m*n)*log(e*x + d) - (b^
3*e^2*g*i*j*m*n*x + b^3*e^2*g*i^2*m*n)*log(j*x + i))*log((e*x + d)^n)^2 + (
3*(d*e*g*j^2*m*n + (e^2*g*i*j*log(h) - (j^2*m - j^2*log(h))*d*e*g)*log(c))*
a^2*b - 3*(2*d*e*g*j^2*m*n^2 - 2*d*e*g*j^2*m*n*log(c) - (e^2*g*i*j*log(h) -
 (j^2*m - j^2*log(h))*d*e*g)*log(c)^2)*a*b^2 + (6*d*e*g*j^2*m*n^3 - 6*d*e*g
*j^2*m*n^2*log(c) + 3*d*e*g*j^2*m*n*log(c)^2 + (e^2*g*i*j*log(h) - (j^2*m -
 j^2*log(h))*d*e*g)*log(c)^3)*b^3)*x - 3*(a^2*b*d^2*g*j^2*m*n - 2*(d^2*g*j^
2*m*n^2 - d^2*g*j^2*m*n*log(c))*a*b^2 + (2*d^2*g*j^2*m*n^3 - 2*d^2*g*j^2*m*
n^2*log(c) + d^2*g*j^2*m*n*log(c)^2)*b^3 + (a^2*b*d*e*g*j^2*m*n - 2*(d*e*g*
j^2*m*n^2 - d*e*g*j^2*m*n*log(c))*a*b^2 + (2*d*e*g*j^2*m*n^3 - 2*d*e*g*j^2*
m*n^2*log(c) + d*e*g*j^2*m*n*log(c)^2)*b^3)*x)*log(e*x + d) + 3*(b^3*d*e*g*
i*j*log(c)^2*log(h) + 2*a*b^2*d*e*g*i*j*log(c)*log(h) + a^2*b*d*e*g*i*j*log
(h) - ((j^2*m - j^2*log(h))*a^2*b*e^2*g - 2*(e^2*g*j^2*m*n - (j^2*m - j^2*l
og(h))*e^2*g*log(c))*a*b^2 + (2*e^2*g*j^2*m*n^2 - 2*e^2*g*j^2*m*n*log(c) +
(j^2*m - j^2*log(h))*e^2*g*log(c)^2)*b^3)*x^2 + (b^3*d*e*g*j^2*m*n^2*x + b^
3*d^2*g*j^2*m*n^2)*log(e*x + d)^2 + ((e^2*g*i*j*log(h) - (j^2*m - j^2*log(h
))*d*e*g)*a^2*b + 2*(d*e*g*j^2*m*n + (e^2*g*i*j*log(h) - (j^2*m - j^2*log(h
))*d*e*g)*log(c))*a*b^2 - (2*d*e*g*j^2*m*n^2 - 2*d*e*g*j^2*m*n*log(c) - (e^
2*g*i*j*log(h) - (j^2*m - j^2*log(h))*d*e*g)*log(c)^2)*b^3)*x - 2*(a*b^2*d^
```

```
2*g*j^2*m*n - (d^2*g*j^2*m*n^2 - d^2*g*j^2*m*n*log(c))*b^3 + (a*b^2*d*e*g*j
^2*m*n - (d*e*g*j^2*m*n^2 - d*e*g*j^2*m*n*log(c))*b^3)*x)*log(e*x + d))*log
((e*x + d)^n))/(e^2*j^2*x^2 + d*e*i*j + (e^2*i*j + d*e*j^2)*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \left(a+b\,\ln\left(c\,(d+e\,x)^n\right)\right)^3\,\left(f+g\,\ln\left(h\,\left(i+j\,x\right)^m\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d + e*x)^n))^3*(f + g*log(h*(i + j*x)^m)),x)
[Out] int((a + b*log(c*(d + e*x)^n))^3*(f + g*log(h*(i + j*x)^m)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**3*(f+g*ln(h*(j*x+i)**m)),x)
[Out] Timed out
```

3.399 $\int \frac{(a+b\log(c(d+ex)^n))^3 (f+g\log(h(i+jx)^m))}{x} dx$

Optimal. Leaf size=37

$$\mathrm{Int}\left(\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^3 \left(f+g\log\left(h(i+jx)^m\right)\right)}{x},x\right)$$

```
[Out] Unintegrable((a+b*ln(c*(e*x+d)^n))^3*(f+g*ln(h*(j*x+i)^m))/x,x)
```

Rubi [A] time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^3 \left(f+g\log\left(h(i+jx)^m\right)\right)}{x}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[((a + b*Log[c*(d + e*x)^n])^3*(f + g*Log[h*(i + j*x)^m]))/x,x]
[Out] Defer[Int][((a + b*Log[c*(d + e*x)^n])^3*(f + g*Log[h*(i + j*x)^m]))/x, x]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^3 \left(f+g\log\left(h(399+jx)^m\right)\right)}{x}\,dx = \int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^3 \left(f+g\log\left(h(399+j\right.\right.}{x}$$

Mathematica [A] time = 1.38, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^3 \left(f+g\log\left(h(i+jx)^m\right)\right)}{x}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[((a + b*Log[c*(d + e*x)^n])^3*(f + g*Log[h*(i + j*x)^m]))/x,x]
[Out] Integrate[((a + b*Log[c*(d + e*x)^n])^3*(f + g*Log[h*(i + j*x)^m]))/x, x]
```

fricas [A] time = 0.44, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{b^3 f\log\left((ex+d)^n c\right)^3 + 3\,ab^2 f\log\left((ex+d)^n c\right)^2 + 3\,a^2 bf\log\left((ex+d)^n c\right) + a^3 f + \left(b^3 g\log\left((ex+d)\right.\right.}{x}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3*(f+g*log(h*(j*x+i)^m))/x,x, algorithm="f
ricas")
[Out] integral((b^3*f*log((e*x + d)^n*c)^3 + 3*a*b^2*f*log((e*x + d)^n*c)^2 + 3*a
^2*b*f*log((e*x + d)^n*c) + a^3*f + (b^3*g*log((e*x + d)^n*c)^3 + 3*a*b^2*g
*log((e*x + d)^n*c)^2 + 3*a^2*b*g*log((e*x + d)^n*c) + a^3*g)*log((j*x + i)
^m*h))/x, x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)^3 \left(g\log\left((jx+i)^m h\right)+f\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3*(f+g*log(h*(j*x+i)^m))/x,x, algorithm="g
iac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^3*(g*log((j*x + i)^m*h) + f)/x, x)
```

maple [A] time = 2.28, size = 0, normalized size = 0.00

$$\int \frac{\left(b\ln\left(c\,(ex+d)^n\right)+a\right)^3 \left(g\ln\left(h\,(jx+i)^m\right)+f\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)^3*(g*ln(h*(j*x+i)^m)+f)/x,x)
```

```
[Out] int((b*ln(c*(e*x+d)^n)+a)^3*(g*ln(h*(j*x+i)^m)+f)/x,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$a^3 f\log(x)+\int \frac{\left(g\log(h)+f\right)b^3\log\left((ex+d)^n\right)^3+\left(g\log(h)+f\right)b^3\log(c)^3+3\left(g\log(h)+f\right)ab^2\log(c)^2+3\left(g\,\mathrm{lo}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3*(f+g*log(h*(j*x+i)^m))/x,x, algorithm="m
axima")
```

```
[Out] a^3*f*log(x) + integrate(((g*log(h) + f)*b^3*log((e*x + d)^n)^3 + (g*log(h)
 + f)*b^3*log(c)^3 + 3*(g*log(h) + f)*a*b^2*log(c)^2 + 3*(g*log(h) + f)*a^2
*b*log(c) + a^3*g*log(h) + 3*((g*log(h) + f)*b^3*log(c) + (g*log(h) + f)*a*
b^2)*log((e*x + d)^n)^2 + 3*((g*log(h) + f)*b^3*log(c)^2 + 2*(g*log(h) + f)
*a*b^2*log(c) + (g*log(h) + f)*a^2*b)*log((e*x + d)^n) + (b^3*g*log((e*x +
d)^n)^3 + b^3*g*log(c)^3 + 3*a*b^2*g*log(c)^2 + 3*a^2*b*g*log(c) + a^3*g +
3*(b^3*g*log(c) + a*b^2*g)*log((e*x + d)^n)^2 + 3*(b^3*g*log(c)^2 + 2*a*b^2
*g*log(c) + a^2*b*g)*log((e*x + d)^n))*log((j*x + i)^m))/x, x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)^3\,\left(f+g\,\ln\left(h\,{\left(i+j\,x\right)}^m\right)\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*log(c*(d + e*x)^n))^3*(f + g*log(h*(i + j*x)^m)))/x,x)
```

```
[Out] int(((a + b*log(c*(d + e*x)^n))^3*(f + g*log(h*(i + j*x)^m)))/x, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**3*(f+g*ln(h*(j*x+i)**m))/x,x)
```

```
[Out] Timed out
```

3.400 $\int \frac{\left(a+b\log(c(d+ex)^n)\right)^3\left(f+g\log\left(h(i+jx)^m\right)\right)}{x^2}\,dx$

Optimal. Leaf size=37

$$\mathrm{Int}\left(\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^3\left(f+g\log\left(h(i+jx)^m\right)\right)}{x^2},x\right)$$

```
[Out] Unintegrable((a+b*ln(c*(e*x+d)^n))^3*(f+g*ln(h*(j*x+i)^m))/x^2,x)
```

Rubi [A] time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^3\left(f+g\log\left(h(i+jx)^m\right)\right)}{x^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[((a + b*Log[c*(d + e*x)^n])^3*(f + g*Log[h*(i + j*x)^m]))/x^2,x]
```

```
[Out] Defer[Int][((a + b*Log[c*(d + e*x)^n])^3*(f + g*Log[h*(i + j*x)^m]))/x^2, x
]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^3\left(f+g\log\left(h(400+jx)^m\right)\right)}{x^2}\,dx = \int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^3\left(f+g\log\left(h(400+j\right.\right.}{x^2}$$

Mathematica [A] time = 1.93, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^3\left(f+g\log\left(h(i+jx)^m\right)\right)}{x^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[((a + b*Log[c*(d + e*x)^n])^3*(f + g*Log[h*(i + j*x)^m]))/x^2,x]
```

```
[Out] Integrate[((a + b*Log[c*(d + e*x)^n])^3*(f + g*Log[h*(i + j*x)^m]))/x^2, x]
```

fricas [A] time = 0.45, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{b^3 f\log\left((ex+d)^n c\right)^3 + 3\,ab^2 f\log\left((ex+d)^n c\right)^2 + 3\,a^2 bf\log\left((ex+d)^n c\right) + a^3 f + \left(b^3 g\log\left((ex+d)\right.\right.}{x^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3*(f+g*log(h*(j*x+i)^m))/x^2,x, algorithm=
"fricas")
```

```
[Out] integral((b^3*f*log((e*x + d)^n*c)^3 + 3*a*b^2*f*log((e*x + d)^n*c)^2 + 3*a
^2*b*f*log((e*x + d)^n*c) + a^3*f + (b^3*g*log((e*x + d)^n*c)^3 + 3*a*b^2*g
*log((e*x + d)^n*c)^2 + 3*a^2*b*g*log((e*x + d)^n*c) + a^3*g)*log((j*x + i)
^m*h))/x^2, x)
```

giac [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3*(f+g*log(h*(j*x+i)^m))/x^2,x, algorithm=
"giac")
```

```
[Out] Timed out
```

maple [**A**] time = 2.59, size = 0, normalized size = 0.00

$$\int \frac{\left(b\ln \left(c\left(ex+d\right)^{n}\right)+a\right)^{3}\left(g\ln \left(h\left(jx+i\right)^{m}\right)+f\right)}{x^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)^3*(g*ln(h*(j*x+i)^m)+f)/x^2,x)
```

```
[Out] int((b*ln(c*(e*x+d)^n)+a)^3*(g*ln(h*(j*x+i)^m)+f)/x^2,x)
```

maxima [**A**] time = 0.00, size = 0, normalized size = 0.00

$$-3\,a^{2}befn\left(\frac{\log\left(ex+d\right)}{d}-\frac{\log(x)}{d}\right)-\frac{3\,a^{2}bf\log\left(\left(ex+d\right)^{n}c\right)}{x}-\frac{a^{3}f}{x}+\int \frac{\left(g\log(h)+f\right)b^{3}\log\left(\left(ex+d\right)^{n}\right)^{3}+\left(g\log(h\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3*(f+g*log(h*(j*x+i)^m))/x^2,x, algorithm=
"maxima")
```

```
[Out] -3*a^2*b*e*f*n*(log(e*x + d)/d - log(x)/d) - 3*a^2*b*f*log((e*x + d)^n*c)/x
 - a^3*f/x + integrate(((g*log(h) + f)*b^3*log((e*x + d)^n)^3 + (g*log(h) +
 f)*b^3*log(c)^3 + 3*(g*log(h) + f)*a*b^2*log(c)^2 + 3*a^2*b*g*log(c)*log(h
) + a^3*g*log(h) + 3*((g*log(h) + f)*b^3*log(c) + (g*log(h) + f)*a*b^2)*log
((e*x + d)^n)^2 + 3*((g*log(h) + f)*b^3*log(c)^2 + 2*(g*log(h) + f)*a*b^2*l
og(c) + a^2*b*g*log(h))*log((e*x + d)^n) + (b^3*g*log((e*x + d)^n)^3 + b^3*
g*log(c)^3 + 3*a*b^2*g*log(c)^2 + 3*a^2*b*g*log(c) + a^3*g + 3*(b^3*g*log(c
) + a*b^2*g)*log((e*x + d)^n)^2 + 3*(b^3*g*log(c)^2 + 2*a*b^2*g*log(c) + a^
2*b*g)*log((e*x + d)^n))*log((j*x + i)^m))/x^2, x)
```

mupad [**A**] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{{\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}^3\,\left(f+g\,\ln\left(h\,{\left(i+j\,x\right)}^m\right)\right)}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*log(c*(d + e*x)^n))^3*(f + g*log(h*(i + j*x)^m)))/x^2,x)
```

```
[Out] int(((a + b*log(c*(d + e*x)^n))^3*(f + g*log(h*(i + j*x)^m)))/x^2, x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**3*(f+g*ln(h*(j*x+i)**m))/x**2,x)
```

```
[Out] Timed out
```

3.401 $\int \frac{\left(a+b\log(c(d+ex)^n)\right)\log\left(\frac{e(f+gx)}{ef-dg}\right)}{d+ex}\,dx$

Optimal. Leaf size=66

$$\frac{bn\text{Li}_3\left(-\frac{g(d+ex)}{ef-dg}\right)}{e}-\frac{\text{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{e}$$

```
[Out] -(a+b*ln(c*(e*x+d)^n))*polylog(2,-g*(e*x+d)/(-d*g+e*f))/e+b*n*polylog(3,-g*
(e*x+d)/(-d*g+e*f))/e
```

Rubi [A] time = 0.08, antiderivative size = 66, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.075, Rules used = {2433, 2374, 6589}

$$\frac{bn\text{PolyLog}\left(3,-\frac{g(d+ex)}{ef-dg}\right)}{e}-\frac{\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{e}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/(d + e*x),x
]
```

```
[Out] -(((a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/e)
+ (b*n*PolyLog[3, -((g*(d + e*x))/(e*f - d*g))])/e
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e(f+gx)}{ef-dg}\right)}{d+ex}\,dx=\frac{\text{Subst}\left(\int \frac{\left(a+b\log(cx^n)\right)\log\left(\frac{e\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)}{ef-dg}\right)}{x}dx,x,d+ex\right)}{e}$$

$$=-\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\text{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)}{e}+\frac{(bn)\,\text{Subst}\left(\int \frac{\text{Li}_2\left(-\frac{gx}{ef-dg}\right)}{x}\right.}{e}$$

$$=-\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\text{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)}{e}+\frac{bn\text{Li}_3\left(-\frac{g(d+ex)}{ef-dg}\right)}{e}$$

Mathematica [A] time = 0.11, size = 62, normalized size = 0.94

$$\frac{bn\text{Li}_3\left(\frac{g(d+ex)}{dg-ef}\right)-\text{Li}_2\left(\frac{g(d+ex)}{dg-ef}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{e}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/(d +
e*x),x]
```

```
[Out] (-((a + b*Log[c*(d + e*x)^n])*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)]) + b
*n*PolyLog[3, (g*(d + e*x))/(-(e*f) + d*g)])/e
```

fricas [F] time = 0.47, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b\log\left((ex+d)^nc\right)\log\left(\frac{egx+ef}{ef-dg}\right)+a\log\left(\frac{egx+ef}{ef-dg}\right)}{ex+d},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*log(e*(g*x+f)/(-d*g+e*f))/(e*x+d),x, algor
ithm="fricas")
```

```
[Out] integral((b*log((e*x + d)^n*c)*log((e*g*x + e*f)/(e*f - d*g)) + a*log((e*g*
x + e*f)/(e*f - d*g)))/(e*x + d), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\log\left((ex+d)^nc\right)+a\right)\log\left(\frac{(gx+f)e}{ef-dg}\right)}{ex+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*log(e*(g*x+f)/(-d*g+e*f))/(e*x+d),x, algor
ithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*log((g*x + f)*e/(e*f - d*g))/(e*x + d)
, x)
```

maple [F] time = 2.42, size = 0, normalized size = 0.00

$$\int \frac{\left(b\ln\left(c\,(ex+d)^n\right)+a\right)\ln\left(\frac{(gx+f)e}{-dg+ef}\right)}{ex+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(e*x+d)^n)+a)*ln(e*(g*x+f)/(-d*g+e*f))/(e*x+d),x)
```

```
[Out] int((b*ln(c*(e*x+d)^n)+a)*ln(e*(g*x+f)/(-d*g+e*f))/(e*x+d),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b \log \left((ex+d)^n c\right)+a\right) \log \left(\frac{(gx+f)e}{ef-dg}\right)}{ex+d}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*log(e*(g*x+f)/(-d*g+e*f))/(e*x+d),x, algor
ithm="maxima")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*log((g*x + f)*e/(e*f - d*g))/(e*x + d)
, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\ln\left(-\frac{e\,\left(f+g\,x\right)}{d\,g-e\,f}\right)\,\left(a+b\,\ln\left(c\,{\left(d+e\,x\right)}^n\right)\right)}{d+e\,x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((log(-(e*(f + g*x))/(d*g - e*f))*(a + b*log(c*(d + e*x)^n)))/(d + e*x),
x)
```

```
[Out] int((log(-(e*(f + g*x))/(d*g - e*f))*(a + b*log(c*(d + e*x)^n)))/(d + e*x),
 x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))*ln(e*(g*x+f)/(-d*g+e*f))/(e*x+d),x)
```

```
[Out] Exception raised: TypeError
```

3.402 $\int \frac{\log(c(d+ex))(a+b\log(c(d+ex)))}{(d+ex)^2}\,dx$

Optimal. Leaf size=92

$$-\frac{\log(c(d+ex))(a+b\log(c(d+ex)))}{e(d+ex)}-\frac{a+b\log(c(d+ex))+b}{e(d+ex)}-\frac{b\log(c(d+ex))}{e(d+ex)}-\frac{b}{e(d+ex)}$$

```
[Out] -b/e/(e*x+d)-b*ln(c*(e*x+d))/e/(e*x+d)-ln(c*(e*x+d))*(a+b*ln(c*(e*x+d)))/e/
(e*x+d)+(-a-b-b*ln(c*(e*x+d)))/e/(e*x+d)
```

Rubi [A] time = 0.09, antiderivative size = 92, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {2369, 12, 2304, 2366}

$$-\frac{\log(c(d+ex))(a+b\log(c(d+ex)))}{e(d+ex)}-\frac{a+b\log(c(d+ex))+b}{e(d+ex)}-\frac{b\log(c(d+ex))}{e(d+ex)}-\frac{b}{e(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Int[(Log[c*(d + e*x)]*(a + b*Log[c*(d + e*x)]))/(d + e*x)^2,x]
```

```
[Out] -(b/(e*(d + e*x))) - (b*Log[c*(d + e*x)])/(e*(d + e*x)) - (Log[c*(d + e*x)]
*(a + b*Log[c*(d + e*x)]))/(e*(d + e*x)) - (a + b + b*Log[c*(d + e*x)])/(e*
(d + e*x))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2366

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.) + Log[(f_.)*(x_)^(r_
.)]*(e_.))*((g_.)*(x_))^(m_.), x_Symbol] :> With[{u = IntHide[(g*x)^m*(a +
b*Log[c*x^n])^p, x]}, Dist[d + e*Log[f*x^r], u, x] - Dist[e*r, Int[Simplify
Integrand[u/x, x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, m, n, p, r}, x] &
&  !(EqQ[p, 1] && EqQ[a, 0] && NeQ[d, 0])
```

Rule 2369

```
Int[((a_.) + Log[v_]*(b_.))^(p_.)*((c_.) + Log[v_]*(d_.))^(q_.)*(u_)^(m_.),
 x_Symbol] :> With[{e = Coeff[u, x, 0], f = Coeff[u, x, 1], g = Coeff[v, x,
 0], h = Coeff[v, x, 1]}, Dist[1/h, Subst[Int[((f*x)/h)^m*(a + b*Log[x])^p*
(c + d*Log[x])^q, x], x, v], x] /; EqQ[f*g - e*h, 0] && NeQ[g, 0]] /; FreeQ
[{a, b, c, d, m, p, q}, x] && LinearQ[{u, v}, x]
```

Rubi steps

$$\int \frac{\log(c(d+ex))(a+b\log(c(d+ex)))}{(d+ex)^2}\,dx = \frac{\text{Subst}\left(\int \frac{c^2\log(x)(a+b\log(x))}{x^2}\,dx, x, c(d+ex)\right)}{ce}$$
$$= \frac{c\,\text{Subst}\left(\int \frac{\log(x)(a+b\log(x))}{x^2}\,dx, x, c(d+ex)\right)}{e}$$
$$= -\frac{b\log(c(d+ex))}{e(d+ex)} - \frac{\log(c(d+ex))(a+b\log(c(d+ex)))}{e(d+ex)} - \frac{c\,\text{Subs}}{}$$
$$= -\frac{b}{e(d+ex)} - \frac{b\log(c(d+ex))}{e(d+ex)} - \frac{\log(c(d+ex))(a+b\log(c(d+ex}{e(d+ex)}$$

Mathematica [A] time = 0.07, size = 43, normalized size = 0.47

$$-\frac{(a+2b)\log(c(d+ex))+a+b\log^2(c(d+ex))+2b}{e(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Log[c*(d + e*x)]*(a + b*Log[c*(d + e*x)]))/(d + e*x)^2,x]
```

```
[Out] -((a + 2*b + (a + 2*b)*Log[c*(d + e*x)] + b*Log[c*(d + e*x)]^2)/(e*(d + e*x
)))
```

fricas [A] time = 0.45, size = 46, normalized size = 0.50

$$-\frac{b\log(cex+cd)^2+(a+2b)\log(cex+cd)+a+2b}{e^2x+de}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(e*x+d))*(a+b*log(c*(e*x+d)))/(e*x+d)^2,x, algorithm="frica
s")
```

```
[Out] -(b*log(c*e*x + c*d)^2 + (a + 2*b)*log(c*e*x + c*d) + a + 2*b)/(e^2*x + d*e
)
```

giac [A] time = 0.19, size = 72, normalized size = 0.78

$$-\frac{\left(bc^2\log((xe+d)c)^2+ac^2\log((xe+d)c)+2bc^2\log((xe+d)c)+ac^2+2bc^2\right)e^{(-1)}}{(xe+d)c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(e*x+d))*(a+b*log(c*(e*x+d)))/(e*x+d)^2,x, algorithm="giac"
)
```

```
[Out] -(b*c^2*log((x*e + d)*c)^2 + a*c^2*log((x*e + d)*c) + 2*b*c^2*log((x*e + d)
*c) + a*c^2 + 2*b*c^2)*e^(-1)/((x*e + d)*c^2)
```

maple [A] time = 0.05, size = 116, normalized size = 1.26

$$-\frac{bc\ln(cex+cd)^2}{(cex+cd)e}-\frac{ac\ln(cex+cd)}{(cex+cd)e}-\frac{2bc\ln(cex+cd)}{(cex+cd)e}-\frac{ac}{(cex+cd)e}-\frac{2bc}{(cex+cd)e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln((e*x+d)*c)*(a+b*ln((e*x+d)*c))/(e*x+d)^2,x)
```

```
[Out] -c/e*a*ln(c*e*x+c*d)/(c*e*x+c*d)-c/e*a/(c*e*x+c*d)-c/e*b/(c*e*x+c*d)*ln(c*e
*x+c*d)^2-2*c/e*b*ln(c*e*x+c*d)/(c*e*x+c*d)-2*c/e*b/(c*e*x+c*d)
```

maxima [A] time = 0.64, size = 99, normalized size = 1.08

$$-\left(b\left(\frac{ce}{ce^3x+cde^2}+\frac{\log(cex+cd)}{e^2x+de}\right)+\frac{a}{e^2x+de}\right)\log((ex+d)c)-\frac{\left(b\left(\log(c)+2\right)+b\log(ex+d)+a\right)e}{e^3x+de^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(e*x+d))*(a+b*log(c*(e*x+d)))/(e*x+d)^2,x, algorithm="maxim
a")
```

```
[Out] -(b*(c*e/(c*e^3*x + c*d*e^2) + log(c*e*x + c*d)/(e^2*x + d*e)) + a/(e^2*x +
 d*e))*log((e*x + d)*c) - (b*(log(c) + 2) + b*log(e*x + d) + a)*e/(e^3*x +
d*e^2)
```

mupad [B] time = 0.47, size = 63, normalized size = 0.68

$$-\frac{d\,\left(b\ln\left(c\,\left(d+e\,x\right)\right)^2+a\,\ln\left(c\,\left(d+e\,x\right)\right)+2\,b\,\ln\left(c\,\left(d+e\,x\right)\right)\right)-e\,\left(a\,x+2\,b\,x\right)}{d\,e\,\left(d+e\,x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((log(c*(d + e*x))*(a + b*log(c*(d + e*x))))/(d + e*x)^2,x)
```

```
[Out] -(d*(b*log(c*(d + e*x))^2 + a*log(c*(d + e*x)) + 2*b*log(c*(d + e*x))) - e*
(a*x + 2*b*x))/(d*e*(d + e*x))
```

sympy [A] time = 0.29, size = 56, normalized size = 0.61

$$-\frac{b\log\left(c\left(d+ex\right)\right)^2}{de+e^2x}+\frac{(-a-2b)\log\left(c\left(d+ex\right)\right)}{de+e^2x}-\frac{a+2b}{de+e^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(c*(e*x+d))*(a+b*ln(c*(e*x+d)))/(e*x+d)**2,x)
```

```
[Out] -b*log(c*(d + e*x))**2/(d*e + e**2*x) + (-a - 2*b)*log(c*(d + e*x))/(d*e +
e**2*x) - (a + 2*b)/(d*e + e**2*x)
```

3.403 $\int \frac{(a+b\log(c(d+ex)))(f+g\log(c(d+ex)))}{(d+ex)^2}\,dx$

Optimal. Leaf size=102

$$-\frac{(a+b\log(c(d+ex)))(g\log(c(d+ex))+f)}{e(d+ex)}-\frac{g(a+b\log(c(d+ex))+b)}{e(d+ex)}-\frac{b(g\log(c(d+ex))+f)}{e(d+ex)}-\frac{bg}{e(d+ex)}$$

```
[Out] -b*g/e/(e*x+d)-g*(a+b+b*ln(c*(e*x+d)))/e/(e*x+d)-b*(f+g*ln(c*(e*x+d)))/e/(e
*x+d)-(a+b*ln(c*(e*x+d)))*(f+g*ln(c*(e*x+d)))/e/(e*x+d)
```

Rubi [A] time = 0.11, antiderivative size = 102, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {2369, 12, 2304, 2366}

$$-\frac{(a+b\log(c(d+ex)))(g\log(c(d+ex))+f)}{e(d+ex)}-\frac{g(a+b\log(c(d+ex))+b)}{e(d+ex)}-\frac{b(g\log(c(d+ex))+f)}{e(d+ex)}-\frac{bg}{e(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Log[c*(d + e*x)])*(f + g*Log[c*(d + e*x)]))/(d + e*x)^2,x]
```

```
[Out] -((b*g)/(e*(d + e*x))) - (g*(a + b + b*Log[c*(d + e*x)]))/(e*(d + e*x)) - (
b*(f + g*Log[c*(d + e*x)]))/(e*(d + e*x)) - ((a + b*Log[c*(d + e*x)])*(f +
g*Log[c*(d + e*x)]))/(e*(d + e*x))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2366

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.) + Log[(f_.)*(x_)^(r_
.)]*(e_.))*((g_.)*(x_))^(m_.), x_Symbol] :> With[{u = IntHide[(g*x)^m*(a +
b*Log[c*x^n])^p, x]}, Dist[d + e*Log[f*x^r], u, x] - Dist[e*r, Int[Simplify
Integrand[u/x, x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, m, n, p, r}, x] &
&  !(EqQ[p, 1] && EqQ[a, 0] && NeQ[d, 0])
```

Rule 2369

```
Int[((a_.) + Log[v_]*(b_.))^(p_.)*((c_.) + Log[v_]*(d_.))^(q_.)*(u_)^(m_.),
 x_Symbol] :> With[{e = Coeff[u, x, 0], f = Coeff[u, x, 1], g = Coeff[v, x,
 0], h = Coeff[v, x, 1]}, Dist[1/h, Subst[Int[((f*x)/h)^m*(a + b*Log[x])^p*
(c + d*Log[x])^q, x], x, v], x] /; EqQ[f*g - e*h, 0] && NeQ[g, 0]] /; FreeQ
[{a, b, c, d, m, p, q}, x] && LinearQ[{u, v}, x]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)))(f+g\log(c(d+ex)))}{(d+ex)^2}dx = \frac{\text{Subst}\left(\int \frac{c^2(a+b\log(x))(f+g\log(x))}{x^2}dx, x, c(d+ex)\right)}{ce}$$
$$= \frac{c\,\text{Subst}\left(\int \frac{(a+b\log(x))(f+g\log(x))}{x^2}dx, x, c(d+ex)\right)}{e}$$
$$= -\frac{b(f+g\log(c(d+ex)))}{e(d+ex)} - \frac{(a+b\log(c(d+ex)))(f+g\log(c$$
$$= -\frac{bg}{e(d+ex)} - \frac{g(a+b+b\log(c(d+ex)))}{e(d+ex)} - \frac{b(f+g\log(c(d+}{e(d+ex)}$$

Mathematica [A] time = 0.11, size = 58, normalized size = 0.57

$$-\frac{(ag+b(f+2g))\log(c(d+ex))+a(f+g)+bg\log^2(c(d+ex))+b(f+2g)}{e(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*Log[c*(d + e*x)])*(f + g*Log[c*(d + e*x)]))/(d + e*x)^2,x
]
```

```
[Out] -((a*(f + g) + b*(f + 2*g) + (a*g + b*(f + 2*g))*Log[c*(d + e*x)] + b*g*Log
[c*(d + e*x)]^2)/(e*(d + e*x)))
```

fricas [A] time = 0.45, size = 61, normalized size = 0.60

$$-\frac{bg\log(cex+cd)^2+(a+b)f+(a+2b)g+\left(bf+(a+2b)g\right)\log(cex+cd)}{e^2x+de}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)))*(f+g*log(c*(e*x+d)))/(e*x+d)^2,x, algorithm=
"fricas")
```

```
[Out] -(b*g*log(c*e*x + c*d)^2 + (a + b)*f + (a + 2*b)*g + (b*f + (a + 2*b)*g)*lo
g(c*e*x + c*d))/(e^2*x + d*e)
```

giac [A] time = 0.21, size = 104, normalized size = 1.02

$$-\frac{\left(bc^2g\log((xe+d)c)^2+bc^2f\log((xe+d)c)+ac^2g\log((xe+d)c)+2\,bc^2g\log((xe+d)c)+ac^2f+bc^2f+ac^2g}{(xe+d)c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)))*(f+g*log(c*(e*x+d)))/(e*x+d)^2,x, algorithm=
"giac")
```

```
[Out] -(b*c^2*g*log((x*e + d)*c)^2 + b*c^2*f*log((x*e + d)*c) + a*c^2*g*log((x*e
+ d)*c) + 2*b*c^2*g*log((x*e + d)*c) + a*c^2*f + b*c^2*f + a*c^2*g + 2*b*c^
2*g)*e^(-1)/((x*e + d)*c^2)
```

maple [A] time = 0.06, size = 184, normalized size = 1.80

$$-\frac{bcg\ln(cex+cd)^2}{(cex+cd)e}-\frac{acg\ln(cex+cd)}{(cex+cd)e}-\frac{bcf\ln(cex+cd)}{(cex+cd)e}-\frac{2bcg\ln(cex+cd)}{(cex+cd)e}-\frac{acf}{(cex+cd)e}-\frac{acg}{(cex+cd)e}-\frac{bcf}{(cex+cd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln((e*x+d)*c))*(f+g*ln((e*x+d)*c))/(e*x+d)^2,x)
```

```
[Out] -c/e*a*f/(c*e*x+c*d)-c/e*a*g*ln(c*e*x+c*d)/(c*e*x+c*d)-c/e*a*g/(c*e*x+c*d)-
c/e*b*f*ln(c*e*x+c*d)/(c*e*x+c*d)-c/e*b*f/(c*e*x+c*d)-c/e*b*g/(c*e*x+c*d)*l
n(c*e*x+c*d)^2-2*c/e*b*g*ln(c*e*x+c*d)/(c*e*x+c*d)-2*c/e*b*g/(c*e*x+c*d)
```

maxima [A] time = 0.71, size = 159, normalized size = 1.56

$$-b\left(\frac{ce}{ce^3x+cde^2}+\frac{\log(cex+cd)}{e^2x+de}\right)f-a\left(\frac{ce}{ce^3x+cde^2}+\frac{\log(cex+cd)}{e^2x+de}\right)g-\frac{af}{e^2x+de}-\frac{\left(c^2\log(cex+cd)^2+2\,c^2\log\right.}{(cex+cd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)))*(f+g*log(c*(e*x+d)))/(e*x+d)^2,x, algorithm=
"maxima")
```

```
[Out] -b*(c*e/(c*e^3*x + c*d*e^2) + log(c*e*x + c*d)/(e^2*x + d*e))*f - a*(c*e/(c
*e^3*x + c*d*e^2) + log(c*e*x + c*d)/(e^2*x + d*e))*g - a*f/(e^2*x + d*e) -
 (c^2*log(c*e*x + c*d)^2 + 2*c^2*log(c*e*x + c*d) + 2*c^2)*b*g/((c*e*x + c*
d)*c*e)
```

mupad [B] time = 0.50, size = 92, normalized size = 0.90

$$-\frac{d\left(b\,g\ln(c\,d+c\,e\,x)^2+a\,g\,\ln(c\,d+c\,e\,x)+b\,f\,\ln(c\,d+c\,e\,x)+2\,b\,g\,\ln(c\,d+c\,e\,x)\right)-e\left(a\,f\,x+a\,g\,x+b\,f\right.}{d^2\,e+x\,d\,e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*log(c*(d + e*x)))*(f + g*log(c*(d + e*x))))/(d + e*x)^2,x)
```

```
[Out] -(d*(b*g*log(c*d + c*e*x)^2 + a*g*log(c*d + c*e*x) + b*f*log(c*d + c*e*x) +
 2*b*g*log(c*d + c*e*x)) - e*(a*f*x + a*g*x + b*f*x + 2*b*g*x))/(d^2*e + d*
e^2*x)
```

sympy [A] time = 0.34, size = 75, normalized size = 0.74

$$-\frac{bg\log(c(d+ex))^2}{de+e^2x}+\frac{(-ag-bf-2bg)\log(c(d+ex))}{de+e^2x}-\frac{af+ag+bf+2bg}{de+e^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)))*(f+g*ln(c*(e*x+d)))/(e*x+d)**2,x)
```

```
[Out] -b*g*log(c*(d + e*x))**2/(d*e + e**2*x) + (-a*g - b*f - 2*b*g)*log(c*(d + e
*x))/(d*e + e**2*x) - (a*f + a*g + b*f + 2*b*g)/(d*e + e**2*x)
```

3.404 $\int \left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^4\,dx$

Optimal. Leaf size=160

$$-24ab^3m^3n^3x+\frac{12b^2m^2n^2(e+fx)\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^2}{f}-\frac{4bmn(e+fx)\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^3}{f}+$$

```
[Out] -24*a*b^3*m^3*n^3*x+24*b^4*m^4*n^4*x-24*b^4*m^3*n^3*(f*x+e)*ln(c*(d*(f*x+e)
^m)^n)/f+12*b^2*m^2*n^2*(f*x+e)*(a+b*ln(c*(d*(f*x+e)^m)^n))^2/f-4*b*m*n*(f*
x+e)*(a+b*ln(c*(d*(f*x+e)^m)^n))^3/f+(f*x+e)*(a+b*ln(c*(d*(f*x+e)^m)^n))^4/
f
```

Rubi [A] time = 0.20, antiderivative size = 160, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {2389, 2296, 2295, 2445}

$$\frac{12b^2m^2n^2(e+fx)\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^2}{f}-24ab^3m^3n^3x-\frac{4bmn(e+fx)\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^3}{f}+\frac{(e$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^m)^n])^4,x]
```

```
[Out] -24*a*b^3*m^3*n^3*x + 24*b^4*m^4*n^4*x - (24*b^4*m^3*n^3*(e + f*x)*Log[c*(d
*(e + f*x)^m)^n])/f + (12*b^2*m^2*n^2*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^m
)^n])^2)/f - (4*b*m*n*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^m)^n])^3)/f + ((e
 + f*x)*(a + b*Log[c*(d*(e + f*x)^m)^n])^4)/f
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^4 dx = \text{Subst}\left(\int \left(a+b\log\left(cd^n(e+fx)^{mn}\right)\right)^4 dx, cd^n(e+fx)^{mn}, c\left(d(e+fx)^{\prime}\right.\right.$$

$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \left(a+b\log\left(cd^nx^{mn}\right)\right)^4 dx, x, e+fx\right)}{f}, cd^n(e+fx)^{mn}, c\right.$$

$$= \frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^4}{f} - \text{Subst}\left(\frac{(4bmn)\,\text{Subst}\left(\int \left(a\right.\right.}{}\right.$$

$$= -\frac{4bmn(e+fx)\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^3}{f} + \frac{(e+fx)\left(a+b\log\left(c\right.\right.}{f}$$

$$= \frac{12b^2m^2n^2(e+fx)\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^2}{f} - \frac{4bmn(e+fx)\left(a+\right.}{}$$

$$= -24ab^3m^3n^3x + \frac{12b^2m^2n^2(e+fx)\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^2}{f} - \frac{4b}{}$$

$$= -24ab^3m^3n^3x + 24b^4m^4n^4x - \frac{24b^4m^3n^3(e+fx)\log\left(c\left(d(e+fx)^m\right)^n\right)}{f}$$

Mathematica [A] time = 0.07, size = 132, normalized size = 0.82

$$\frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^4 - 4bmn\left((e+fx)\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^3 - 3bmn\left((e+fx)\left(a+\right.\right.\right.}{f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^m)^n])^4,x]
```

```
[Out] ((e + f*x)*(a + b*Log[c*(d*(e + f*x)^m)^n])^4 - 4*b*m*n*((e + f*x)*(a + b*L
og[c*(d*(e + f*x)^m)^n])^3 - 3*b*m*n*((e + f*x)*(a + b*Log[c*(d*(e + f*x)^m
)^n])^2 - 2*b*m*n*(f*(a - b*m*n)*x + b*(e + f*x)*Log[c*(d*(e + f*x)^m)^n]))
))/f
```

fricas [B] time = 0.49, size = 1409, normalized size = 8.81

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^4,x, algorithm="fricas")
```

```
[Out] (b^4*f*n^4*x*log(d)^4 + b^4*f*x*log(c)^4 + (b^4*f*m^4*n^4*x + b^4*e*m^4*n^4
)*log(f*x + e)^4 - 4*(b^4*f*m*n - a*b^3*f)*x*log(c)^3 - 4*(b^4*e*m^4*n^4 -
a*b^3*e*m^3*n^3 + (b^4*f*m^4*n^4 - a*b^3*f*m^3*n^3)*x - (b^4*f*m^3*n^3*x +
b^4*e*m^3*n^3)*log(c) - (b^4*f*m^3*n^4*x + b^4*e*m^3*n^4)*log(d))*log(f*x +
 e)^3 + 6*(2*b^4*f*m^2*n^2 - 2*a*b^3*f*m*n + a^2*b^2*f)*x*log(c)^2 + 4*(b^4
*f*n^3*x*log(c) - (b^4*f*m*n^4 - a*b^3*f*n^3)*x)*log(d)^3 + 6*(2*b^4*e*m^4*
n^4 - 2*a*b^3*e*m^3*n^3 + a^2*b^2*e*m^2*n^2 + (b^4*f*m^2*n^2*x + b^4*e*m^2*
n^2)*log(c)^2 + (b^4*f*m^2*n^4*x + b^4*e*m^2*n^4)*log(d)^2 + (2*b^4*f*m^4*n
^4 - 2*a*b^3*f*m^3*n^3 + a^2*b^2*f*m^2*n^2)*x - 2*(b^4*e*m^3*n^3 - a*b^3*e*
```

```
m^2*n^2 + (b^4*f*m^3*n^3 - a*b^3*f*m^2*n^2)*x)*log(c) - 2*(b^4*e*m^3*n^4 -
a*b^3*e*m^2*n^3 + (b^4*f*m^3*n^4 - a*b^3*f*m^2*n^3)*x - (b^4*f*m^2*n^3*x +
b^4*e*m^2*n^3)*log(c))*log(d))*log(f*x + e)^2 - 4*(6*b^4*f*m^3*n^3 - 6*a*b^
3*f*m^2*n^2 + 3*a^2*b^2*f*m*n - a^3*b*f)*x*log(c) + 6*(b^4*f*n^2*x*log(c)^2
 - 2*(b^4*f*m*n^3 - a*b^3*f*n^2)*x*log(c) + (2*b^4*f*m^2*n^4 - 2*a*b^3*f*m*
n^3 + a^2*b^2*f*n^2)*x)*log(d)^2 + (24*b^4*f*m^4*n^4 - 24*a*b^3*f*m^3*n^3 +
 12*a^2*b^2*f*m^2*n^2 - 4*a^3*b*f*m*n + a^4*f)*x - 4*(6*b^4*e*m^4*n^4 - 6*a
*b^3*e*m^3*n^3 + 3*a^2*b^2*e*m^2*n^2 - a^3*b*e*m*n - (b^4*f*m*n*x + b^4*e*m
*n)*log(c)^3 - (b^4*f*m*n^4*x + b^4*e*m*n^4)*log(d)^3 + 3*(b^4*e*m^2*n^2 -
a*b^3*e*m*n + (b^4*f*m^2*n^2 - a*b^3*f*m*n)*x)*log(c)^2 + 3*(b^4*e*m^2*n^4
- a*b^3*e*m*n^3 + (b^4*f*m^2*n^4 - a*b^3*f*m*n^3)*x - (b^4*f*m*n^3*x + b^4*
e*m*n^3)*log(c))*log(d)^2 + (6*b^4*f*m^4*n^4 - 6*a*b^3*f*m^3*n^3 + 3*a^2*b^
2*f*m^2*n^2 - a^3*b*f*m*n)*x - 3*(2*b^4*e*m^3*n^3 - 2*a*b^3*e*m^2*n^2 + a^2
*b^2*e*m*n + (2*b^4*f*m^3*n^3 - 2*a*b^3*f*m^2*n^2 + a^2*b^2*f*m*n)*x)*log(c
) - 3*(2*b^4*e*m^3*n^4 - 2*a*b^3*e*m^2*n^3 + a^2*b^2*e*m*n^2 + (b^4*f*m*n^2
*x + b^4*e*m*n^2)*log(c)^2 + (2*b^4*f*m^3*n^4 - 2*a*b^3*f*m^2*n^3 + a^2*b^2
*f*m*n^2)*x - 2*(b^4*e*m^2*n^3 - a*b^3*e*m*n^2 + (b^4*f*m^2*n^3 - a*b^3*f*m
*n^2)*x)*log(c))*log(d))*log(f*x + e) + 4*(b^4*f*n*x*log(c)^3 - 3*(b^4*f*m*
n^2 - a*b^3*f*n)*x*log(c)^2 + 3*(2*b^4*f*m^2*n^3 - 2*a*b^3*f*m*n^2 + a^2*b^
2*f*n)*x*log(c) - (6*b^4*f*m^3*n^4 - 6*a*b^3*f*m^2*n^3 + 3*a^2*b^2*f*m*n^2
- a^3*b*f*n)*x)*log(d))/f
```

giac [B] time = 0.35, size = 1802, normalized size = 11.26

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^4,x, algorithm="giac")
```

```
[Out] (f*x + e)*b^4*m^4*n^4*log(f*x + e)^4/f - 4*(f*x + e)*b^4*m^4*n^4*log(f*x +
e)^3/f + 4*(f*x + e)*b^4*m^3*n^4*log(f*x + e)^3*log(d)/f + 12*(f*x + e)*b^4
*m^4*n^4*log(f*x + e)^2/f + 4*(f*x + e)*b^4*m^3*n^3*log(f*x + e)^3*log(c)/f
 - 12*(f*x + e)*b^4*m^3*n^4*log(f*x + e)^2*log(d)/f + 6*(f*x + e)*b^4*m^2*n
^4*log(f*x + e)^2*log(d)^2/f - 24*(f*x + e)*b^4*m^4*n^4*log(f*x + e)/f + 4*
(f*x + e)*a*b^3*m^3*n^3*log(f*x + e)^3/f - 12*(f*x + e)*b^4*m^3*n^3*log(f*x
 + e)^2*log(c)/f + 24*(f*x + e)*b^4*m^3*n^4*log(f*x + e)*log(d)/f + 12*(f*x
 + e)*b^4*m^2*n^3*log(f*x + e)^2*log(c)*log(d)/f - 12*(f*x + e)*b^4*m^2*n^4
*log(f*x + e)*log(d)^2/f + 4*(f*x + e)*b^4*m*n^4*log(f*x + e)*log(d)^3/f +
24*(f*x + e)*b^4*m^4*n^4/f - 12*(f*x + e)*a*b^3*m^3*n^3*log(f*x + e)^2/f +
24*(f*x + e)*b^4*m^3*n^3*log(f*x + e)*log(c)/f + 6*(f*x + e)*b^4*m^2*n^2*lo
g(f*x + e)^2*log(c)^2/f - 24*(f*x + e)*b^4*m^3*n^4*log(d)/f + 12*(f*x + e)*
a*b^3*m^2*n^3*log(f*x + e)^2*log(d)/f - 24*(f*x + e)*b^4*m^2*n^3*log(f*x +
e)*log(c)*log(d)/f + 12*(f*x + e)*b^4*m^2*n^4*log(d)^2/f + 12*(f*x + e)*b^4
*m*n^3*log(f*x + e)*log(c)*log(d)^2/f - 4*(f*x + e)*b^4*m*n^4*log(d)^3/f +
(f*x + e)*b^4*n^4*log(d)^4/f + 24*(f*x + e)*a*b^3*m^3*n^3*log(f*x + e)/f -
24*(f*x + e)*b^4*m^3*n^3*log(c)/f + 12*(f*x + e)*a*b^3*m^2*n^2*log(f*x + e)
^2*log(c)/f - 12*(f*x + e)*b^4*m^2*n^2*log(f*x + e)*log(c)^2/f - 24*(f*x +
e)*a*b^3*m^2*n^3*log(f*x + e)*log(d)/f + 24*(f*x + e)*b^4*m^2*n^3*log(c)*lo
g(d)/f + 12*(f*x + e)*b^4*m*n^2*log(f*x + e)*log(c)^2*log(d)/f + 12*(f*x +
e)*a*b^3*m*n^3*log(f*x + e)*log(d)^2/f - 12*(f*x + e)*b^4*m*n^3*log(c)*log(
d)^2/f + 4*(f*x + e)*b^4*n^3*log(c)*log(d)^3/f - 24*(f*x + e)*a*b^3*m^3*n^3
/f + 6*(f*x + e)*a^2*b^2*m^2*n^2*log(f*x + e)^2/f - 24*(f*x + e)*a*b^3*m^2*
n^2*log(f*x + e)*log(c)/f + 12*(f*x + e)*b^4*m^2*n^2*log(c)^2/f + 4*(f*x +
e)*b^4*m*n*log(f*x + e)*log(c)^3/f + 24*(f*x + e)*a*b^3*m^2*n^3*log(d)/f +
24*(f*x + e)*a*b^3*m*n^2*log(f*x + e)*log(c)*log(d)/f - 12*(f*x + e)*b^4*m*
n^2*log(c)^2*log(d)/f - 12*(f*x + e)*a*b^3*m*n^3*log(d)^2/f + 6*(f*x + e)*b
^4*n^2*log(c)^2*log(d)^2/f + 4*(f*x + e)*a*b^3*n^3*log(d)^3/f - 12*(f*x + e
)*a^2*b^2*m^2*n^2*log(f*x + e)/f + 24*(f*x + e)*a*b^3*m^2*n^2*log(c)/f + 12
*(f*x + e)*a*b^3*m*n*log(f*x + e)*log(c)^2/f - 4*(f*x + e)*b^4*m*n*log(c)^3
/f + 12*(f*x + e)*a^2*b^2*m*n^2*log(f*x + e)*log(d)/f - 24*(f*x + e)*a*b^3*
```

```
m*n^2*log(c)*log(d)/f + 4*(f*x + e)*b^4*n*log(c)^3*log(d)/f + 12*(f*x + e)*
a*b^3*n^2*log(c)*log(d)^2/f + 12*(f*x + e)*a^2*b^2*m^2*n^2/f + 12*(f*x + e)
*a^2*b^2*m*n*log(f*x + e)*log(c)/f - 12*(f*x + e)*a*b^3*m*n*log(c)^2/f + (f
*x + e)*b^4*log(c)^4/f - 12*(f*x + e)*a^2*b^2*m*n^2*log(d)/f + 12*(f*x + e)
*a*b^3*n*log(c)^2*log(d)/f + 6*(f*x + e)*a^2*b^2*n^2*log(d)^2/f + 4*(f*x +
e)*a^3*b*m*n*log(f*x + e)/f - 12*(f*x + e)*a^2*b^2*m*n*log(c)/f + 4*(f*x +
e)*a*b^3*log(c)^3/f + 12*(f*x + e)*a^2*b^2*n*log(c)*log(d)/f - 4*(f*x + e)*
a^3*b*m*n/f + 6*(f*x + e)*a^2*b^2*log(c)^2/f + 4*(f*x + e)*a^3*b*n*log(d)/f
 + 4*(f*x + e)*a^3*b*log(c)/f + (f*x + e)*a^4/f
```

maple [F] time = 0.76, size = 0, normalized size = 0.00

$$\int \left(b\ln\left(c\left(d\left(fx+e\right)^{m}\right)^{n}\right)+a\right)^{4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^m)^n))^4,x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^m)^n))^4,x)
```

maxima [B] time = 0.86, size = 559, normalized size = 3.49

$$b^4x\log\left(\left(\left(fx+e\right)^m d\right)^n c\right)^4 - 4a^3bfmn\left(\frac{x}{f}-\frac{e\log\left(fx+e\right)}{f^2}\right)+4ab^3x\log\left(\left(\left(fx+e\right)^m d\right)^n c\right)^3+6a^2b^2x\log\left(\left(\left(fx\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^4,x, algorithm="maxima")
```

```
[Out] b^4*x*log(((f*x + e)^m*d)^n*c)^4 - 4*a^3*b*f*m*n*(x/f - e*log(f*x + e)/f^2)
 + 4*a*b^3*x*log(((f*x + e)^m*d)^n*c)^3 + 6*a^2*b^2*x*log(((f*x + e)^m*d)^n
*c)^2 + 4*a^3*b*x*log(((f*x + e)^m*d)^n*c) - 6*(2*f*m*n*(x/f - e*log(f*x +
e)/f^2)*log(((f*x + e)^m*d)^n*c) + (e*log(f*x + e)^2 - 2*f*x + 2*e*log(f*x
+ e))*m^2*n^2/f)*a^2*b^2 - 4*(3*f*m*n*(x/f - e*log(f*x + e)/f^2)*log(((f*x
+ e)^m*d)^n*c)^2 - ((e*log(f*x + e)^3 + 3*e*log(f*x + e)^2 - 6*f*x + 6*e*lo
g(f*x + e))*m^2*n^2/f^2 - 3*(e*log(f*x + e)^2 - 2*f*x + 2*e*log(f*x + e))*m
*n*log(((f*x + e)^m*d)^n*c)/f^2)*f*m*n)*a*b^3 - (4*f*m*n*(x/f - e*log(f*x +
 e)/f^2)*log(((f*x + e)^m*d)^n*c)^3 + (((e*log(f*x + e)^4 + 4*e*log(f*x + e
)^3 + 12*e*log(f*x + e)^2 - 24*f*x + 24*e*log(f*x + e))*m^2*n^2/f^3 - 4*(e*
log(f*x + e)^3 + 3*e*log(f*x + e)^2 - 6*f*x + 6*e*log(f*x + e))*m*n*log(((f
*x + e)^m*d)^n*c)/f^3)*f*m*n + 6*(e*log(f*x + e)^2 - 2*f*x + 2*e*log(f*x +
e))*m*n*log(((f*x + e)^m*d)^n*c)^2/f^2)*f*m*n)*b^4 + a^4*x
```

mupad [B] time = 0.58, size = 380, normalized size = 2.38

$$\ln\left(c\left(d\left(e+f\,x\right)^m\right)^n\right)^3\,\left(\frac{4\,\left(a\,b^3\,e-b^4\,e\,m\,n\right)}{f}+4\,b^3\,x\,\left(a-b\,m\,n\right)\right)+\ln\left(c\left(d\left(e+f\,x\right)^m\right)^n\right)^4\,\left(b^4\,x+\frac{b^4\,e}{f}\right)+x\,\left(a^4\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^m)^n))^4,x)
```

```
[Out] log(c*(d*(e + f*x)^m)^n)^3*((4*(a*b^3*e - b^4*e*m*n))/f + 4*b^3*x*(a - b*m*
n)) + log(c*(d*(e + f*x)^m)^n)^4*(b^4*x + (b^4*e)/f) + x*(a^4 + 24*b^4*m^4*
n^4 - 24*a*b^3*m^3*n^3 - 4*a^3*b*m*n + 12*a^2*b^2*m^2*n^2) + log(c*(d*(e +
f*x)^m)^n)^2*((6*(a^2*b^2*e + 2*b^4*e*m^2*n^2 - 2*a*b^3*e*m*n))/f + 6*b^2*x
```

```
*(a^2 + 2*b^2*m^2*n^2 - 2*a*b*m*n)) - (log(e + f*x)*(24*b^4*e*m^4*n^4 - 24*
a*b^3*e*m^3*n^3 - 4*a^3*b*e*m*n + 12*a^2*b^2*e*m^2*n^2))/f + (log(c*(d*(e +
 f*x)^m)^n)*(4*b*f*x^2*(a^3 - 6*b^3*m^3*n^3 + 6*a*b^2*m^2*n^2 - 3*a^2*b*m*n
) + 4*b*e*x*(a^3 - 6*b^3*m^3*n^3 + 6*a*b^2*m^2*n^2 - 3*a^2*b*m*n)))/(e + f*
x)
```

sympy [A] time = 24.01, size = 2390, normalized size = 14.94

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**m)**n))**4,x)
```

```
[Out] Piecewise((a**4*x + 4*a**3*b*e*m*n*log(e + f*x)/f + 4*a**3*b*m*n*x*log(e +
f*x) - 4*a**3*b*m*n*x + 4*a**3*b*n*x*log(d) + 4*a**3*b*x*log(c) + 6*a**2*b*
*2*e*m**2*n**2*log(e + f*x)**2/f - 12*a**2*b**2*e*m**2*n**2*log(e + f*x)/f
+ 12*a**2*b**2*e*m*n**2*log(d)*log(e + f*x)/f + 12*a**2*b**2*e*m*n*log(c)*l
og(e + f*x)/f + 6*a**2*b**2*m**2*n**2*x*log(e + f*x)**2 - 12*a**2*b**2*m**2
*n**2*x*log(e + f*x) + 12*a**2*b**2*m**2*n**2*x + 12*a**2*b**2*m*n**2*x*log
(d)*log(e + f*x) - 12*a**2*b**2*m*n**2*x*log(d) + 12*a**2*b**2*m*n*x*log(c)
*log(e + f*x) - 12*a**2*b**2*m*n*x*log(c) + 6*a**2*b**2*n**2*x*log(d)**2 +
12*a**2*b**2*n*x*log(c)*log(d) + 6*a**2*b**2*x*log(c)**2 + 4*a*b**3*e*m**3*
n**3*log(e + f*x)**3/f - 12*a*b**3*e*m**3*n**3*log(e + f*x)**2/f + 24*a*b**
3*e*m**3*n**3*log(e + f*x)/f + 12*a*b**3*e*m**2*n**3*log(d)*log(e + f*x)**2
/f - 24*a*b**3*e*m**2*n**3*log(d)*log(e + f*x)/f + 12*a*b**3*e*m**2*n**2*lo
g(c)*log(e + f*x)**2/f - 24*a*b**3*e*m**2*n**2*log(c)*log(e + f*x)/f + 12*a
*b**3*e*m*n**3*log(d)**2*log(e + f*x)/f + 24*a*b**3*e*m*n**2*log(c)*log(d)*
log(e + f*x)/f + 12*a*b**3*e*m*n*log(c)**2*log(e + f*x)/f + 4*a*b**3*m**3*n
**3*x*log(e + f*x)**3 - 12*a*b**3*m**3*n**3*x*log(e + f*x)**2 + 24*a*b**3*m
**3*n**3*x*log(e + f*x) - 24*a*b**3*m**3*n**3*x + 12*a*b**3*m**2*n**3*x*log
(d)*log(e + f*x)**2 - 24*a*b**3*m**2*n**3*x*log(d)*log(e + f*x) + 24*a*b**3
*m**2*n**3*x*log(d) + 12*a*b**3*m**2*n**2*x*log(c)*log(e + f*x)**2 - 24*a*b
**3*m**2*n**2*x*log(c)*log(e + f*x) + 24*a*b**3*m**2*n**2*x*log(c) + 12*a*b
**3*m*n**3*x*log(d)**2*log(e + f*x) - 12*a*b**3*m*n**3*x*log(d)**2 + 24*a*b
**3*m*n**2*x*log(c)*log(d)*log(e + f*x) - 24*a*b**3*m*n**2*x*log(c)*log(d)
+ 12*a*b**3*m*n*x*log(c)**2*log(e + f*x) - 12*a*b**3*m*n*x*log(c)**2 + 4*a*
b**3*n**3*x*log(d)**3 + 12*a*b**3*n**2*x*log(c)*log(d)**2 + 12*a*b**3*n*x*l
og(c)**2*log(d) + 4*a*b**3*x*log(c)**3 + b**4*e*m**4*n**4*log(e + f*x)**4/f
 - 4*b**4*e*m**4*n**4*log(e + f*x)**3/f + 12*b**4*e*m**4*n**4*log(e + f*x)*
*2/f - 24*b**4*e*m**4*n**4*log(e + f*x)/f + 4*b**4*e*m**3*n**4*log(d)*log(e
 + f*x)**3/f - 12*b**4*e*m**3*n**4*log(d)*log(e + f*x)**2/f + 24*b**4*e*m**
3*n**4*log(d)*log(e + f*x)/f + 4*b**4*e*m**3*n**3*log(c)*log(e + f*x)**3/f
- 12*b**4*e*m**3*n**3*log(c)*log(e + f*x)**2/f + 24*b**4*e*m**3*n**3*log(c)
*log(e + f*x)/f + 6*b**4*e*m**2*n**4*log(d)**2*log(e + f*x)**2/f - 12*b**4*
e*m**2*n**4*log(d)**2*log(e + f*x)/f + 12*b**4*e*m**2*n**3*log(c)*log(d)*lo
g(e + f*x)**2/f - 24*b**4*e*m**2*n**3*log(c)*log(d)*log(e + f*x)/f + 6*b**4
*e*m**2*n**2*log(c)**2*log(e + f*x)**2/f - 12*b**4*e*m**2*n**2*log(c)**2*lo
g(e + f*x)/f + 4*b**4*e*m*n**4*log(d)**3*log(e + f*x)/f + 12*b**4*e*m*n**3*
log(c)*log(d)**2*log(e + f*x)/f + 12*b**4*e*m*n**2*log(c)**2*log(d)*log(e +
 f*x)/f + 4*b**4*e*m*n*log(c)**3*log(e + f*x)/f + b**4*m**4*n**4*x*log(e +
f*x)**4 - 4*b**4*m**4*n**4*x*log(e + f*x)**3 + 12*b**4*m**4*n**4*x*log(e +
f*x)**2 - 24*b**4*m**4*n**4*x*log(e + f*x) + 24*b**4*m**4*n**4*x + 4*b**4*m
**3*n**4*x*log(d)*log(e + f*x)**3 - 12*b**4*m**3*n**4*x*log(d)*log(e + f*x)
**2 + 24*b**4*m**3*n**4*x*log(d)*log(e + f*x) - 24*b**4*m**3*n**4*x*log(d)
+ 4*b**4*m**3*n**3*x*log(c)*log(e + f*x)**3 - 12*b**4*m**3*n**3*x*log(c)*lo
g(e + f*x)**2 + 24*b**4*m**3*n**3*x*log(c)*log(e + f*x) - 24*b**4*m**3*n**3
*x*log(c) + 6*b**4*m**2*n**4*x*log(d)**2*log(e + f*x)**2 - 12*b**4*m**2*n**
4*x*log(d)**2*log(e + f*x) + 12*b**4*m**2*n**4*x*log(d)**2 + 12*b**4*m**2*n
**3*x*log(c)*log(d)*log(e + f*x)**2 - 24*b**4*m**2*n**3*x*log(c)*log(d)*log
(e + f*x) + 24*b**4*m**2*n**3*x*log(c)*log(d) + 6*b**4*m**2*n**2*x*log(c)**
```

```
2*log(e + f*x)**2 - 12*b**4*m**2*n**2*x*log(c)**2*log(e + f*x) + 12*b**4*m*
*2*n**2*x*log(c)**2 + 4*b**4*m*n**4*x*log(d)**3*log(e + f*x) - 4*b**4*m*n**
4*x*log(d)**3 + 12*b**4*m*n**3*x*log(c)*log(d)**2*log(e + f*x) - 12*b**4*m*
n**3*x*log(c)*log(d)**2 + 12*b**4*m*n**2*x*log(c)**2*log(d)*log(e + f*x) -
12*b**4*m*n**2*x*log(c)**2*log(d) + 4*b**4*m*n*x*log(c)**3*log(e + f*x) - 4
*b**4*m*n*x*log(c)**3 + b**4*n**4*x*log(d)**4 + 4*b**4*n**3*x*log(c)*log(d)
**3 + 6*b**4*n**2*x*log(c)**2*log(d)**2 + 4*b**4*n*x*log(c)**3*log(d) + b**
4*x*log(c)**4, Ne(f, 0)), (x*(a + b*log(c*(d*e**m)**n))**4, True))
```

3.405 $\int \left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^3\,dx$

Optimal. Leaf size=121

$$6ab^2m^2n^2x-\frac{3bmn(e+fx)\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^2}{f}+\frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^3}{f}+\frac{6b^3m^2n^2(e+$$

```
[Out] 6*a*b^2*m^2*n^2*x-6*b^3*m^3*n^3*x+6*b^3*m^2*n^2*(f*x+e)*ln(c*(d*(f*x+e)^m)^
n)/f-3*b*m*n*(f*x+e)*(a+b*ln(c*(d*(f*x+e)^m)^n))^2/f+(f*x+e)*(a+b*ln(c*(d*(
f*x+e)^m)^n))^3/f
```

Rubi [A] time = 0.14, antiderivative size = 121, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {2389, 2296, 2295, 2445}

$$6ab^2m^2n^2x-\frac{3bmn(e+fx)\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^2}{f}+\frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^3}{f}+\frac{6b^3m^2n^2(e+$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^m)^n])^3,x]
```

```
[Out] 6*a*b^2*m^2*n^2*x - 6*b^3*m^3*n^3*x + (6*b^3*m^2*n^2*(e + f*x)*Log[c*(d*(e
+ f*x)^m)^n])/f - (3*b*m*n*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^m)^n])^2)/f
+ ((e + f*x)*(a + b*Log[c*(d*(e + f*x)^m)^n])^3)/f
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^3 dx = \text{Subst}\left(\int \left(a+b\log\left(cd^n(e+fx)^{mn}\right)\right)^3 dx, cd^n(e+fx)^{mn}, c\left(d(e+fx)^{\cdot}\right.\right.$$

$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \left(a+b\log\left(cd^nx^{mn}\right)\right)^3 dx, x, e+fx\right)}{f}, cd^n(e+fx)^{mn}, c\right.$$

$$= \frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^3}{f} - \text{Subst}\left(\frac{(3bmn)\,\text{Subst}\left(\int \left(a\right.\right.}{}\right.$$

$$= -\frac{3bmn(e+fx)\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^2}{f} + \frac{(e+fx)\left(a+b\log\left(c\right.\right.}{f}$$

$$= 6ab^2m^2n^2x - \frac{3bmn(e+fx)\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^2}{f} + \frac{(e+fx)}{}$$

$$= 6ab^2m^2n^2x - 6b^3m^3n^3x + \frac{6b^3m^2n^2(e+fx)\log\left(c\left(d(e+fx)^m\right)^n\right)}{f} - \frac{3b}{}$$

Mathematica [A] time = 0.01, size = 100, normalized size = 0.83

$$\frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^3 - 3bmn\left((e+fx)\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^2 - 2bmn\left(fx(a-bmn)\right.\right.}{f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^m)^n])^3,x]
```

```
[Out] ((e + f*x)*(a + b*Log[c*(d*(e + f*x)^m)^n])^3 - 3*b*m*n*((e + f*x)*(a + b*L
og[c*(d*(e + f*x)^m)^n])^2 - 2*b*m*n*(f*(a - b*m*n)*x + b*(e + f*x)*Log[c*(
d*(e + f*x)^m)^n])))/f
```

fricas [B] time = 0.47, size = 639, normalized size = 5.28

$$\frac{b^3fn^3x\log(d)^3 + b^3fx\log(c)^3 + \left(b^3fm^3n^3x + b^3em^3n^3\right)\log\left(fx+e\right)^3 - 3\left(b^3fmn - ab^2f\right)x\log(c)^2 - 3\left(b^3em\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^3,x, algorithm="fricas")
```

```
[Out] (b^3*f*n^3*x*log(d)^3 + b^3*f*x*log(c)^3 + (b^3*f*m^3*n^3*x + b^3*e*m^3*n^3
)*log(f*x + e)^3 - 3*(b^3*f*m*n - a*b^2*f)*x*log(c)^2 - 3*(b^3*e*m^3*n^3 -
a*b^2*e*m^2*n^2 + (b^3*f*m^3*n^3 - a*b^2*f*m^2*n^2)*x - (b^3*f*m^2*n^2*x +
b^3*e*m^2*n^2)*log(c) - (b^3*f*m^2*n^3*x + b^3*e*m^2*n^3)*log(d))*log(f*x +
 e)^2 + 3*(2*b^3*f*m^2*n^2 - 2*a*b^2*f*m*n + a^2*b*f)*x*log(c) + 3*(b^3*f*n
^2*x*log(c) - (b^3*f*m*n^3 - a*b^2*f*n^2)*x)*log(d)^2 - (6*b^3*f*m^3*n^3 -
6*a*b^2*f*m^2*n^2 + 3*a^2*b*f*m*n - a^3*f)*x + 3*(2*b^3*e*m^3*n^3 - 2*a*b^2
*e*m^2*n^2 + a^2*b*e*m*n + (b^3*f*m*n*x + b^3*e*m*n)*log(c)^2 + (b^3*f*m*n^
3*x + b^3*e*m*n^3)*log(d)^2 + (2*b^3*f*m^3*n^3 - 2*a*b^2*f*m^2*n^2 + a^2*b*
f*m*n)*x - 2*(b^3*e*m^2*n^2 - a*b^2*e*m*n + (b^3*f*m^2*n^2 - a*b^2*f*m*n)*x
)*log(c) - 2*(b^3*e*m^2*n^3 - a*b^2*e*m*n^2 + (b^3*f*m^2*n^3 - a*b^2*f*m*n^
2)*x - (b^3*f*m*n^2*x + b^3*e*m*n^2)*log(c))*log(d))*log(f*x + e) + 3*(b^3*
```

```
f*n*x*log(c)^2 - 2*(b^3*f*m*n^2 - a*b^2*f*n)*x*log(c) + (2*b^3*f*m^2*n^3 -
2*a*b^2*f*m*n^2 + a^2*b*f*n)*x)*log(d))/f
```

giac [B] time = 0.28, size = 822, normalized size = 6.79

$$\frac{(fx+e)b^3m^3n^3\log(fx+e)^3}{f} - \frac{3(fx+e)b^3m^3n^3\log(fx+e)^2}{f} + \frac{3(fx+e)b^3m^2n^3\log(fx+e)^2\log(d)}{f} + \frac{6(fx+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^3,x, algorithm="giac")
```

```
[Out] (f*x + e)*b^3*m^3*n^3*log(f*x + e)^3/f - 3*(f*x + e)*b^3*m^3*n^3*log(f*x +
e)^2/f + 3*(f*x + e)*b^3*m^2*n^3*log(f*x + e)^2*log(d)/f + 6*(f*x + e)*b^3*
m^3*n^3*log(f*x + e)/f + 3*(f*x + e)*b^3*m^2*n^2*log(f*x + e)^2*log(c)/f -
6*(f*x + e)*b^3*m^2*n^3*log(f*x + e)*log(d)/f + 3*(f*x + e)*b^3*m*n^3*log(f
*x + e)*log(d)^2/f - 6*(f*x + e)*b^3*m^3*n^3/f + 3*(f*x + e)*a*b^2*m^2*n^2*
log(f*x + e)^2/f - 6*(f*x + e)*b^3*m^2*n^2*log(f*x + e)*log(c)/f + 6*(f*x +
 e)*b^3*m^2*n^3*log(d)/f + 6*(f*x + e)*b^3*m*n^2*log(f*x + e)*log(c)*log(d)
/f - 3*(f*x + e)*b^3*m*n^3*log(d)^2/f + (f*x + e)*b^3*n^3*log(d)^3/f - 6*(f
*x + e)*a*b^2*m^2*n^2*log(f*x + e)/f + 6*(f*x + e)*b^3*m^2*n^2*log(c)/f + 3
*(f*x + e)*b^3*m*n*log(f*x + e)*log(c)^2/f + 6*(f*x + e)*a*b^2*m*n^2*log(f*
x + e)*log(d)/f - 6*(f*x + e)*b^3*m*n^2*log(c)*log(d)/f + 3*(f*x + e)*b^3*n
^2*log(c)*log(d)^2/f + 6*(f*x + e)*a*b^2*m^2*n^2/f + 6*(f*x + e)*a*b^2*m*n*
log(f*x + e)*log(c)/f - 3*(f*x + e)*b^3*m*n*log(c)^2/f - 6*(f*x + e)*a*b^2*
m*n^2*log(d)/f + 3*(f*x + e)*b^3*n*log(c)^2*log(d)/f + 3*(f*x + e)*a*b^2*n^
2*log(d)^2/f + 3*(f*x + e)*a^2*b*m*n*log(f*x + e)/f - 6*(f*x + e)*a*b^2*m*n
*log(c)/f + (f*x + e)*b^3*log(c)^3/f + 6*(f*x + e)*a*b^2*n*log(c)*log(d)/f
- 3*(f*x + e)*a^2*b*m*n/f + 3*(f*x + e)*a*b^2*log(c)^2/f + 3*(f*x + e)*a^2*
b*n*log(d)/f + 3*(f*x + e)*a^2*b*log(c)/f + (f*x + e)*a^3/f
```

maple [F] time = 0.10, size = 0, normalized size = 0.00

$$\int \left(b\ln\left(c\left(d\left(fx+e\right)^{m}\right)^{n}\right)+a\right)^{3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(d*(f*x+e)^m)^n)+a)^3,x)
```

```
[Out] int((b*ln(c*(d*(f*x+e)^m)^n)+a)^3,x)
```

maxima [B] time = 0.79, size = 317, normalized size = 2.62

$$-3\,a^2bfmn\left(\frac{x}{f} - \frac{e\log\left(fx+e\right)}{f^2}\right) + b^3x\log\left(\left(\left(fx+e\right)^m d\right)^n c\right)^3 + 3\,ab^2x\log\left(\left(\left(fx+e\right)^m d\right)^n c\right)^2 + 3\,a^2bx\log\left(\left(\left(fx+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^3,x, algorithm="maxima")
```

```
[Out] -3*a^2*b*f*m*n*(x/f - e*log(f*x + e)/f^2) + b^3*x*log(((f*x + e)^m*d)^n*c)^
3 + 3*a*b^2*x*log(((f*x + e)^m*d)^n*c)^2 + 3*a^2*b*x*log(((f*x + e)^m*d)^n*
c) - 3*(2*f*m*n*(x/f - e*log(f*x + e)/f^2)*log(((f*x + e)^m*d)^n*c) + (e*lo
g(f*x + e)^2 - 2*f*x + 2*e*log(f*x + e))*m^2*n^2/f)*a*b^2 - (3*f*m*n*(x/f -
 e*log(f*x + e)/f^2)*log(((f*x + e)^m*d)^n*c)^2 - ((e*log(f*x + e)^3 + 3*e*
log(f*x + e)^2 - 6*f*x + 6*e*log(f*x + e))*m^2*n^2/f^2 - 3*(e*log(f*x + e)^
2 - 2*f*x + 2*e*log(f*x + e))*m*n*log(((f*x + e)^m*d)^n*c)/f^2)*f*m*n)*b^3
+ a^3*x
```

mupad [B] time = 0.41, size = 242, normalized size = 2.00

$$x\left(a^3-3\,a^2\,b\,m\,n+6\,a\,b^2\,m^2\,n^2-6\,b^3\,m^3\,n^3\right)+\ln\left(c\left(d\left(e+f\,x\right)^m\right)^n\right)^2\left(\frac{3\,\left(a\,b^2\,e-b^3\,e\,m\,n\right)}{f}+3\,b^2\,x\,\left(a-b\,m\,n\right)\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^m)^n))^3,x)
```

```
[Out] x*(a^3 - 6*b^3*m^3*n^3 + 6*a*b^2*m^2*n^2 - 3*a^2*b*m*n) + log(c*(d*(e + f*x
)^m)^n)^2*((3*(a*b^2*e - b^3*e*m*n))/f + 3*b^2*x*(a - b*m*n)) + log(c*(d*(e
 + f*x)^m)^n)^3*(b^3*x + (b^3*e)/f) + (log(e + f*x)*(6*b^3*e*m^3*n^3 - 6*a*
b^2*e*m^2*n^2 + 3*a^2*b*e*m*n))/f + (log(c*(d*(e + f*x)^m)^n)*(3*b*e*x*(a^2
 + 2*b^2*m^2*n^2 - 2*a*b*m*n) + 3*b*f*x^2*(a^2 + 2*b^2*m^2*n^2 - 2*a*b*m*n)
))/(e + f*x)
```

sympy [A] time = 9.84, size = 1023, normalized size = 8.45

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**m)**n))**3,x)
```

```
[Out] Piecewise((a**3*x + 3*a**2*b*e*m*n*log(e + f*x)/f + 3*a**2*b*m*n*x*log(e +
f*x) - 3*a**2*b*m*n*x + 3*a**2*b*n*x*log(d) + 3*a**2*b*x*log(c) + 3*a*b**2*
e*m**2*n**2*log(e + f*x)**2/f - 6*a*b**2*e*m**2*n**2*log(e + f*x)/f + 6*a*b
**2*e*m*n**2*log(d)*log(e + f*x)/f + 6*a*b**2*e*m*n*log(c)*log(e + f*x)/f +
 3*a*b**2*m**2*n**2*x*log(e + f*x)**2 - 6*a*b**2*m**2*n**2*x*log(e + f*x) +
 6*a*b**2*m**2*n**2*x + 6*a*b**2*m*n**2*x*log(d)*log(e + f*x) - 6*a*b**2*m*
n**2*x*log(d) + 6*a*b**2*m*n*x*log(c)*log(e + f*x) - 6*a*b**2*m*n*x*log(c)
+ 3*a*b**2*n**2*x*log(d)**2 + 6*a*b**2*n*x*log(c)*log(d) + 3*a*b**2*x*log(c
)**2 + b**3*e*m**3*n**3*log(e + f*x)**3/f - 3*b**3*e*m**3*n**3*log(e + f*x)
**2/f + 6*b**3*e*m**3*n**3*log(e + f*x)/f + 3*b**3*e*m**2*n**3*log(d)*log(e
 + f*x)**2/f - 6*b**3*e*m**2*n**3*log(d)*log(e + f*x)/f + 3*b**3*e*m**2*n**
2*log(c)*log(e + f*x)**2/f - 6*b**3*e*m**2*n**2*log(c)*log(e + f*x)/f + 3*b
**3*e*m*n**3*log(d)**2*log(e + f*x)/f + 6*b**3*e*m*n**2*log(c)*log(d)*log(e
 + f*x)/f + 3*b**3*e*m*n*log(c)**2*log(e + f*x)/f + b**3*m**3*n**3*x*log(e
+ f*x)**3 - 3*b**3*m**3*n**3*x*log(e + f*x)**2 + 6*b**3*m**3*n**3*x*log(e +
 f*x) - 6*b**3*m**3*n**3*x + 3*b**3*m**2*n**3*x*log(d)*log(e + f*x)**2 - 6*
b**3*m**2*n**3*x*log(d)*log(e + f*x) + 6*b**3*m**2*n**3*x*log(d) + 3*b**3*m
**2*n**2*x*log(c)*log(e + f*x)**2 - 6*b**3*m**2*n**2*x*log(c)*log(e + f*x)
+ 6*b**3*m**2*n**2*x*log(c) + 3*b**3*m*n**3*x*log(d)**2*log(e + f*x) - 3*b*
*3*m*n**3*x*log(d)**2 + 6*b**3*m*n**2*x*log(c)*log(d)*log(e + f*x) - 6*b**3
*m*n**2*x*log(c)*log(d) + 3*b**3*m*n*x*log(c)**2*log(e + f*x) - 3*b**3*m*n*
x*log(c)**2 + b**3*n**3*x*log(d)**3 + 3*b**3*n**2*x*log(c)*log(d)**2 + 3*b*
*3*n*x*log(c)**2*log(d) + b**3*x*log(c)**3, Ne(f, 0)), (x*(a + b*log(c*(d*e
**m)**n))**3, True))
```

3.406 $\int \left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^2\,dx$

Optimal. Leaf size=78

$$\frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^2}{f}-2abmnx-\frac{2b^2mn(e+fx)\log\left(c\left(d(e+fx)^m\right)^n\right)}{f}+2b^2m^2n^2x$$

```
[Out] -2*a*b*m*n*x+2*b^2*m^2*n^2*x-2*b^2*m*n*(f*x+e)*ln(c*(d*(f*x+e)^m)^n)/f+(f*x
+e)*(a+b*ln(c*(d*(f*x+e)^m)^n))^2/f
```

Rubi [A] time = 0.09, antiderivative size = 78, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {2389, 2296, 2295, 2445}

$$\frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^2}{f}-2abmnx-\frac{2b^2mn(e+fx)\log\left(c\left(d(e+fx)^m\right)^n\right)}{f}+2b^2m^2n^2x$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^m)^n])^2,x]
```

```
[Out] -2*a*b*m*n*x + 2*b^2*m^2*n^2*x - (2*b^2*m*n*(e + f*x)*Log[c*(d*(e + f*x)^m)
^n])/f + ((e + f*x)*(a + b*Log[c*(d*(e + f*x)^m)^n])^2)/f
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^2 dx = \text{Subst}\left(\int \left(a+b\log\left(cd^n(e+fx)^{mn}\right)\right)^2 dx, cd^n(e+fx)^{mn}, c\left(d(e+fx)^{m}\right.\right.$$

$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \left(a+b\log\left(cd^n x^{mn}\right)\right)^2 dx, x, e+fx\right)}{f}, cd^n(e+fx)^{mn}, c\right.$$

$$= \frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^2}{f} - \text{Subst}\left(\frac{(2bmn)\,\text{Subst}\left(\int \left(a+\right.\right.}{}\right.$$

$$= -2abmnx + \frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^2}{f} - \text{Subst}\left(\frac{\left(2b^2mn\right)}{}\right.$$

$$= -2abmnx + 2b^2m^2n^2x - \frac{2b^2mn(e+fx)\log\left(c\left(d(e+fx)^m\right)^n\right)}{f} + \frac{(e+}{}$$

Mathematica [A] time = 0.01, size = 69, normalized size = 0.88

$$\frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^2}{f} - 2bmn\left(ax + \frac{b(e+fx)\log\left(c\left(d(e+fx)^m\right)^n\right)}{f} - bmnx\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^m)^n])^2,x]
```

```
[Out] ((e + f*x)*(a + b*Log[c*(d*(e + f*x)^m)^n])^2)/f - 2*b*m*n*(a*x - b*m*n*x +
 (b*(e + f*x)*Log[c*(d*(e + f*x)^m)^n])/f)
```

fricas [B] time = 0.44, size = 231, normalized size = 2.96

$$\frac{b^2fn^2x\log(d)^2 + b^2fx\log(c)^2 + \left(b^2fm^2n^2x + b^2em^2n^2\right)\log\left(fx+e\right)^2 - 2\left(b^2fmn - abf\right)x\log(c) + \left(2\,b^2fm^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^2,x, algorithm="fricas")
```

```
[Out] (b^2*f*n^2*x*log(d)^2 + b^2*f*x*log(c)^2 + (b^2*f*m^2*n^2*x + b^2*e*m^2*n^2
)*log(f*x + e)^2 - 2*(b^2*f*m*n - a*b*f)*x*log(c) + (2*b^2*f*m^2*n^2 - 2*a*
b*f*m*n + a^2*f)*x - 2*(b^2*e*m^2*n^2 - a*b*e*m*n + (b^2*f*m^2*n^2 - a*b*f*
m*n)*x - (b^2*f*m*n*x + b^2*e*m*n)*log(c) - (b^2*f*m*n^2*x + b^2*e*m*n^2)*l
og(d))*log(f*x + e) + 2*(b^2*f*n*x*log(c) - (b^2*f*m*n^2 - a*b*f*n)*x)*log(
d))/f
```

giac [B] time = 0.33, size = 303, normalized size = 3.88

$$\frac{\left(fx+e\right)b^2m^2n^2\log\left(fx+e\right)^2}{f} - \frac{2\left(fx+e\right)b^2m^2n^2\log\left(fx+e\right)}{f} + \frac{2\left(fx+e\right)b^2mn^2\log\left(fx+e\right)\log(d)}{f} + \frac{2\left(fx+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^2,x, algorithm="giac")
```

```
[Out] (f*x + e)*b^2*m^2*n^2*log(f*x + e)^2/f - 2*(f*x + e)*b^2*m^2*n^2*log(f*x +
e)/f + 2*(f*x + e)*b^2*m*n^2*log(f*x + e)*log(d)/f + 2*(f*x + e)*b^2*m^2*n^
```

```
2/f + 2*(f*x + e)*b^2*m*n*log(f*x + e)*log(c)/f - 2*(f*x + e)*b^2*m*n^2*log
(d)/f + (f*x + e)*b^2*n^2*log(d)^2/f + 2*(f*x + e)*a*b*m*n*log(f*x + e)/f -
 2*(f*x + e)*b^2*m*n*log(c)/f + 2*(f*x + e)*b^2*n*log(c)*log(d)/f - 2*(f*x
+ e)*a*b*m*n/f + (f*x + e)*b^2*log(c)^2/f + 2*(f*x + e)*a*b*n*log(d)/f + 2*
(f*x + e)*a*b*log(c)/f + (f*x + e)*a^2/f
```

maple [F] time = 0.09, size = 0, normalized size = 0.00

$$\int \left(b \ln \left(c \left(d \left(fx+e\right)^{m}\right)^{n}\right)+a\right)^{2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(d*(f*x+e)^m)^n)+a)^2,x)
```

```
[Out] int((b*ln(c*(d*(f*x+e)^m)^n)+a)^2,x)
```

maxima [A] time = 0.63, size = 148, normalized size = 1.90

$$-2\,abfmn\left(\frac{x}{f}-\frac{e\log\left(fx+e\right)}{f^2}\right)+b^2x\log\left(\left(\left(fx+e\right)^m d\right)^n c\right)^2+2\,abx\log\left(\left(\left(fx+e\right)^m d\right)^n c\right)-\left(2\,fmn\left(\frac{x}{f}-\frac{e\log\left(fx\right.}{f^2}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^2,x, algorithm="maxima")
```

```
[Out] -2*a*b*f*m*n*(x/f - e*log(f*x + e)/f^2) + b^2*x*log(((f*x + e)^m*d)^n*c)^2
+ 2*a*b*x*log(((f*x + e)^m*d)^n*c) - (2*f*m*n*(x/f - e*log(f*x + e)/f^2)*lo
g(((f*x + e)^m*d)^n*c) + (e*log(f*x + e)^2 - 2*f*x + 2*e*log(f*x + e))*m^2*
n^2/f)*b^2 + a^2*x
```

mupad [B] time = 0.28, size = 111, normalized size = 1.42

$$\ln\left(c\left(d\left(e+f\,x\right)^m\right)^n\right)^2\,\left(b^2\,x+\frac{b^2\,e}{f}\right)+x\,\left(a^2-2\,a\,b\,m\,n+2\,b^2\,m^2\,n^2\right)-\frac{\ln\left(e+f\,x\right)\,\left(2\,b^2\,e\,m^2\,n^2-2\,a\,b\,e\,m\,n\right)}{f}+2\,b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^m)^n))^2,x)
```

```
[Out] log(c*(d*(e + f*x)^m)^n)^2*(b^2*x + (b^2*e)/f) + x*(a^2 + 2*b^2*m^2*n^2 - 2
*a*b*m*n) - (log(e + f*x)*(2*b^2*e*m^2*n^2 - 2*a*b*e*m*n))/f + 2*b*x*log(c*
(d*(e + f*x)^m)^n)*(a - b*m*n)
```

sympy [A] time = 3.59, size = 343, normalized size = 4.40

$$\begin{cases} a^2x+\frac{2abemn\log\left(e+fx\right)}{f}+2abmnx\log\left(e+fx\right)-2abmnx+2abnx\log\left(d\right)+2abx\log\left(c\right)+\frac{b^2em^2n^2\log\left(e+fx\right)^2}{f}-\frac{2b^2e}{} \\ x\left(a+b\log\left(c\left(de^m\right)^n\right)\right)^2 \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**m)**n))**2,x)
```

```
[Out] Piecewise((a**2*x + 2*a*b*e*m*n*log(e + f*x)/f + 2*a*b*m*n*x*log(e + f*x) -
 2*a*b*m*n*x + 2*a*b*n*x*log(d) + 2*a*b*x*log(c) + b**2*e*m**2*n**2*log(e +
 f*x)**2/f - 2*b**2*e*m**2*n**2*log(e + f*x)/f + 2*b**2*e*m*n**2*log(d)*log
(e + f*x)/f + 2*b**2*e*m*n*log(c)*log(e + f*x)/f + b**2*m**2*n**2*x*log(e +
 f*x)**2 - 2*b**2*m**2*n**2*x*log(e + f*x) + 2*b**2*m**2*n**2*x + 2*b**2*m*
```

```
n**2*x*log(d)*log(e + f*x) - 2*b**2*m*n**2*x*log(d) + 2*b**2*m*n*x*log(c)*l
og(e + f*x) - 2*b**2*m*n*x*log(c) + b**2*n**2*x*log(d)**2 + 2*b**2*n*x*log(
c)*log(d) + b**2*x*log(c)**2, Ne(f, 0)), (x*(a + b*log(c*(d*e**m)**n))**2,
True))
```

3.407 $\int \left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)\,dx$

Optimal. Leaf size=34

$$ax+\frac{b(e+fx)\log\left(c\left(d(e+fx)^m\right)^n\right)}{f}-bmnx$$

[Out] a*x-b*m*n*x+b*(f*x+e)*ln(c*(d*(f*x+e)^m)^n)/f

Rubi [A] time = 0.03, antiderivative size = 34, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {2389, 2295, 2445}

$$ax+\frac{b(e+fx)\log\left(c\left(d(e+fx)^m\right)^n\right)}{f}-bmnx$$

Antiderivative was successfully verified.

[In] Int[a + b*Log[c*(d*(e + f*x)^m)^n],x]

[Out] a*x - b*m*n*x + (b*(e + f*x)*Log[c*(d*(e + f*x)^m)^n])/f

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\begin{aligned}
\int \left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)\,dx &= ax+b\int \log\left(c\left(d(e+fx)^m\right)^n\right)\,dx\\
&= ax+b\,\text{Subst}\left(\int \log\left(cd^n(e+fx)^{mn}\right)\,dx,cd^n(e+fx)^{mn},c\left(d(e+fx)^m\right)^n\right)\\
&= ax+b\,\text{Subst}\left(\frac{\text{Subst}\left(\int \log\left(cd^nx^{mn}\right)\,dx,x,e+fx\right)}{f},cd^n(e+fx)^{mn},c\left(d(e+\right.\right.\\
&= ax-bmnx+\frac{b(e+fx)\log\left(c\left(d(e+fx)^m\right)^n\right)}{f}
\end{aligned}$$

Mathematica [A] time = 0.01, size = 34, normalized size = 1.00

$$ax+\frac{b(e+fx)\log\left(c\left(d(e+fx)^m\right)^n\right)}{f}-bmnx$$

Antiderivative was successfully verified.

```
[In] Integrate[a + b*Log[c*(d*(e + f*x)^m)^n],x]
```

```
[Out] a*x - b*m*n*x + (b*(e + f*x)*Log[c*(d*(e + f*x)^m)^n])/f
```

fricas [A] time = 0.45, size = 50, normalized size = 1.47

$$\frac{bfnx\log(d)+bfx\log(c)-\left(bfmn-af\right)x+\left(bfmnx+bemn\right)\log\left(fx+e\right)}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*log(c*(d*(f*x+e)^m)^n),x, algorithm="fricas")
```

```
[Out] (b*f*n*x*log(d) + b*f*x*log(c) - (b*f*m*n - a*f)*x + (b*f*m*n*x + b*e*m*n)*
log(f*x + e))/f
```

giac [A] time = 0.18, size = 64, normalized size = 1.88

$$\left(\frac{\left(fx+e\right)mn\log\left(fx+e\right)}{f}-\frac{\left(fx+e\right)mn}{f}+\frac{\left(fx+e\right)n\log(d)}{f}+\frac{\left(fx+e\right)\log(c)}{f}\right)b+ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*log(c*(d*(f*x+e)^m)^n),x, algorithm="giac")
```

```
[Out] ((f*x + e)*m*n*log(f*x + e)/f - (f*x + e)*m*n/f + (f*x + e)*n*log(d)/f + (f
*x + e)*log(c)/f)*b + a*x
```

maple [A] time = 0.05, size = 42, normalized size = 1.24

$$\frac{bemn\ln\left(fx+e\right)}{f}-bmnx+bx\ln\left(c\left(d\left(fx+e\right)^m\right)^n\right)+ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(b*ln(c*(d*(f*x+e)^m)^n)+a,x)
```

```
[Out] a*x+b*x*ln(c*(d*(f*x+e)^m)^n)-b*m*n*x+b*e/f*m*n*ln(f*x+e)
```

maxima [A] time = 0.62, size = 45, normalized size = 1.32

$$-bfmn\left(\frac{x}{f}-\frac{e\log\left(fx+e\right)}{f^2}\right)+bx\log\left(\left(\left(fx+e\right)^m d\right)^n c\right)+ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*log(c*(d*(f*x+e)^m)^n),x, algorithm="maxima")
```

```
[Out] -b*f*m*n*(x/f - e*log(f*x + e)/f^2) + b*x*log(((f*x + e)^m*d)^n*c) + a*x
```

mupad [B] time = 0.21, size = 41, normalized size = 1.21

$$x\,\left(a-b\,m\,n\right)+b\,x\,\ln\left(c\,\left(d\,\left(e+f\,x\right)^m\right)^n\right)+\frac{b\,e\,m\,n\,\ln\left(e+f\,x\right)}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(a + b*log(c*(d*(e + f*x)^m)^n),x)
```

```
[Out] x*(a - b*m*n) + b*x*log(c*(d*(e + f*x)^m)^n) + (b*e*m*n*log(e + f*x))/f
```

sympy [A] time = 0.97, size = 58, normalized size = 1.71

$$ax + b\left(\begin{cases} \frac{emn\log\left(e+fx\right)}{f} + mnx\log\left(e + fx\right) - mnx + nx\log\left(d\right) + x\log\left(c\right) & \text{for } f \neq 0 \\ x\log\left(c\left(de^m\right)^n\right) & \text{otherwise} \end{cases}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*ln(c*(d*(f*x+e)**m)**n),x)
```

```
[Out] a*x + b*Piecewise((e*m*n*log(e + f*x)/f + m*n*x*log(e + f*x) - m*n*x + n*x*
log(d) + x*log(c), Ne(f, 0)), (x*log(c*(d*e**m)**n), True))
```

3.408 $\int \frac{1}{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}\,dx$

Optimal. Leaf size=83

$$\frac{(e+fx)e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\operatorname{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}{bmn}\right)}{bfmn}$$

```
[Out] (f*x+e)*Ei((a+b*ln(c*(d*(f*x+e)^m)^n))/b/m/n)/b/exp(a/b/m/n)/f/m/n/((c*(d*(
f*x+e)^m)^n)^(1/m/n))
```

Rubi [A] time = 0.13, antiderivative size = 83, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {2389, 2300, 2178, 2445}

$$\frac{(e+fx)e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\operatorname{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}{bmn}\right)}{bfmn}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^m)^n])^(-1),x]
```

```
[Out] ((e + f*x)*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^m)^n])/(b*m*n)])/(b*E^(a
/(b*m*n))*f*m*n*(c*(d*(e + f*x)^m)^n)^(1/(m*n)))
```

Rule 2178

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - (c*f)/d))*ExpIntegralEi[(f*g*(c + d*x)*Log[F])/d])/d, x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{1}{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}\,dx = \text{Subst}\left(\int \frac{1}{a+b\log\left(cd^n(e+fx)^{mn}\right)}\,dx, cd^n(e+fx)^{mn}, c\left(d(e+fx)^m\right)^n\right)$$

$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \frac{1}{a+b\log(cd^n x^{mn})}\,dx, x, e+fx\right)}{f}, cd^n(e+fx)^{mn}, c\left(d(e+fx)^m\right)^n\right.$$

$$= \text{Subst}\left(\frac{\left((e+fx)\left(cd^n(e+fx)^{mn}\right)^{-\frac{1}{mn}}\right)\text{Subst}\left(\int \frac{e^{\frac{x}{mn}}}{a+bx}\,dx, x, \log\left(cd^n(e+fx)^{m}\right.\right.}{fmn}\right.$$

$$= \frac{e^{-\frac{a}{bmn}}(e+fx)\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}{bmn}\right)}{bfmn}$$

Mathematica [A] time = 0.12, size = 83, normalized size = 1.00

$$\frac{(e+fx)e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}{bmn}\right)}{bfmn}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^m)^n])^(-1),x]
```

```
[Out] ((e + f*x)*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^m)^n])/(b*m*n)])/(b*E^(a
/(b*m*n))*f*m*n*(c*(d*(e + f*x)^m)^n)^(1/(m*n)))
```

fricas [A] time = 0.43, size = 65, normalized size = 0.78

$$\frac{e^{\left(-\frac{bn\log(d)+b\log(c)+a}{bmn}\right)}\text{log\_integral}\left(\left(fx+e\right)e^{\left(\frac{bn\log(d)+b\log(c)+a}{bmn}\right)}\right)}{bfmn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n)),x, algorithm="fricas")
```

```
[Out] e^(-(b*n*log(d) + b*log(c) + a)/(b*m*n))*log_integral((f*x + e)*e^((b*n*log
(d) + b*log(c) + a)/(b*m*n)))/(b*f*m*n)
```

giac [A] time = 0.17, size = 79, normalized size = 0.95

$$\frac{\text{Ei}\left(\frac{\log(d)}{m}+\frac{\log(c)}{mn}+\frac{a}{bmn}+\log\left(fx+e\right)\right)e^{\left(-\frac{a}{bmn}\right)}}{bc^{\frac{1}{mn}}d^{\left(\frac{1}{m}\right)}fmn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n)),x, algorithm="giac")
```

```
[Out] Ei(log(d)/m + log(c)/(m*n) + a/(b*m*n) + log(f*x + e))*e^(-a/(b*m*n))/(b*c^
(1/(m*n))*d^(1/m)*f*m*n)
```

maple [F] time = 0.07, size = 0, normalized size = 0.00

$$\int \frac{1}{b\ln\left(c\left(d\left(fx+e\right)^{m}\right)^{n}\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*ln(c*(d*(f*x+e)^m)^n)+a),x)
[Out] int(1/(b*ln(c*(d*(f*x+e)^m)^n)+a),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{b\log\left(\left(\left(fx+e\right)^{m}d\right)^{n}c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n)),x, algorithm="maxima")
[Out] integrate(1/(b*log(((f*x + e)^m*d)^n*c) + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{a+b\,\ln\left(c\left(d\left(e+f\,x\right)^{m}\right)^{n}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*log(c*(d*(e + f*x)^m)^n)),x)
[Out] int(1/(a + b*log(c*(d*(e + f*x)^m)^n)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{a+b\log\left(c\left(d\left(e+fx\right)^{m}\right)^{n}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(d*(f*x+e)**m)**n)),x)
[Out] Integral(1/(a + b*log(c*(d*(e + f*x)**m)**n)), x)
```

3.409 $\int \frac{1}{\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^2}\,dx$

Optimal. Leaf size=123

$$\frac{(e+fx)e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}{bmn}\right)}{b^2fm^2n^2}-\frac{e+fx}{bfmn\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)}$$

```
[Out] (f*x+e)*Ei((a+b*ln(c*(d*(f*x+e)^m)^n))/b/m/n)/b^2/exp(a/b/m/n)/f/m^2/n^2/((
c*(d*(f*x+e)^m)^n)^(1/m/n))+(-f*x-e)/b/f/m/n/(a+b*ln(c*(d*(f*x+e)^m)^n))
```

Rubi [A] time = 0.17, antiderivative size = 123, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {2389, 2297, 2300, 2178, 2445}

$$\frac{(e+fx)e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}{bmn}\right)}{b^2fm^2n^2}-\frac{e+fx}{bfmn\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^m)^n])^(-2),x]
```

```
[Out] ((e + f*x)*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^m)^n])/(b*m*n)])/(b^2*E^
(a/(b*m*n))*f*m^2*n^2*(c*(d*(e + f*x)^m)^n)^(1/(m*n))) - (e + f*x)/(b*f*m*n
*(a + b*Log[c*(d*(e + f*x)^m)^n]))
```

Rule 2178

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - (c*f)/d))*ExpIntegralEi[(f*g*(c + d*x)*Log[F])/d])/d, x] /; F
reeQ[{F, c, d, e, f, g}, x] && !$UseGamma === True
```

Rule 2297

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[(x*(a + b
*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
gerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
```

```
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{1}{\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^2}\,dx = \text{Subst}\left(\int \frac{1}{\left(a+b\log\left(cd^n(e+fx)^{mn}\right)\right)^2}\,dx, cd^n(e+fx)^{mn}, c\left(d(e+fx)^{\dots}\right.\right.$$

$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \frac{1}{\left(a+b\log(cd^n x^{mn})\right)^2}\,dx, x, e+fx\right)}{f}, cd^n(e+fx)^{mn}, c\left(d(e+\dots\right.\right.$$

$$= -\frac{e+fx}{bfmn\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)} + \text{Subst}\left(\frac{\text{Subst}\left(\int \frac{1}{a+b\log(cd^n x^{mn})}\dots\right.}{bfmn}\dots\right.$$

$$= -\frac{e+fx}{bfmn\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)} + \text{Subst}\left(\frac{\left((e+fx)\left(cd^n(e+fx)^{\dots}\right.\right.}{\dots}\right.$$

$$= \frac{e^{-\frac{a}{bmn}}(e+fx)\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}{bmn}\right)}{b^2fm^2n^2} - \frac{\dots}{bfmn\left(a\dots\right.}$$

Mathematica [A]   time = 0.12, size = 163, normalized size = 1.33

$$-\frac{(e+fx)e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\left(bmne^{\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{\frac{1}{mn}} - \left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)\text{Ei}\left(\frac{a+b\log\left(\dots\right.}{\dots}\right.\right.}{b^2fm^2n^2\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^m)^n])^(-2),x]
```

```
[Out] -(((e + f*x)*(b*E^(a/(b*m*n))*m*n*(c*(d*(e + f*x)^m)^n)^(1/(m*n)) - ExpInte
gralEi[(a + b*Log[c*(d*(e + f*x)^m)^n])/(b*m*n)]*(a + b*Log[c*(d*(e + f*x)^
m)^n])))/(b^2*E^(a/(b*m*n))*f*m^2*n^2*(c*(d*(e + f*x)^m)^n)^(1/(m*n))*(a +
b*Log[c*(d*(e + f*x)^m)^n])))
```

fricas [A]   time = 0.44, size = 171, normalized size = 1.39

$$-\frac{\left((bfmnx+bemn)e^{\left(\frac{bn\log(d)+b\log(c)+a}{bmn}\right)} - \left(bmn\log\left(fx+e\right)+bn\log(d)+b\log(c)+a\right)\text{log\_integral}\left(\left(fx+e\right)e^{\left(\dots\right.}\right.\right.}{b^3fm^3n^3\log\left(fx+e\right)+b^3fm^2n^3\log(d)+b^3fm^2n^2\log(c)+ab^2fm^2n^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n))^2,x, algorithm="fricas")
```

```
[Out] -((b*f*m*n*x + b*e*m*n)*e^((b*n*log(d) + b*log(c) + a)/(b*m*n)) - (b*m*n*lo
g(f*x + e) + b*n*log(d) + b*log(c) + a)*log_integral((f*x + e)*e^((b*n*log(
```

```
d) + b*log(c) + a)/(b*m*n))))*e^(-(b*n*log(d) + b*log(c) + a)/(b*m*n))/(b^3
*f*m^3*n^3*log(f*x + e) + b^3*f*m^2*n^3*log(d) + b^3*f*m^2*n^2*log(c) + a*b
^2*f*m^2*n^2)
```

giac [B] time = 0.25, size = 593, normalized size = 4.82

$$-\frac{(fx+e)bmn}{b^3fm^3n^3\log(fx+e)+b^3fm^2n^3\log(d)+b^3fm^2n^2\log(c)+ab^2fm^2n^2}+\frac{bmn\mathrm{Ei}\left(\frac{\log(d)}{m}+\frac{\log(c)}{mn}+\frac{a}{bmn}\right.}{\left(b^3fm^3n^3\log(fx+e)+b^3fm^2n^3\log\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n))^2,x, algorithm="giac")
```

```
[Out] -(f*x + e)*b*m*n/(b^3*f*m^3*n^3*log(f*x + e) + b^3*f*m^2*n^3*log(d) + b^3*f
*m^2*n^2*log(c) + a*b^2*f*m^2*n^2) + b*m*n*Ei(log(d)/m + log(c)/(m*n) + a/(
b*m*n) + log(f*x + e))*e^(-a/(b*m*n))*log(f*x + e)/((b^3*f*m^3*n^3*log(f*x
+ e) + b^3*f*m^2*n^3*log(d) + b^3*f*m^2*n^2*log(c) + a*b^2*f*m^2*n^2)*c^(1/
(m*n))*d^(1/m)) + b*n*Ei(log(d)/m + log(c)/(m*n) + a/(b*m*n) + log(f*x + e)
)*e^(-a/(b*m*n))*log(d)/((b^3*f*m^3*n^3*log(f*x + e) + b^3*f*m^2*n^3*log(d)
 + b^3*f*m^2*n^2*log(c) + a*b^2*f*m^2*n^2)*c^(1/(m*n))*d^(1/m)) + b*Ei(log(
d)/m + log(c)/(m*n) + a/(b*m*n) + log(f*x + e))*e^(-a/(b*m*n))*log(c)/((b^3
*f*m^3*n^3*log(f*x + e) + b^3*f*m^2*n^3*log(d) + b^3*f*m^2*n^2*log(c) + a*b
^2*f*m^2*n^2)*c^(1/(m*n))*d^(1/m)) + a*Ei(log(d)/m + log(c)/(m*n) + a/(b*m*
n) + log(f*x + e))*e^(-a/(b*m*n))/((b^3*f*m^3*n^3*log(f*x + e) + b^3*f*m^2*
n^3*log(d) + b^3*f*m^2*n^2*log(c) + a*b^2*f*m^2*n^2)*c^(1/(m*n))*d^(1/m))
```

maple [F] time = 0.07, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(b\ln\left(c\left(d\left(fx+e\right)^{m}\right)^{n}\right)+a\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*ln(c*(d*(f*x+e)^m)^n)+a)^2,x)
```

```
[Out] int(1/(b*ln(c*(d*(f*x+e)^m)^n)+a)^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{fx+e}{b^2fmn\log\left(\left(\left(fx+e\right)^{m}\right)^{n}\right)+abfmn+\left(fmn^2\log(d)+fmn\log(c)\right)b^2}+\int\frac{1}{b^2mn\log\left(\left(\left(fx+e\right)^{m}\right)^{n}\right)+abmn+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n))^2,x, algorithm="maxima")
```

```
[Out] -(f*x + e)/(b^2*f*m*n*log(((f*x + e)^m)^n) + a*b*f*m*n + (f*m*n^2*log(d) +
f*m*n*log(c))*b^2) + integrate(1/(b^2*m*n*log(((f*x + e)^m)^n) + a*b*m*n +
(m*n^2*log(d) + m*n*log(c))*b^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{\left(a+b\,\ln\left(c\,\left(d\,\left(e+f\,x\right)^{m}\right)^{n}\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*log(c*(d*(e + f*x)^m)^n))^2,x)
```

```
[Out] int(1/(a + b*log(c*(d*(e + f*x)^m)^n))^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a + b\log\left(c\left(d\left(e + fx\right)^{m}\right)^{n}\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(d*(f*x+e)**m)**n))**2,x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**m)**n))**(-2), x)
```

3.410 $\int \frac{1}{\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^3}\,dx$

Optimal. Leaf size=169

$$\frac{(e+fx)e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\operatorname{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}{bmn}\right)}{2b^3fm^3n^3}-\frac{e+fx}{2b^2fm^2n^2\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)}-\frac{}{2bfmn\left(a\right.}$$

```
[Out] 1/2*(f*x+e)*Ei((a+b*ln(c*(d*(f*x+e)^m)^n))/b/m/n)/b^3/exp(a/b/m/n)/f/m^3/n^
3/((c*(d*(f*x+e)^m)^n)^(1/m/n))+1/2*(-f*x-e)/b/f/m/n/(a+b*ln(c*(d*(f*x+e)^m
)^n))^2+1/2*(-f*x-e)/b^2/f/m^2/n^2/(a+b*ln(c*(d*(f*x+e)^m)^n))
```

Rubi [A] time = 0.22, antiderivative size = 169, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {2389, 2297, 2300, 2178, 2445}

$$\frac{(e+fx)e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\operatorname{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}{bmn}\right)}{2b^3fm^3n^3}-\frac{e+fx}{2b^2fm^2n^2\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)}-\frac{}{2bfmn\left(a\right.}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^m)^n])^(-3),x]
```

```
[Out] ((e + f*x)*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^m)^n])/(b*m*n)])/(2*b^3*
E^(a/(b*m*n))*f*m^3*n^3*(c*(d*(e + f*x)^m)^n)^(1/(m*n))) - (e + f*x)/(2*b*f
*m*n*(a + b*Log[c*(d*(e + f*x)^m)^n])^2) - (e + f*x)/(2*b^2*f*m^2*n^2*(a +
b*Log[c*(d*(e + f*x)^m)^n]))
```

Rule 2178

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - (c*f)/d))*ExpIntegralEi[(f*g*(c + d*x)*Log[F])/d])/d, x] /; F
reeQ[{F, c, d, e, f, g}, x] && !$UseGamma === True
```

Rule 2297

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[(x*(a + b
*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
gerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] && !IntegerQ[n] && !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{1}{\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^3}\,dx = \text{Subst}\left(\int \frac{1}{\left(a+b\log\left(cd^n(e+fx)^{mn}\right)\right)^3}\,dx, cd^n(e+fx)^{mn}, c\left(d(e+fx)^{\cdots}\right.\right.$$

$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \frac{1}{\left(a+b\log(cd^nx^{mn})\right)^3}\,dx, x, e+fx\right)}{f}, cd^n(e+fx)^{mn}, c\left(d(e+\cdots\right.\right.$$

$$= -\frac{e+fx}{2bfmn\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^2} + \text{Subst}\left(\frac{\text{Subst}\left(\int \frac{1}{\left(a+b\log(cd^nx\cdots\right.}\cdots\right.}{2bf\cdots}\right.$$

$$= -\frac{e+fx}{2bfmn\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^2} - \frac{e+fx}{2b^2fm^2n^2\left(a+b\log\left(c\left(d(e\cdots\right.\right.\right.}$$

$$= -\frac{e+fx}{2bfmn\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^2} - \frac{e+fx}{2b^2fm^2n^2\left(a+b\log\left(c\left(d(e\cdots\right.\right.\right.}$$

$$= \frac{e^{-\frac{a}{bmn}}(e+fx)\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}{bmn}\right)}{2b^3fm^3n^3} - \frac{\cdots}{2bfmn\left(\cdots\right.}$$

Mathematica [A] time = 0.19, size = 189, normalized size = 1.12

$$-\frac{(e+fx)e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\left(bmne^{\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{\frac{1}{mn}}\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)+bmn\right)-\left(a\cdots\right.\right.}{2b^3fm^3n^3\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^m)^n])^(-3),x]
```

```
[Out] -1/2*((e + f*x)*(-(ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^m)^n])/(b*m*n)]*
(a + b*Log[c*(d*(e + f*x)^m)^n])^2) + b*E^(a/(b*m*n))*m*n*(c*(d*(e + f*x)^m
)^n)^(1/(m*n))*(a + b*m*n + b*Log[c*(d*(e + f*x)^m)^n])))/(b^3*E^(a/(b*m*n)
)*f*m^3*n^3*(c*(d*(e + f*x)^m)^n)^(1/(m*n))*(a + b*Log[c*(d*(e + f*x)^m)^n]
)^2)
```

fricas [B] time = 0.43, size = 444, normalized size = 2.63

$$-\frac{\left(\left(b^2em^2n^2+abemn+\left(b^2fm^2n^2+abfmn\right)x+\left(b^2fm^2n^2x+b^2em^2n^2\right)\log\left(fx+e\right)+\left(b^2fmnx+b^2emn\right)\log(\right.\right.}{2\left(b^5fm^5n^5\log\left(fx+e\right)^2\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n))^3,x, algorithm="fricas")
```

```
[Out] -1/2*((b^2*e*m^2*n^2 + a*b*e*m*n + (b^2*f*m^2*n^2 + a*b*f*m*n)*x + (b^2*f*m
^2*n^2*x + b^2*e*m^2*n^2)*log(f*x + e) + (b^2*f*m*n*x + b^2*e*m*n)*log(c) +
 (b^2*f*m*n^2*x + b^2*e*m*n^2)*log(d))*e^((b*n*log(d) + b*log(c) + a)/(b*m*
n)) - (b^2*m^2*n^2*log(f*x + e)^2 + b^2*n^2*log(d)^2 + b^2*log(c)^2 + 2*a*b
*log(c) + a^2 + 2*(b^2*m*n^2*log(d) + b^2*m*n*log(c) + a*b*m*n)*log(f*x + e
) + 2*(b^2*n*log(c) + a*b*n)*log(d))*log_integral((f*x + e)*e^((b*n*log(d)
+ b*log(c) + a)/(b*m*n))))*e^(-(b*n*log(d) + b*log(c) + a)/(b*m*n))/(b^5*f*
m^5*n^5*log(f*x + e)^2 + b^5*f*m^3*n^5*log(d)^2 + b^5*f*m^3*n^3*log(c)^2 +
2*a*b^4*f*m^3*n^3*log(c) + a^2*b^3*f*m^3*n^3 + 2*(b^5*f*m^4*n^5*log(d) + b^
5*f*m^4*n^4*log(c) + a*b^4*f*m^4*n^4)*log(f*x + e) + 2*(b^5*f*m^3*n^4*log(c
) + a*b^4*f*m^3*n^4)*log(d))
```

giac [B] time = 0.45, size = 3481, normalized size = 20.60

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n))^3,x, algorithm="giac")
```

```
[Out] -1/2*(f*x + e)*b^2*m^2*n^2*log(f*x + e)/(b^5*f*m^5*n^5*log(f*x + e)^2 + 2*b
^5*f*m^4*n^5*log(f*x + e)*log(d) + 2*b^5*f*m^4*n^4*log(f*x + e)*log(c) + b^
5*f*m^3*n^5*log(d)^2 + 2*a*b^4*f*m^4*n^4*log(f*x + e) + 2*b^5*f*m^3*n^4*log
(c)*log(d) + b^5*f*m^3*n^3*log(c)^2 + 2*a*b^4*f*m^3*n^4*log(d) + 2*a*b^4*f*
m^3*n^3*log(c) + a^2*b^3*f*m^3*n^3) + 1/2*b^2*m^2*n^2*Ei(log(d)/m + log(c)/
(m*n) + a/(b*m*n) + log(f*x + e))*e^(-a/(b*m*n))*log(f*x + e)^2/((b^5*f*m^5
*n^5*log(f*x + e)^2 + 2*b^5*f*m^4*n^5*log(f*x + e)*log(d) + 2*b^5*f*m^4*n^4
*log(f*x + e)*log(c) + b^5*f*m^3*n^5*log(d)^2 + 2*a*b^4*f*m^4*n^4*log(f*x +
 e) + 2*b^5*f*m^3*n^4*log(c)*log(d) + b^5*f*m^3*n^3*log(c)^2 + 2*a*b^4*f*m^
3*n^4*log(d) + 2*a*b^4*f*m^3*n^3*log(c) + a^2*b^3*f*m^3*n^3)*c^(1/(m*n))*d^
(1/m)) - 1/2*(f*x + e)*b^2*m^2*n^2/(b^5*f*m^5*n^5*log(f*x + e)^2 + 2*b^5*f*
m^4*n^5*log(f*x + e)*log(d) + 2*b^5*f*m^4*n^4*log(f*x + e)*log(c) + b^5*f*m
^3*n^5*log(d)^2 + 2*a*b^4*f*m^4*n^4*log(f*x + e) + 2*b^5*f*m^3*n^4*log(c)*l
og(d) + b^5*f*m^3*n^3*log(c)^2 + 2*a*b^4*f*m^3*n^4*log(d) + 2*a*b^4*f*m^3*n
^3*log(c) + a^2*b^3*f*m^3*n^3) - 1/2*(f*x + e)*b^2*m*n^2*log(d)/(b^5*f*m^5*
n^5*log(f*x + e)^2 + 2*b^5*f*m^4*n^5*log(f*x + e)*log(d) + 2*b^5*f*m^4*n^4*
log(f*x + e)*log(c) + b^5*f*m^3*n^5*log(d)^2 + 2*a*b^4*f*m^4*n^4*log(f*x +
e) + 2*b^5*f*m^3*n^4*log(c)*log(d) + b^5*f*m^3*n^3*log(c)^2 + 2*a*b^4*f*m^3
*n^4*log(d) + 2*a*b^4*f*m^3*n^3*log(c) + a^2*b^3*f*m^3*n^3) + b^2*m*n^2*Ei(
log(d)/m + log(c)/(m*n) + a/(b*m*n) + log(f*x + e))*e^(-a/(b*m*n))*log(f*x
+ e)*log(d)/((b^5*f*m^5*n^5*log(f*x + e)^2 + 2*b^5*f*m^4*n^5*log(f*x + e)*l
og(d) + 2*b^5*f*m^4*n^4*log(f*x + e)*log(c) + b^5*f*m^3*n^5*log(d)^2 + 2*a*
b^4*f*m^4*n^4*log(f*x + e) + 2*b^5*f*m^3*n^4*log(c)*log(d) + b^5*f*m^3*n^3*
log(c)^2 + 2*a*b^4*f*m^3*n^4*log(d) + 2*a*b^4*f*m^3*n^3*log(c) + a^2*b^3*f*
m^3*n^3)*c^(1/(m*n))*d^(1/m)) - 1/2*(f*x + e)*b^2*m*n*log(c)/(b^5*f*m^5*n^5
*log(f*x + e)^2 + 2*b^5*f*m^4*n^5*log(f*x + e)*log(d) + 2*b^5*f*m^4*n^4*log
(f*x + e)*log(c) + b^5*f*m^3*n^5*log(d)^2 + 2*a*b^4*f*m^4*n^4*log(f*x + e)
+ 2*b^5*f*m^3*n^4*log(c)*log(d) + b^5*f*m^3*n^3*log(c)^2 + 2*a*b^4*f*m^3*n^
4*log(d) + 2*a*b^4*f*m^3*n^3*log(c) + a^2*b^3*f*m^3*n^3) + b^2*m*n*Ei(log(d
)/m + log(c)/(m*n) + a/(b*m*n) + log(f*x + e))*e^(-a/(b*m*n))*log(f*x + e)*
```

```
log(c)/((b^5*f*m^5*n^5*log(f*x + e)^2 + 2*b^5*f*m^4*n^5*log(f*x + e)*log(d)
 + 2*b^5*f*m^4*n^4*log(f*x + e)*log(c) + b^5*f*m^3*n^5*log(d)^2 + 2*a*b^4*f
*m^4*n^4*log(f*x + e) + 2*b^5*f*m^3*n^4*log(c)*log(d) + b^5*f*m^3*n^3*log(c
)^2 + 2*a*b^4*f*m^3*n^4*log(d) + 2*a*b^4*f*m^3*n^3*log(c) + a^2*b^3*f*m^3*n
^3)*c^(1/(m*n))*d^(1/m)) + 1/2*b^2*n^2*Ei(log(d)/m + log(c)/(m*n) + a/(b*m*
n) + log(f*x + e))*e^(-a/(b*m*n))*log(d)^2/((b^5*f*m^5*n^5*log(f*x + e)^2 +
 2*b^5*f*m^4*n^5*log(f*x + e)*log(d) + 2*b^5*f*m^4*n^4*log(f*x + e)*log(c)
+ b^5*f*m^3*n^5*log(d)^2 + 2*a*b^4*f*m^4*n^4*log(f*x + e) + 2*b^5*f*m^3*n^4
*log(c)*log(d) + b^5*f*m^3*n^3*log(c)^2 + 2*a*b^4*f*m^3*n^4*log(d) + 2*a*b^
4*f*m^3*n^3*log(c) + a^2*b^3*f*m^3*n^3)*c^(1/(m*n))*d^(1/m)) - 1/2*(f*x + e
)*a*b*m*n/(b^5*f*m^5*n^5*log(f*x + e)^2 + 2*b^5*f*m^4*n^5*log(f*x + e)*log(
d) + 2*b^5*f*m^4*n^4*log(f*x + e)*log(c) + b^5*f*m^3*n^5*log(d)^2 + 2*a*b^4
*f*m^4*n^4*log(f*x + e) + 2*b^5*f*m^3*n^4*log(c)*log(d) + b^5*f*m^3*n^3*log
(c)^2 + 2*a*b^4*f*m^3*n^4*log(d) + 2*a*b^4*f*m^3*n^3*log(c) + a^2*b^3*f*m^3
*n^3) + a*b*m*n*Ei(log(d)/m + log(c)/(m*n) + a/(b*m*n) + log(f*x + e))*e^(-
a/(b*m*n))*log(f*x + e)/((b^5*f*m^5*n^5*log(f*x + e)^2 + 2*b^5*f*m^4*n^5*lo
g(f*x + e)*log(d) + 2*b^5*f*m^4*n^4*log(f*x + e)*log(c) + b^5*f*m^3*n^5*log
(d)^2 + 2*a*b^4*f*m^4*n^4*log(f*x + e) + 2*b^5*f*m^3*n^4*log(c)*log(d) + b^
5*f*m^3*n^3*log(c)^2 + 2*a*b^4*f*m^3*n^4*log(d) + 2*a*b^4*f*m^3*n^3*log(c)
+ a^2*b^3*f*m^3*n^3)*c^(1/(m*n))*d^(1/m)) + b^2*n*Ei(log(d)/m + log(c)/(m*n
) + a/(b*m*n) + log(f*x + e))*e^(-a/(b*m*n))*log(c)*log(d)/((b^5*f*m^5*n^5*
log(f*x + e)^2 + 2*b^5*f*m^4*n^5*log(f*x + e)*log(d) + 2*b^5*f*m^4*n^4*log(
f*x + e)*log(c) + b^5*f*m^3*n^5*log(d)^2 + 2*a*b^4*f*m^4*n^4*log(f*x + e) +
 2*b^5*f*m^3*n^4*log(c)*log(d) + b^5*f*m^3*n^3*log(c)^2 + 2*a*b^4*f*m^3*n^4
*log(d) + 2*a*b^4*f*m^3*n^3*log(c) + a^2*b^3*f*m^3*n^3)*c^(1/(m*n))*d^(1/m)
) + 1/2*b^2*Ei(log(d)/m + log(c)/(m*n) + a/(b*m*n) + log(f*x + e))*e^(-a/(b
*m*n))*log(c)^2/((b^5*f*m^5*n^5*log(f*x + e)^2 + 2*b^5*f*m^4*n^5*log(f*x +
e)*log(d) + 2*b^5*f*m^4*n^4*log(f*x + e)*log(c) + b^5*f*m^3*n^5*log(d)^2 +
2*a*b^4*f*m^4*n^4*log(f*x + e) + 2*b^5*f*m^3*n^4*log(c)*log(d) + b^5*f*m^3*
n^3*log(c)^2 + 2*a*b^4*f*m^3*n^4*log(d) + 2*a*b^4*f*m^3*n^3*log(c) + a^2*b^
3*f*m^3*n^3)*c^(1/(m*n))*d^(1/m)) + a*b*n*Ei(log(d)/m + log(c)/(m*n) + a/(b
*m*n) + log(f*x + e))*e^(-a/(b*m*n))*log(d)/((b^5*f*m^5*n^5*log(f*x + e)^2
+ 2*b^5*f*m^4*n^5*log(f*x + e)*log(d) + 2*b^5*f*m^4*n^4*log(f*x + e)*log(c)
 + b^5*f*m^3*n^5*log(d)^2 + 2*a*b^4*f*m^4*n^4*log(f*x + e) + 2*b^5*f*m^3*n^
4*log(c)*log(d) + b^5*f*m^3*n^3*log(c)^2 + 2*a*b^4*f*m^3*n^4*log(d) + 2*a*b
^4*f*m^3*n^3*log(c) + a^2*b^3*f*m^3*n^3)*c^(1/(m*n))*d^(1/m)) + a*b*Ei(log(
d)/m + log(c)/(m*n) + a/(b*m*n) + log(f*x + e))*e^(-a/(b*m*n))*log(c)/((b^5
*f*m^5*n^5*log(f*x + e)^2 + 2*b^5*f*m^4*n^5*log(f*x + e)*log(d) + 2*b^5*f*m
^4*n^4*log(f*x + e)*log(c) + b^5*f*m^3*n^5*log(d)^2 + 2*a*b^4*f*m^4*n^4*log
(f*x + e) + 2*b^5*f*m^3*n^4*log(c)*log(d) + b^5*f*m^3*n^3*log(c)^2 + 2*a*b^
4*f*m^3*n^4*log(d) + 2*a*b^4*f*m^3*n^3*log(c) + a^2*b^3*f*m^3*n^3)*c^(1/(m*
n))*d^(1/m)) + 1/2*a^2*Ei(log(d)/m + log(c)/(m*n) + a/(b*m*n) + log(f*x + e
))*e^(-a/(b*m*n))/((b^5*f*m^5*n^5*log(f*x + e)^2 + 2*b^5*f*m^4*n^5*log(f*x
+ e)*log(d) + 2*b^5*f*m^4*n^4*log(f*x + e)*log(c) + b^5*f*m^3*n^5*log(d)^2
+ 2*a*b^4*f*m^4*n^4*log(f*x + e) + 2*b^5*f*m^3*n^4*log(c)*log(d) + b^5*f*m^
3*n^3*log(c)^2 + 2*a*b^4*f*m^3*n^4*log(d) + 2*a*b^4*f*m^3*n^3*log(c) + a^2*
b^3*f*m^3*n^3)*c^(1/(m*n))*d^(1/m))
```

maple [F] time = 0.07, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(b \ln \left(c \left(d \left(f x+e\right)^{m}\right)^{n}\right)+a\right)^{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*ln(c*(d*(f*x+e)^m)^n)+a)^3,x)
```

```
[Out] int(1/(b*ln(c*(d*(f*x+e)^m)^n)+a)^3,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{\left(emn + en\log(d) + e\log(c)\right)b + ae + \left(\left(fmn + fn\log(\right.\right.}{2\left(b^4fm^2n^2\log\left(\left(\left(fx+e\right)^m\right)^n\right)^2 + a^2b^2fm^2n^2 + 2\left(fm^2n^3\log(d) + fm^2n^2\log(c)\right)ab^3 + \left(fm^2n^4\log(d)^2 + 2\,fn\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n))^3,x, algorithm="maxima")
```

```
[Out] -1/2*((e*m*n + e*n*log(d) + e*log(c))*b + a*e + ((f*m*n + f*n*log(d) + f*lo
g(c))*b + a*f)*x + (b*f*x + b*e)*log(((f*x + e)^m)^n))/(b^4*f*m^2*n^2*log((
(f*x + e)^m)^n)^2 + a^2*b^2*f*m^2*n^2 + 2*(f*m^2*n^3*log(d) + f*m^2*n^2*log
(c))*a*b^3 + (f*m^2*n^4*log(d)^2 + 2*f*m^2*n^3*log(c)*log(d) + f*m^2*n^2*lo
g(c)^2)*b^4 + 2*(a*b^3*f*m^2*n^2 + (f*m^2*n^3*log(d) + f*m^2*n^2*log(c))*b^
4)*log(((f*x + e)^m)^n)) + integrate(1/2/(b^3*m^2*n^2*log(((f*x + e)^m)^n)
+ a*b^2*m^2*n^2 + (m^2*n^3*log(d) + m^2*n^2*log(c))*b^3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^m\right)}^n\right)\right)}^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*log(c*(d*(e + f*x)^m)^n))^3,x)
```

```
[Out] int(1/(a + b*log(c*(d*(e + f*x)^m)^n))^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a + b\log\left(c\left(d\left(e + fx\right)^{m}\right)^{n}\right)\right)^{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(d*(f*x+e)**m)**n))**3,x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**m)**n))**(-3), x)
```

3.411 $\int \left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^{5/2}\,dx$

Optimal. Leaf size=219

$$-\frac{15\sqrt{\pi}\,b^{5/2}m^{5/2}n^{5/2}(e+fx)e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\operatorname{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{\sqrt{b}\sqrt{m}\sqrt{n}}\right)}{8f}+\frac{15b^2m^2n^2(e+fx)\sqrt{a+b}}{4f}$$

```
[Out] -5/2*b*m*n*(f*x+e)*(a+b*ln(c*(d*(f*x+e)^m)^n))^(3/2)/f+(f*x+e)*(a+b*ln(c*(d
*(f*x+e)^m)^n))^(5/2)/f-15/8*b^(5/2)*m^(5/2)*n^(5/2)*(f*x+e)*erfi((a+b*ln(c
*(d*(f*x+e)^m)^n))^(1/2)/b^(1/2)/m^(1/2)/n^(1/2))*Pi^(1/2)/exp(a/b/m/n)/f/(
(c*(d*(f*x+e)^m)^n)^(1/m/n))+15/4*b^2*m^2*n^2*(f*x+e)*(a+b*ln(c*(d*(f*x+e)^
m)^n))^(1/2)/f
```

Rubi [A] time = 0.37, antiderivative size = 219, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273, Rules used = {2389, 2296, 2300, 2180, 2204, 2445}

$$-\frac{15\sqrt{\pi}\,b^{5/2}m^{5/2}n^{5/2}(e+fx)e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{\sqrt{b}\sqrt{m}\sqrt{n}}\right)}{8f}+\frac{15b^2m^2n^2(e+fx)\sqrt{a+b}}{4f}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^m)^n])^(5/2),x]
```

```
[Out] (-15*b^(5/2)*m^(5/2)*n^(5/2)*Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e
 + f*x)^m)^n]]/(Sqrt[b]*Sqrt[m]*Sqrt[n])])/(8*E^(a/(b*m*n))*f*(c*(d*(e + f*
x)^m)^n)^(1/(m*n))) + (15*b^2*m^2*n^2*(e + f*x)*Sqrt[a + b*Log[c*(d*(e + f*
x)^m)^n]])/(4*f) - (5*b*m*n*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^m)^n])^(3/2
))/(2*f) + ((e + f*x)*(a + b*Log[c*(d*(e + f*x)^m)^n])^(5/2))/f
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^{5/2} dx = \text{Subst}\left(\int \left(a+b\log\left(cd^n(e+fx)^{mn}\right)\right)^{5/2} dx, cd^n(e+fx)^{mn}, c\left(d(e+fx)^{\cdots}\right.\right.$$

$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \left(a+b\log\left(cd^n x^{mn}\right)\right)^{5/2} dx, x, e+fx\right)}{f}, cd^n(e+fx)^{mn}, c\cdots\right.$$

$$= \frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^{5/2}}{f} - \text{Subst}\left(\frac{(5bmn)\,\text{Subst}\left(\int (a+\cdots\right.}{\cdots}\right.$$

$$= -\frac{5bmn(e+fx)\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^{3/2}}{2f} + \frac{(e+fx)\left(a+b\log\left(c\cdots\right.\right.}{f}$$

$$= \frac{15b^2m^2n^2(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{4f} - \frac{5bmn(e+fx)\left(a+b\cdots\right.}{\cdots}$$

$$= \frac{15b^2m^2n^2(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{4f} - \frac{5bmn(e+fx)\left(a+b\cdots\right.}{\cdots}$$

$$= \frac{15b^2m^2n^2(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{4f} - \frac{5bmn(e+fx)\left(a+b\cdots\right.}{\cdots}$$

$$= -\frac{15b^{5/2}e^{-\frac{a}{bmn}}m^{5/2}n^{5/2}\sqrt{\pi}(e+fx)\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d\cdots\right.\right.}}{\sqrt{b}\sqrt{m\cdots}}\right.}{8f}$$

Mathematica [A] time = 0.33, size = 190, normalized size = 0.87

$$\frac{(e+fx)\left(8\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^{5/2} - 5bmn\left(3\sqrt{\pi}b^{3/2}m^{3/2}n^{3/2}e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(\cdots\right.\right.}}{\sqrt{b}\sqrt{\cdots}}\right.\right.\right.}{8f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^m)^n])^(5/2),x]
```

```
[Out] ((e + f*x)*(8*(a + b*Log[c*(d*(e + f*x)^m)^n])^(5/2) - 5*b*m*n*((3*b^(3/2)*
m^(3/2)*n^(3/2)*Sqrt[Pi]*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^m)^n]]/(Sqrt[b]
*Sqrt[m]*Sqrt[n])])/(E^(a/(b*m*n))*(c*(d*(e + f*x)^m)^n)^(1/(m*n))) + 2*Sqr
t[a + b*Log[c*(d*(e + f*x)^m)^n]]*(2*a - 3*b*m*n + 2*b*Log[c*(d*(e + f*x)^m
)^n]))))/(8*f)
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b \log\left(\left(\left(fx+e\right)^{m} d\right)^{n} c\right)+a\right)^{\frac{5}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^m*d)^n*c) + a)^(5/2), x)
```

maple [F] time = 0.09, size = 0, normalized size = 0.00

$$\int \left(b \ln\left(c \left(d \left(fx+e\right)^{m}\right)^{n}\right)+a\right)^{\frac{5}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(d*(f*x+e)^m)^n)+a)^(5/2),x)
```

```
[Out] int((b*ln(c*(d*(f*x+e)^m)^n)+a)^(5/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b \log\left(\left(\left(fx+e\right)^{m} d\right)^{n} c\right)+a\right)^{\frac{5}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((b*log(((f*x + e)^m*d)^n*c) + a)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int {\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^m\right)}^n\right)\right)}^{5/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^m)^n))^(5/2),x)
```

```
[Out] int((a + b*log(c*(d*(e + f*x)^m)^n))^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**m)**n))**(5/2),x)
```

```
[Out] Timed out
```

3.412 $\int \left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^{3/2}\,dx$

Optimal. Leaf size=176

$$\frac{3\sqrt{\pi}\,b^{3/2}m^{3/2}n^{3/2}(e+fx)e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\operatorname{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{\sqrt{b}\,\sqrt{m}\,\sqrt{n}}\right)}{4f}+\frac{(e+fx)\left(a+b\log\left(c\left(d(e+\right.\right.\right.}{f}$$

```
[Out] (f*x+e)*(a+b*ln(c*(d*(f*x+e)^m)^n))^(3/2)/f+3/4*b^(3/2)*m^(3/2)*n^(3/2)*(f*
x+e)*erfi((a+b*ln(c*(d*(f*x+e)^m)^n))^(1/2)/b^(1/2)/m^(1/2)/n^(1/2))*Pi^(1/
2)/exp(a/b/m/n)/f/((c*(d*(f*x+e)^m)^n)^(1/m/n))-3/2*b*m*n*(f*x+e)*(a+b*ln(c
*(d*(f*x+e)^m)^n))^(1/2)/f
```

Rubi [A] time = 0.28, antiderivative size = 176, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273, Rules used = {2389, 2296, 2300, 2180, 2204, 2445}

$$\frac{3\sqrt{\pi}\,b^{3/2}m^{3/2}n^{3/2}(e+fx)e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{\sqrt{b}\,\sqrt{m}\,\sqrt{n}}\right)}{4f}+\frac{(e+fx)\left(a+b\log\left(c\left(d(e+\right.\right.\right.}{f}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^m)^n])^(3/2),x]
```

```
[Out] (3*b^(3/2)*m^(3/2)*n^(3/2)*Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e +
 f*x)^m)^n]]/(Sqrt[b]*Sqrt[m]*Sqrt[n])])/(4*E^(a/(b*m*n))*f*(c*(d*(e + f*x)
^m)^n)^(1/(m*n))) - (3*b*m*n*(e + f*x)*Sqrt[a + b*Log[c*(d*(e + f*x)^m)^n]]
)/(2*f) + ((e + f*x)*(a + b*Log[c*(d*(e + f*x)^m)^n])^(3/2))/f
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^{3/2}\,dx = \text{Subst}\left(\int \left(a+b\log\left(cd^n(e+fx)^{mn}\right)\right)^{3/2}\,dx, cd^n(e+fx)^{mn}, c\left(d(e+fx)^{\cdots}\right.\right.$$

$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \left(a+b\log\left(cd^n x^{mn}\right)\right)^{3/2}\,dx, x, e+fx\right)}{f}, cd^n(e+fx)^{mn}, c\ \cdots\right.$$

$$= \frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^{3/2}}{f} - \text{Subst}\left(\frac{(3bmn)\,\text{Subst}\left(\int \sqrt{a}\ \cdots\right.}{\cdots}\right.$$

$$= -\frac{3bmn(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{2f} + \frac{(e+fx)\left(a+b\log\left(c\left(\cdots\right.\right.\right.}{f}$$

$$= -\frac{3bmn(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{2f} + \frac{(e+fx)\left(a+b\log\left(c\left(\cdots\right.\right.\right.}{f}$$

$$= -\frac{3bmn(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{2f} + \frac{(e+fx)\left(a+b\log\left(c\left(\cdots\right.\right.\right.}{f}$$

$$= \frac{3b^{3/2}e^{-\frac{a}{bmn}}m^{3/2}n^{3/2}\sqrt{\pi}\,(e+fx)\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+\cdots\right.\right.}}{\sqrt{b}\sqrt{m}\sqrt{n\cdots}}\right.}{4f}$$

Mathematica [A] time = 0.06, size = 160, normalized size = 0.91

$$\frac{(e+fx)\left(3\sqrt{\pi}\,b^{3/2}m^{3/2}n^{3/2}e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{\sqrt{b}\sqrt{m}\sqrt{n}}\right)+2\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^{n\cdots}\right.}\right.}{4f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^m)^n])^(3/2),x]
```

```
[Out] ((e + f*x)*((3*b^(3/2)*m^(3/2)*n^(3/2)*Sqrt[Pi]*Erfi[Sqrt[a + b*Log[c*(d*(e
 + f*x)^m)^n]]/(Sqrt[b]*Sqrt[m]*Sqrt[n])])/(E^(a/(b*m*n))*(c*(d*(e + f*x)^m
```

```
)^n)^(1/(m*n))) + 2*Sqrt[a + b*Log[c*(d*(e + f*x)^m)^n]]*(2*a - 3*b*m*n + 2
*b*Log[c*(d*(e + f*x)^m)^n])))/(4*f)
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b \log\left(\left(\left(fx+e\right)^{m} d\right)^{n} c\right)+a\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^m*d)^n*c) + a)^(3/2), x)
```

maple [F] time = 0.07, size = 0, normalized size = 0.00

$$\int \left(b \ln\left(c \left(d \left(fx+e\right)^{m}\right)^{n}\right)+a\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(d*(f*x+e)^m)^n)+a)^(3/2),x)
```

```
[Out] int((b*ln(c*(d*(f*x+e)^m)^n)+a)^(3/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b \log\left(\left(\left(fx+e\right)^{m} d\right)^{n} c\right)+a\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((b*log(((f*x + e)^m*d)^n*c) + a)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int {\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^m\right)}^n\right)\right)}^{3/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^m)^n))^(3/2),x)
```

```
[Out] int((a + b*log(c*(d*(e + f*x)^m)^n))^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(a + b \log{\left(c \left(d \left(e + f x\right)^{m}\right)^{n} \right)}\right)^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**m)**n))**(3/2),x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**m)**n))**(3/2), x)
```

3.413 $\int \sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}\,dx$

Optimal. Leaf size=139

$$\frac{(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{f}-\frac{\sqrt{\pi}\sqrt{b}\sqrt{m}\sqrt{n}\,(e+fx)e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\operatorname{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+\cdots\right.\right.}}{\sqrt{b}\sqrt{m}\sqrt{\cdots}}\right.}{2f}$$

```
[Out] -1/2*(f*x+e)*erfi((a+b*ln(c*(d*(f*x+e)^m)^n))^(1/2)/b^(1/2)/m^(1/2)/n^(1/2)
)*b^(1/2)*m^(1/2)*n^(1/2)*Pi^(1/2)/exp(a/b/m/n)/f/((c*(d*(f*x+e)^m)^n)^(1/m
/n))+(f*x+e)*(a+b*ln(c*(d*(f*x+e)^m)^n))^(1/2)/f
```

Rubi [A] time = 0.22, antiderivative size = 139, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273, Rules used = {2389, 2296, 2300, 2180, 2204, 2445}

$$\frac{(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{f}-\frac{\sqrt{\pi}\sqrt{b}\sqrt{m}\sqrt{n}\,(e+fx)e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+\cdots\right.\right.}}{\sqrt{b}\sqrt{m}\sqrt{\cdots}}\right.}{2f}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + b*Log[c*(d*(e + f*x)^m)^n]],x]
```

```
[Out] -(Sqrt[b]*Sqrt[m]*Sqrt[n]*Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e +
f*x)^m)^n]]/(Sqrt[b]*Sqrt[m]*Sqrt[n])])/(2*E^(a/(b*m*n))*f*(c*(d*(e + f*x)^
m)^n)^(1/(m*n))) + ((e + f*x)*Sqrt[a + b*Log[c*(d*(e + f*x)^m)^n]])/f
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
```

```
, b, c, d, e, n, p}, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] && !IntegerQ[n] && !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}\,dx = \text{Subst}\left(\int \sqrt{a+b\log\left(cd^n(e+fx)^{mn}\right)}\,dx, cd^n(e+fx)^{mn}, c\left(d(e+fx)^m\right)^n\right)$$

$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \sqrt{a+b\log\left(cd^nx^{mn}\right)}\,dx, x, e+fx\right)}{f}, cd^n(e+fx)^{mn}, c\left(d(e\right.\right.$$

$$= \frac{(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{f} - \text{Subst}\left(\frac{(bmn)\,\text{Subst}\left(\int \frac{1}{\sqrt{a+b\log(c}}\right.}{2f}\right.$$

$$= \frac{(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{f} - \text{Subst}\left(\frac{\left(b(e+fx)\left(cd^n(e+fx)^{mn}\right.\right.}{}\right.$$

$$= \frac{(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{f} - \text{Subst}\left(\frac{\left((e+fx)\left(cd^n(e+fx)^{mn}\right)\right.}{}\right.$$

$$= -\frac{\sqrt{b}\,e^{-\frac{a}{bmn}}\sqrt{m}\sqrt{n}\sqrt{\pi}\,(e+fx)\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)\right.\right.}}{\sqrt{b}\sqrt{m}\sqrt{n}}\right.}{2f}$$

Mathematica [A] time = 0.06, size = 134, normalized size = 0.96

$$\frac{(e+fx)\left(2\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}-\sqrt{\pi}\sqrt{b}\sqrt{m}\sqrt{n}\,e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{\sqrt{b}\sqrt{m}\sqrt{n}}\right)\right)}{2f}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[a + b*Log[c*(d*(e + f*x)^m)^n]],x]
```

```
[Out] ((e + f*x)*(-((Sqrt[b]*Sqrt[m]*Sqrt[n]*Sqrt[Pi]*Erfi[Sqrt[a + b*Log[c*(d*(e
 + f*x)^m)^n]]/(Sqrt[b]*Sqrt[m]*Sqrt[n])])/(E^(a/(b*m*n))*(c*(d*(e + f*x)^m
)^n)^(1/(m*n)))) + 2*Sqrt[a + b*Log[c*(d*(e + f*x)^m)^n]]))/(2*f)
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{b \log\left(\left(\left(fx+e\right)^m d\right)^n c\right) + a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(b*log(((f*x + e)^m*d)^n*c) + a), x)
```

maple [F] time = 0.07, size = 0, normalized size = 0.00

$$\int \sqrt{b \ln\left(c\left(d\left(fx+e\right)^m\right)^n\right) + a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(d*(f*x+e)^m)^n)+a)^(1/2),x)
```

```
[Out] int((b*ln(c*(d*(f*x+e)^m)^n)+a)^(1/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{b \log\left(\left(\left(fx+e\right)^m d\right)^n c\right) + a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(b*log(((f*x + e)^m*d)^n*c) + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \sqrt{a + b\,\ln\left(c\,\left(d\,\left(e+f\,x\right)^m\right)^n\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^m)^n))^(1/2),x)
```

```
[Out] int((a + b*log(c*(d*(e + f*x)^m)^n))^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{a + b \log\left(c\left(d\left(e+fx\right)^m\right)^n\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**m)**n))**(1/2),x)
```

```
[Out] Integral(sqrt(a + b*log(c*(d*(e + f*x)**m)**n)), x)
```

3.414 $\int \frac{1}{\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}\,dx$

Optimal. Leaf size=104

$$\frac{\sqrt{\pi}\,(e+fx)e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\operatorname{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{\sqrt{b}\sqrt{m}\sqrt{n}}\right)}{\sqrt{b}\,f\sqrt{m}\sqrt{n}}$$

```
[Out] (f*x+e)*erfi((a+b*ln(c*(d*(f*x+e)^m)^n))^(1/2)/b^(1/2)/m^(1/2)/n^(1/2))*Pi^
(1/2)/exp(a/b/m/n)/f/((c*(d*(f*x+e)^m)^n)^(1/m/n))/b^(1/2)/m^(1/2)/n^(1/2)
```

Rubi [A] time = 0.18, antiderivative size = 104, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.227$, Rules used = {2389, 2300, 2180, 2204, 2445}

$$\frac{\sqrt{\pi}\,(e+fx)e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{\sqrt{b}\sqrt{m}\sqrt{n}}\right)}{\sqrt{b}\,f\sqrt{m}\sqrt{n}}$$

Antiderivative was successfully verified.

```
[In] Int[1/Sqrt[a + b*Log[c*(d*(e + f*x)^m)^n]],x]
```

```
[Out] (Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^m)^n]]/(Sqrt[b]*Sqrt
[m]*Sqrt[n])])/(Sqrt[b]*E^(a/(b*m*n))*f*Sqrt[m]*Sqrt[n]*(c*(d*(e + f*x)^m)^
n)^(1/(m*n)))
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
```

```
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{1}{\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}\,dx = \text{Subst}\left(\int \frac{1}{\sqrt{a+b\log\left(cd^n(e+fx)^{mn}\right)}}\,dx, cd^n(e+fx)^{mn}, c\left(d(e+fx)^n\right.\right.$$

$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \frac{1}{\sqrt{a+b\log(cd^nx^{mn})}}\,dx, x, e+fx\right)}{f}, cd^n(e+fx)^{mn}, c\left(d(e+\right.\right.$$

$$= \text{Subst}\left(\frac{\left((e+fx)\left(cd^n(e+fx)^{mn}\right)^{-\frac{1}{mn}}\right)\text{Subst}\left(\int \frac{e^{\frac{x}{mn}}}{\sqrt{a+bx}}\,dx, x, \log\left(cd^n(e\right.\right.}{fmn}\right.$$

$$= \text{Subst}\left(\frac{\left(2(e+fx)\left(cd^n(e+fx)^{mn}\right)^{-\frac{1}{mn}}\right)\text{Subst}\left(\int e^{-\frac{a}{bmn}+\frac{x^2}{bmn}}\,dx, x, \sqrt{a+\right.}{bfmn}\right.$$

$$= \frac{e^{-\frac{a}{bmn}}\sqrt{\pi}(e+fx)\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{\sqrt{b}\sqrt{m}\sqrt{n}}\right)}{\sqrt{b}f\sqrt{m}\sqrt{n}}$$

Mathematica [A] time = 0.02, size = 104, normalized size = 1.00

$$\frac{\sqrt{\pi}(e+fx)e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{\sqrt{b}\sqrt{m}\sqrt{n}}\right)}{\sqrt{b}f\sqrt{m}\sqrt{n}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/Sqrt[a + b*Log[c*(d*(e + f*x)^m)^n]],x]
```

```
[Out] (Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^m)^n]]/(Sqrt[b]*Sqrt
[m]*Sqrt[n])])/(Sqrt[b]*E^(a/(b*m*n))*f*Sqrt[m]*Sqrt[n]*(c*(d*(e + f*x)^m)^
n)^(1/(m*n)))
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{b \log \left(\left(\left(fx + e\right)^m d\right)^n c\right) + a}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n))^(1/2),x, algorithm="giac")
[Out] integrate(1/sqrt(b*log(((f*x + e)^m*d)^n*c) + a), x)
```

maple [F] time = 0.07, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{b \ln \left(c \left(d \left(fx + e\right)^m\right)^n\right) + a}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*ln(c*(d*(f*x+e)^m)^n)+a)^(1/2),x)
[Out] int(1/(b*ln(c*(d*(f*x+e)^m)^n)+a)^(1/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{b \log \left(\left(\left(fx + e\right)^m d\right)^n c\right) + a}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n))^(1/2),x, algorithm="maxima")
[Out] integrate(1/sqrt(b*log(((f*x + e)^m*d)^n*c) + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{\sqrt{a + b\, \ln \left(c \left(d \left(e + f\, x\right)^m\right)^n\right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*log(c*(d*(e + f*x)^m)^n))^(1/2),x)
[Out] int(1/(a + b*log(c*(d*(e + f*x)^m)^n))^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{a + b \log \left(c \left(d \left(e + fx\right)^m\right)^n\right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(d*(f*x+e)**m)**n))**(1/2),x)
[Out] Integral(1/sqrt(a + b*log(c*(d*(e + f*x)**m)**n)), x)
```

3.415 $\int \frac{1}{\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^{3/2}}\,dx$

Optimal. Leaf size=147

$$\frac{2\sqrt{\pi}\,(e+fx)e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\operatorname{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{\sqrt{b}\sqrt{m}\sqrt{n}}\right)}{b^{3/2}fm^{3/2}n^{3/2}}-\frac{2(e+fx)}{bfmn\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}$$

```
[Out] 2*(f*x+e)*erfi((a+b*ln(c*(d*(f*x+e)^m)^n))^(1/2)/b^(1/2)/m^(1/2)/n^(1/2))*P
i^(1/2)/b^(3/2)/exp(a/b/m/n)/f/m^(3/2)/n^(3/2)/((c*(d*(f*x+e)^m)^n)^(1/m/n)
)-2*(f*x+e)/b/f/m/n/(a+b*ln(c*(d*(f*x+e)^m)^n))^(1/2)
```

Rubi [A] time = 0.25, antiderivative size = 147, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273, Rules used = {2389, 2297, 2300, 2180, 2204, 2445}

$$\frac{2\sqrt{\pi}\,(e+fx)e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{\sqrt{b}\sqrt{m}\sqrt{n}}\right)}{b^{3/2}fm^{3/2}n^{3/2}}-\frac{2(e+fx)}{bfmn\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^m)^n])^(-3/2),x]
```

```
[Out] (2*Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^m)^n]]/(Sqrt[b]*Sq
rt[m]*Sqrt[n])])/(b^(3/2)*E^(a/(b*m*n))*f*m^(3/2)*n^(3/2)*(c*(d*(e + f*x)^m
)^n)^(1/(m*n))) - (2*(e + f*x))/(b*f*m*n*Sqrt[a + b*Log[c*(d*(e + f*x)^m)^n
]])
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2297

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[(x*(a + b
*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
gerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{1}{\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^{3/2}}\,dx = \text{Subst}\left(\int \frac{1}{\left(a+b\log\left(cd^n(e+fx)^{mn}\right)\right)^{3/2}}\,dx, cd^n(e+fx)^{mn}, c\left(d(e+fx)^{\right.$$

$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \frac{1}{\left(a+b\log(cd^n x^{mn})\right)^{3/2}}\,dx, x, e+fx\right)}{f}, cd^n(e+fx)^{mn}, c\left(d(e+\right.\right.$$

$$= -\frac{2(e+fx)}{bfmn\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}} + \text{Subst}\left(\frac{2\,\text{Subst}\left(\int \frac{1}{\sqrt{a+b\log(cd^n x^{\cdots}}}\right.}{bfmn}\right.$$

$$= -\frac{2(e+fx)}{bfmn\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}} + \text{Subst}\left(\frac{\left(2(e+fx)\left(cd^n(e+fx)^{\cdots}\right.\right.}{\cdots}\right.$$

$$= -\frac{2(e+fx)}{bfmn\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}} + \text{Subst}\left(\frac{\left(4(e+fx)\left(cd^n(e+fx)^{\cdots}\right.\right.}{\cdots}\right.$$

$$= \frac{2e^{-\frac{a}{bmn}}\sqrt{\pi}(e+fx)\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{\sqrt{b}\sqrt{m}\sqrt{n}}\right)}{b^{3/2}fm^{3/2}n^{3/2}} - \cdots$$

Mathematica [A] time = 0.23, size = 181, normalized size = 1.23

$$-\frac{2(e+fx)e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\left(e^{\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{\frac{1}{mn}} - \sqrt{-\frac{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}{bmn}}\,\Gamma\left(\frac{1}{2}, -\frac{a+b\log\left(c\left(d(e+fx)^m\right)^{\cdots}\right)}{bmn}\right.\right.}{bfmn\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^m)^n])^(-3/2),x]
```

```
[Out] (-2*(e + f*x)*(E^(a/(b*m*n))*(c*(d*(e + f*x)^m)^n)^(1/(m*n)) - Gamma[1/2, -
((a + b*Log[c*(d*(e + f*x)^m)^n])/(b*m*n))]*Sqrt[-((a + b*Log[c*(d*(e + f*x
)^m)^n])/(b*m*n))]))/(b*E^(a/(b*m*n))*f*m*n*(c*(d*(e + f*x)^m)^n)^(1/(m*n))
*Sqrt[a + b*Log[c*(d*(e + f*x)^m)^n]])
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(b \log\left(\left(\left(fx+e\right)^{m} d\right)^{n} c\right)+a\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^m*d)^n*c) + a)^(-3/2), x)
```

maple [F] time = 0.07, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(b \ln\left(c \left(d \left(fx+e\right)^{m}\right)^{n}\right)+a\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*ln(c*(d*(f*x+e)^m)^n)+a)^(3/2),x)
```

```
[Out] int(1/(b*ln(c*(d*(f*x+e)^m)^n)+a)^(3/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(b \log\left(\left(\left(fx+e\right)^{m} d\right)^{n} c\right)+a\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((b*log(((f*x + e)^m*d)^n*c) + a)^(-3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^m\right)}^n\right)\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*log(c*(d*(e + f*x)^m)^n))^(3/2),x)
```

```
[Out] int(1/(a + b*log(c*(d*(e + f*x)^m)^n))^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a + b\log\left(c\left(d\left(e + fx\right)^{m}\right)^{n}\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(d*(f*x+e)**m)**n))**(3/2),x)
[Out] Integral((a + b*log(c*(d*(e + f*x)**m)**n))**(-3/2), x)
```

3.416 $\int \frac{1}{\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^{5/2}}\,dx$

Optimal. Leaf size=194

$$\frac{4\sqrt{\pi}(e+fx)e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\operatorname{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{\sqrt{b}\sqrt{m}\sqrt{n}}\right)}{3b^{5/2}fm^{5/2}n^{5/2}}-\frac{4(e+fx)}{3b^2fm^2n^2\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}$$

```
[Out] -2/3*(f*x+e)/b/f/m/n/(a+b*ln(c*(d*(f*x+e)^m)^n))^(3/2)+4/3*(f*x+e)*erfi((a+
b*ln(c*(d*(f*x+e)^m)^n))^(1/2)/b^(1/2)/m^(1/2)/n^(1/2))*Pi^(1/2)/b^(5/2)/ex
p(a/b/m/n)/f/m^(5/2)/n^(5/2)/((c*(d*(f*x+e)^m)^n)^(1/m/n))-4/3*(f*x+e)/b^2/
f/m^2/n^2/(a+b*ln(c*(d*(f*x+e)^m)^n))^(1/2)
```

Rubi [A] time = 0.31, antiderivative size = 194, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.273$, Rules used = {2389, 2297, 2300, 2180, 2204, 2445}

$$\frac{4\sqrt{\pi}(e+fx)e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{\sqrt{b}\sqrt{m}\sqrt{n}}\right)}{3b^{5/2}fm^{5/2}n^{5/2}}-\frac{4(e+fx)}{3b^2fm^2n^2\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^m)^n])^(-5/2),x]
```

```
[Out] (4*Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^m)^n]]/(Sqrt[b]*Sq
rt[m]*Sqrt[n])])/(3*b^(5/2)*E^(a/(b*m*n))*f*m^(5/2)*n^(5/2)*(c*(d*(e + f*x)
^m)^n)^(1/(m*n))) - (2*(e + f*x))/(3*b*f*m*n*(a + b*Log[c*(d*(e + f*x)^m)^n
])^(3/2)) - (4*(e + f*x))/(3*b^2*f*m^2*n^2*Sqrt[a + b*Log[c*(d*(e + f*x)^m)
^n]])
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2297

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[(x*(a + b
*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
gerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
```

```
{a, b, c, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{1}{\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^{5/2}}\,dx = \text{Subst}\left(\int \frac{1}{\left(a+b\log\left(cd^n(e+fx)^{mn}\right)\right)^{5/2}}\,dx, cd^n(e+fx)^{mn}, c\left(d(e+fx)^{\prime}\right.\right.$$

$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \frac{1}{\left(a+b\log(cd^n x^{mn})\right)^{5/2}}\,dx, x, e+fx\right)}{f}, cd^n(e+fx)^{mn}, c\left(d(e+\right.\right.$$

$$= -\frac{2(e+fx)}{3bfmn\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^{3/2}} + \text{Subst}\left(\frac{2\,\text{Subst}\left(\int \frac{1}{\left(a+b\log(cd\right.}\right.}{3bj}\right.$$

$$= -\frac{2(e+fx)}{3bfmn\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^{3/2}} - \frac{4(e+fx)}{3b^2fm^2n^2\sqrt{a+b\log\left(c\left(d(\right.\right.}}$$

$$= -\frac{2(e+fx)}{3bfmn\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^{3/2}} - \frac{4(e+fx)}{3b^2fm^2n^2\sqrt{a+b\log\left(c\left(d(\right.\right.}}$$

$$= -\frac{2(e+fx)}{3bfmn\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^{3/2}} - \frac{4(e+fx)}{3b^2fm^2n^2\sqrt{a+b\log\left(c\left(d(\right.\right.}}$$

$$= \frac{4e^{-\frac{a}{bmn}}\sqrt{\pi}\,(e+fx)\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{\sqrt{b}\,\sqrt{m}\,\sqrt{n}}\right)}{3b^{5/2}fm^{5/2}n^{5/2}} - \ldots$$

3

Mathematica [A] time = 0.33, size = 211, normalized size = 1.09

$$-\frac{2(e+fx)e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\left(e^{\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{\frac{1}{mn}}\left(2a+2b\log\left(c\left(d(e+fx)^m\right)^n\right)+bmn\right)+2bn}{3b^2fm^2n^2\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^m)^n])^(-5/2),x]
```

```
[Out] (-2*(e + f*x)*(2*b*m*n*Gamma[1/2, -((a + b*Log[c*(d*(e + f*x)^m)^n])/(b*m*n
))]*(-((a + b*Log[c*(d*(e + f*x)^m)^n])/(b*m*n)))^(3/2) + E^(a/(b*m*n))*(c*
(d*(e + f*x)^m)^n)^(1/(m*n))*(2*a + b*m*n + 2*b*Log[c*(d*(e + f*x)^m)^n])))
/(3*b^2*E^(a/(b*m*n))*f*m^2*n^2*(c*(d*(e + f*x)^m)^n)^(1/(m*n))*(a + b*Log[
c*(d*(e + f*x)^m)^n])^(3/2))
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(b\log\left(\left(\left(fx+e\right)^m d\right)^n c\right)+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^m*d)^n*c) + a)^(-5/2), x)
```

maple [F] time = 0.07, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(b\ln\left(c\left(d\left(fx+e\right)^m\right)^n\right)+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*ln(c*(d*(f*x+e)^m)^n)+a)^(5/2),x)
```

```
[Out] int(1/(b*ln(c*(d*(f*x+e)^m)^n)+a)^(5/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(b\log\left(\left(\left(fx+e\right)^m d\right)^n c\right)+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((b*log(((f*x + e)^m*d)^n*c) + a)^(-5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{\left(a+b\,\ln\left(c\left(d\left(e+f\,x\right)^m\right)^n\right)\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*log(c*(d*(e + f*x)^m)^n))^(5/2),x)
```

```
[Out] int(1/(a + b*log(c*(d*(e + f*x)^m)^n))^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\log\left(c\left(d\left(e+fx\right)^m\right)^n\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(d*(f*x+e)**m)**n))**(5/2),x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**m)**n))**(-5/2), x)
```

3.417 $\int \frac{1}{\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^{7/2}}\,dx$

Optimal. Leaf size=237

$$\frac{8\sqrt{\pi}\,(e+fx)e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\operatorname{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{\sqrt{b}\sqrt{m}\sqrt{n}}\right)}{15b^{7/2}fm^{7/2}n^{7/2}}-\frac{8(e+fx)}{15b^3fm^3n^3\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}$$

```
[Out] -2/5*(f*x+e)/b/f/m/n/(a+b*ln(c*(d*(f*x+e)^m)^n))^(5/2)-4/15*(f*x+e)/b^2/f/m
^2/n^2/(a+b*ln(c*(d*(f*x+e)^m)^n))^(3/2)+8/15*(f*x+e)*erfi((a+b*ln(c*(d*(f*
x+e)^m)^n))^(1/2)/b^(1/2)/m^(1/2)/n^(1/2))*Pi^(1/2)/b^(7/2)/exp(a/b/m/n)/f/
m^(7/2)/n^(7/2)/((c*(d*(f*x+e)^m)^n)^(1/m/n))-8/15*(f*x+e)/b^3/f/m^3/n^3/(a
+b*ln(c*(d*(f*x+e)^m)^n))^(1/2)
```

Rubi [A] time = 0.38, antiderivative size = 237, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273, Rules used = {2389, 2297, 2300, 2180, 2204, 2445}

$$\frac{8\sqrt{\pi}\,(e+fx)e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{\sqrt{b}\sqrt{m}\sqrt{n}}\right)}{15b^{7/2}fm^{7/2}n^{7/2}}-\frac{8(e+fx)}{15b^3fm^3n^3\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^m)^n])^(-7/2),x]
```

```
[Out] (8*Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^m)^n]]/(Sqrt[b]*Sq
rt[m]*Sqrt[n])])/(15*b^(7/2)*E^(a/(b*m*n))*f*m^(7/2)*n^(7/2)*(c*(d*(e + f*x
)^m)^n)^(1/(m*n))) - (2*(e + f*x))/(5*b*f*m*n*(a + b*Log[c*(d*(e + f*x)^m)^
n])^(5/2)) - (4*(e + f*x))/(15*b^2*f*m^2*n^2*(a + b*Log[c*(d*(e + f*x)^m)^n
])^(3/2)) - (8*(e + f*x))/(15*b^3*f*m^3*n^3*Sqrt[a + b*Log[c*(d*(e + f*x)^m
)^n]])
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2297

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[(x*(a + b
*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
gerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{1}{\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^{7/2}}\,dx = \text{Subst}\left(\int \frac{1}{\left(a+b\log\left(cd^n(e+fx)^{mn}\right)\right)^{7/2}}\,dx, cd^n(e+fx)^{mn}, c\left(d(e+f\right.\right.$$

$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \frac{1}{\left(a+b\log(cd^n x^{mn})\right)^{7/2}}\,dx, x, e+fx\right)}{f}, cd^n(e+fx)^{mn}, c\left(d(e\right.\right.$$

$$= -\frac{2(e+fx)}{5bfmn\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^{5/2}} + \text{Subst}\left(\frac{2\,\text{Subst}\left(\int \frac{}{\left(a+b\log\right.}\right.}{}\right.$$

$$= -\frac{2(e+fx)}{5bfmn\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^{5/2}} - \frac{4(e+fx}{15b^2fm^2n^2\left(a+b\log\left(c\right.\right.}$$

$$= -\frac{2(e+fx)}{5bfmn\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^{5/2}} - \frac{4(e+fx}{15b^2fm^2n^2\left(a+b\log\left(c\right.\right.}$$

$$= -\frac{2(e+fx)}{5bfmn\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^{5/2}} - \frac{4(e+fx}{15b^2fm^2n^2\left(a+b\log\left(c\right.\right.}$$

$$= -\frac{2(e+fx)}{5bfmn\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^{5/2}} - \frac{4(e+fx}{15b^2fm^2n^2\left(a+b\log\left(c\right.\right.}$$

$$= \frac{8e^{-\frac{a}{bmn}}\sqrt{\pi}\,(e+fx)\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{\sqrt{b}\sqrt{m}\sqrt{n}}\right)}{15b^{7/2}fm^{7/2}n^{7/2}} -$$

Mathematica [A] time = 0.45, size = 272, normalized size = 1.15

$$-\frac{2(e+fx)e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\left(e^{\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{\frac{1}{mn}}\left(4a^2+2b(4a+bmn)\log\left(c\left(d(e+fx)^m\right)^n\right)+\right.\right.}{15b^3fm^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^m)^n])^(-7/2),x]
```

```
[Out] (-2*(e + f*x)*(-4*Gamma[1/2, -((a + b*Log[c*(d*(e + f*x)^m)^n])/(b*m*n))]*(
a + b*Log[c*(d*(e + f*x)^m)^n])^2*Sqrt[-((a + b*Log[c*(d*(e + f*x)^m)^n])/(
b*m*n))] + E^(a/(b*m*n))*(c*(d*(e + f*x)^m)^n)^(1/(m*n))*(4*a^2 + 2*a*b*m*n
 + 3*b^2*m^2*n^2 + 2*b*(4*a + b*m*n)*Log[c*(d*(e + f*x)^m)^n] + 4*b^2*Log[c
```

```
*(d*(e + f*x)^m)^n]^2)))/(15*b^3*E^(a/(b*m*n))*f*m^3*n^3*(c*(d*(e + f*x)^m)
^n)^(1/(m*n))*(a + b*Log[c*(d*(e + f*x)^m)^n])^(5/2))
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n))^(7/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(b\log\left(\left(\left(fx+e\right)^{m}d\right)^{n}c\right)+a\right)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n))^(7/2),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^m*d)^n*c) + a)^(-7/2), x)
```

maple [F] time = 0.07, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(b\ln\left(c\left(d\left(fx+e\right)^{m}\right)^{n}\right)+a\right)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*ln(c*(d*(f*x+e)^m)^n)+a)^(7/2),x)
```

```
[Out] int(1/(b*ln(c*(d*(f*x+e)^m)^n)+a)^(7/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(b\log\left(\left(\left(fx+e\right)^{m}d\right)^{n}c\right)+a\right)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n))^(7/2),x, algorithm="maxima")
```

```
[Out] integrate((b*log(((f*x + e)^m*d)^n*c) + a)^(-7/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{1}{{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^m\right)}^n\right)\right)}^{7/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*log(c*(d*(e + f*x)^m)^n))^(7/2),x)
```

```
[Out] int(1/(a + b*log(c*(d*(e + f*x)^m)^n))^(7/2), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(d*(f*x+e)**m)**n))**(7/2),x)
```

```
[Out] Timed out
```

3.418 $\int \left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^p\,dx$

Optimal. Leaf size=131

$$\frac{(e+fx)e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^p\left(-\frac{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}{bmn}\right)^{-p}\Gamma\left(p+1,-\frac{a+b\log\left(c\left(d(e+\right.\right.}{bmn}\right.}{f}$$

```
[Out] (f*x+e)*GAMMA(1+p,(-a-b*ln(c*(d*(f*x+e)^m)^n))/b/m/n)*(a+b*ln(c*(d*(f*x+e)^
m)^n))^p/exp(a/b/m/n)/f/((c*(d*(f*x+e)^m)^n)^(1/m/n))/(((-a-b*ln(c*(d*(f*x+
e)^m)^n))/b/m/n)^p)
```

Rubi [A] time = 0.15, antiderivative size = 131, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {2389, 2300, 2181, 2445}

$$\frac{(e+fx)e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^p\left(-\frac{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}{bmn}\right)^{-p}\text{Gamma}\left(p+1,-\frac{a+b\,\text{l}}{}\right.}{f}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^m)^n])^p,x]
```

```
[Out] ((e + f*x)*Gamma[1 + p, -((a + b*Log[c*(d*(e + f*x)^m)^n])/(b*m*n))]*(a + b
*Log[c*(d*(e + f*x)^m)^n])^p)/(E^(a/(b*m*n))*f*(c*(d*(e + f*x)^m)^n)^(1/(m*
n))*(-((a + b*Log[c*(d*(e + f*x)^m)^n])/(b*m*n)))^p)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] && !I
ntegerQ[m]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] && !IntegerQ[n] && !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^p\,dx = \text{Subst}\left(\int \left(a+b\log\left(cd^n(e+fx)^{mn}\right)\right)^p\,dx, cd^n(e+fx)^{mn}, c\left(d(e+fx)\right.\right.$$

$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \left(a+b\log\left(cd^n x^{mn}\right)\right)^p\,dx, x, e+fx\right)}{f}, cd^n(e+fx)^{mn}, c\right.$$

$$= \text{Subst}\left(\frac{\left((e+fx)\left(cd^n(e+fx)^{mn}\right)^{-\frac{1}{mn}}\right)\text{Subst}\left(\int e^{\frac{x}{mn}}(a+bx)^p\,dx, x, \log\right.}{fmn}\right.$$

$$= \frac{e^{-\frac{a}{bmn}}(e+fx)\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\Gamma\left(1+p, -\frac{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}{bmn}\right)\left(a+\right.}{f}$$

Mathematica [A] time = 0.18, size = 131, normalized size = 1.00

$$\frac{(e+fx)e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^p\left(-\frac{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}{bmn}\right)^{-p}\Gamma\left(p+1, -\frac{a+b\log\left(c\left(\right.\right.}{bn}\right.}{f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^m)^n])^p,x]
```

```
[Out] ((e + f*x)*Gamma[1 + p, -((a + b*Log[c*(d*(e + f*x)^m)^n])/(b*m*n))]*(a + b
*Log[c*(d*(e + f*x)^m)^n])^p)/(E^(a/(b*m*n))*f*(c*(d*(e + f*x)^m)^n)^(1/(m*
n))*(-((a + b*Log[c*(d*(e + f*x)^m)^n])/(b*m*n)))^p)
```

fricas [A] time = 0.48, size = 80, normalized size = 0.61

$$\frac{e^{\left(-\frac{bmnp\log\left(-\frac{1}{bmn}\right)+bn\log(d)+b\log(c)+a}{bmn}\right)}\Gamma\left(p+1, -\frac{bmn\log\left(fx+e\right)+bn\log(d)+b\log(c)+a}{bmn}\right)}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^p,x, algorithm="fricas")
```

```
[Out] e^(-(b*m*n*p*log(-1/(b*m*n)) + b*n*log(d) + b*log(c) + a)/(b*m*n))*gamma(p
+ 1, -(b*m*n*log(f*x + e) + b*n*log(d) + b*log(c) + a)/(b*m*n))/f
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b\log\left(\left(\left(fx+e\right)^m d\right)^n c\right)+a\right)^p\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^p,x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^m*d)^n*c) + a)^p, x)
```

maple [F] time = 0.12, size = 0, normalized size = 0.00

$$\int \left(b\ln\left(c\left(d\left(fx+e\right)^m\right)^n\right)+a\right)^p\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(d*(f*x+e)^m)^n)+a)^p,x)
```

```
[Out] int((b*ln(c*(d*(f*x+e)^m)^n)+a)^p,x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^p,x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: In function CAR, the value of t
he first argument is  0which is not of the expected type LIST
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^m\right)}^n\right)\right)^p \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^m)^n))^p,x)
```

```
[Out] int((a + b*log(c*(d*(e + f*x)^m)^n))^p, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(a + b \log{\left(c \left(d \left(e + f x\right)^{m}\right)^{n} \right)}\right)^{p}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**m)**n))**p,x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**m)**n))**p, x)
```

3.419 $\int \left(a+b\log\left(c\sqrt{d\sqrt{e+fx}}\right)\right)^p\,dx$

Optimal. Leaf size=109

$$\frac{4^{-p}e^{-\frac{4a}{b}}\left(a+b\log\left(c\sqrt{d\sqrt{e+fx}}\right)\right)^p\left(-\frac{a+b\log\left(c\sqrt{d\sqrt{e+fx}}\right)}{b}\right)^{-p}\Gamma\left(p+1,-\frac{4\left(a+b\log\left(c\sqrt{d\sqrt{e+fx}}\right)\right)}{b}\right)}{c^4d^2f}$$

```
[Out] GAMMA(1+p,-4*(a+b*ln(c*(d*(f*x+e)^(1/2))^(1/2)))/b)*(a+b*ln(c*(d*(f*x+e)^(1
/2))^(1/2)))^p/(4^p)/c^4/d^2/exp(4*a/b)/f/(((-a-b*ln(c*(d*(f*x+e)^(1/2))^(1
/2)))/b)^p)
```

Rubi [A] time = 0.14, antiderivative size = 109, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$, Rules used = {2389, 2299, 2181, 2445}

$$\frac{4^{-p}e^{-\frac{4a}{b}}\left(a+b\log\left(c\sqrt{d\sqrt{e+fx}}\right)\right)^p\left(-\frac{a+b\log\left(c\sqrt{d\sqrt{e+fx}}\right)}{b}\right)^{-p}\text{Gamma}\left(p+1,-\frac{4\left(a+b\log\left(c\sqrt{d\sqrt{e+fx}}\right)\right)}{b}\right)}{c^4d^2f}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*Sqrt[d*Sqrt[e + f*x]]])^p,x]
```

```
[Out] (Gamma[1 + p, (-4*(a + b*Log[c*Sqrt[d*Sqrt[e + f*x]]]))/b]*(a + b*Log[c*Sqr
t[d*Sqrt[e + f*x]]])^p)/(4^p*c^4*d^2*E^((4*a)/b)*f*(-((a + b*Log[c*Sqrt[d*S
qrt[e + f*x]]])/b))^p)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] && !I
ntegerQ[m]
```

Rule 2299

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[1/(n*c^(1
/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b,
 c, p}, x] && IntegerQ[1/n]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] && !IntegerQ[n] && !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \left(a+b\log\left(c\sqrt{d\sqrt{e+fx}}\right)\right)^p\,dx = \text{Subst}\left(\int \left(a+b\log\left(c\sqrt{d}\sqrt[4]{e+fx}\right)\right)^p\,dx, c\sqrt{d}\sqrt[4]{e+fx}, c\sqrt{d\sqrt{e+fx}}\right)$$
$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \left(a+b\log\left(c\sqrt{d}\sqrt[4]{x}\right)\right)^p\,dx, x, e+fx\right)}{f}, c\sqrt{d}\sqrt[4]{e+fx}, c\sqrt{d\cdot\right.$$
$$= \text{Subst}\left(\frac{4\,\text{Subst}\left(\int e^{4x}(a+bx)^p\,dx, x, \log\left(c\sqrt{d}\sqrt[4]{e+fx}\right)\right)}{c^4d^2f}, c\sqrt{d}\sqrt[4]{e+fx}, c\cdot\right.$$
$$= \frac{4^{-p}e^{-\frac{4a}{b}}\Gamma\left(1+p,-\frac{4\left(a+b\log\left(c\sqrt{d\sqrt{e+fx}}\right)\right)}{b}\right)\left(a+b\log\left(c\sqrt{d\sqrt{e+fx}}\right)\right)^p\left(-\frac{a+b\text{l}\cdot}{\cdot}\right.}{c^4d^2f}$$

Mathematica [A] time = 0.12, size = 109, normalized size = 1.00

$$\frac{2^{-2p}e^{-\frac{4a}{b}}\left(a+b\log\left(c\sqrt{d\sqrt{e+fx}}\right)\right)^p\left(-\frac{a+b\log\left(c\sqrt{d\sqrt{e+fx}}\right)}{b}\right)^{-p}\Gamma\left(p+1,-\frac{4\left(a+b\log\left(c\sqrt{d\sqrt{e+fx}}\right)\right)}{b}\right)}{c^4d^2f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*Sqrt[d*Sqrt[e + f*x]]])^p,x]
```

```
[Out] (Gamma[1 + p, (-4*(a + b*Log[c*Sqrt[d*Sqrt[e + f*x]]]))/b]*(a + b*Log[c*Sqr
t[d*Sqrt[e + f*x]]])^p)/(2^(2*p)*c^4*d^2*E^((4*a)/b)*f*(-((a + b*Log[c*Sqrt
[d*Sqrt[e + f*x]]])/b))^p)
```

fricas [F] time = 0.49, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(b\log\left(\sqrt{\sqrt{fx+e}\,d}\,c\right)+a\right)^p, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^(1/2))^(1/2)))^p,x, algorithm="fricas")
```

```
[Out] integral((b*log(sqrt(sqrt(f*x + e)*d)*c) + a)^p, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b\log\left(\sqrt{\sqrt{fx+e}\,d}\,c\right)+a\right)^p\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^(1/2))^(1/2)))^p,x, algorithm="giac")
```

```
[Out] integrate((b*log(sqrt(sqrt(f*x + e)*d)*c) + a)^p, x)
```

maple [F] time = 0.15, size = 0, normalized size = 0.00

$$\int \left(b\ln\left(\sqrt{\sqrt{fx+e}\,d}\;c\right)+a\right)^p\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^(1/2))^(1/2)))^p,x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^(1/2))^(1/2)))^p,x)
```

maxima [A] time = 0.63, size = 70, normalized size = 0.64

$$-\frac{4\left(b\log\left(\sqrt{\sqrt{fx+e}\,d}\,c\right)+a\right)^{p+1}e^{\left(-\frac{4a}{b}\right)}E_{-p}\left(-\frac{4\left(b\log\left(\sqrt{\sqrt{fx+e}\,d}\,c\right)+a\right)}{b}\right)}{bc^4d^2f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^(1/2))^(1/2)))^p,x, algorithm="maxima")
```

```
[Out] -4*(b*log(sqrt(sqrt(f*x + e)*d)*c) + a)^(p + 1)*e^(-4*a/b)*exp_integral_e(-
p, -4*(b*log(sqrt(sqrt(f*x + e)*d)*c) + a)/b)/(b*c^4*d^2*f)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \left(a+b\,\ln\left(c\,\sqrt{d\,\sqrt{e+f\,x}}\right)\right)^p\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^(1/2))^(1/2)))^p,x)
```

```
[Out] int((a + b*log(c*(d*(e + f*x)^(1/2))^(1/2)))^p, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(a+b\log\left(c\sqrt{d\sqrt{e+fx}}\right)\right)^p\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**(1/2))**(1/2)))**p,x)
```

```
[Out] Integral((a + b*log(c*sqrt(d*sqrt(e + f*x))))**p, x)
```

3.420 $\int (g+hx)^3 \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right) \, dx$

Optimal. Leaf size=158

$$\frac{(g+hx)^4\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{4h}-\frac{bpq(fg-eh)^4\log(e+fx)}{4f^4h}-\frac{bpqx(fg-eh)^3}{4f^3}-\frac{bpq(g+hx)^2(fg-eh)^2}{8f^2h}-$$

```
[Out] -1/4*b*(-e*h+f*g)^3*p*q*x/f^3-1/8*b*(-e*h+f*g)^2*p*q*(h*x+g)^2/f^2/h-1/12*b
*(-e*h+f*g)*p*q*(h*x+g)^3/f/h-1/16*b*p*q*(h*x+g)^4/h-1/4*b*(-e*h+f*g)^4*p*q
*ln(f*x+e)/f^4/h+1/4*(h*x+g)^4*(a+b*ln(c*(d*(f*x+e)^p)^q))/h
```

Rubi [A] time = 0.16, antiderivative size = 158, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.115, Rules used = {2395, 43, 2445}

$$\frac{(g+hx)^4\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{4h}-\frac{bpqx(fg-eh)^3}{4f^3}-\frac{bpq(g+hx)^2(fg-eh)^2}{8f^2h}-\frac{bpq(fg-eh)^4\log(e+fx)}{4f^4h}-$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)^3*(a + b*Log[c*(d*(e + f*x)^p)^q]),x]
```

```
[Out] -(b*(f*g - e*h)^3*p*q*x)/(4*f^3) - (b*(f*g - e*h)^2*p*q*(g + h*x)^2)/(8*f^2
*h) - (b*(f*g - e*h)*p*q*(g + h*x)^3)/(12*f*h) - (b*p*q*(g + h*x)^4)/(16*h)
 - (b*(f*g - e*h)^4*p*q*Log[e + f*x])/(4*f^4*h) + ((g + h*x)^4*(a + b*Log[c
*(d*(e + f*x)^p)^q]))/(4*h)
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int (g+hx)^3 \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right) dx = \text{Subst}\left(\int (g+hx)^3 \left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right) dx, cd^q(e+fx)^{p\cdots}\right.$$
$$= \frac{(g+hx)^4 \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{4h} - \text{Subst}\left(\frac{(bfpq)\int \frac{(g+hx\cdots}{e+fx\cdots}}{4h}\right.$$
$$= \frac{(g+hx)^4 \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{4h} - \text{Subst}\left(\frac{(bfpq)\int \left(\frac{h(fg\cdots}{f\cdots}\right.}{\cdots}\right.$$
$$= -\frac{b(fg-eh)^3pqx}{4f^3} - \frac{b(fg-eh)^2pq(g+hx)^2}{8f^2h} - \frac{b(fg-eh)pq(g+\cdots}{12fh}$$

Mathematica [A] time = 0.31, size = 232, normalized size = 1.47

$$\frac{fx\left(12af^3\left(4g^3+6g^2hx+4gh^2x^2+h^3x^3\right)-bpq\left(-12e^3h^3+6e^2fh^2(8g+hx)-4ef^2h\left(18g^2+6ghx+h^2x^2\right)+\cdots\right.}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)^3*(a + b*Log[c*(d*(e + f*x)^p)^q]),x]
```

```
[Out] (f*x*(12*a*f^3*(4*g^3 + 6*g^2*h*x + 4*g*h^2*x^2 + h^3*x^3) - b*p*q*(-12*e^3
*h^3 + 6*e^2*f*h^2*(8*g + h*x) - 4*e*f^2*h*(18*g^2 + 6*g*h*x + h^2*x^2) + f
^3*(48*g^3 + 36*g^2*h*x + 16*g*h^2*x^2 + 3*h^3*x^3))) - 12*b*e^2*h*(6*f^2*g
^2 - 4*e*f*g*h + e^2*h^2)*p*q*Log[e + f*x] + 12*b*f^3*(4*e*g^3 + f*x*(4*g^3
 + 6*g^2*h*x + 4*g*h^2*x^2 + h^3*x^3))*Log[c*(d*(e + f*x)^p)^q])/(48*f^4)
```

fricas [B] time = 0.43, size = 405, normalized size = 2.56

$$-\frac{3\left(bf^4h^3pq-4\,af^4h^3\right)x^4-4\left(12\,af^4gh^2-\left(4\,bf^4gh^2-bef^3h^3\right)pq\right)x^3-6\left(12\,af^4g^2h-\left(6\,bf^4g^2h-4\,bef^3gh^2\cdots\right.\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^3*(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="fricas")
```

```
[Out] -1/48*(3*(b*f^4*h^3*p*q - 4*a*f^4*h^3)*x^4 - 4*(12*a*f^4*g*h^2 - (4*b*f^4*g
*h^2 - b*e*f^3*h^3)*p*q)*x^3 - 6*(12*a*f^4*g^2*h - (6*b*f^4*g^2*h - 4*b*e*f
^3*g*h^2 + b*e^2*f^2*h^3)*p*q)*x^2 - 12*(4*a*f^4*g^3 - (4*b*f^4*g^3 - 6*b*e
*f^3*g^2*h + 4*b*e^2*f^2*g*h^2 - b*e^3*f*h^3)*p*q)*x - 12*(b*f^4*h^3*p*q*x^
4 + 4*b*f^4*g*h^2*p*q*x^3 + 6*b*f^4*g^2*h*p*q*x^2 + 4*b*f^4*g^3*p*q*x + (4*
b*e*f^3*g^3 - 6*b*e^2*f^2*g^2*h + 4*b*e^3*f*g*h^2 - b*e^4*h^3)*p*q)*log(f*x
 + e) - 12*(b*f^4*h^3*x^4 + 4*b*f^4*g*h^2*x^3 + 6*b*f^4*g^2*h*x^2 + 4*b*f^4
*g^3*x)*log(c) - 12*(b*f^4*h^3*q*x^4 + 4*b*f^4*g*h^2*q*x^3 + 6*b*f^4*g^2*h*
q*x^2 + 4*b*f^4*g^3*q*x)*log(d))/f^4
```

giac [B] time = 0.24, size = 1047, normalized size = 6.63

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^3*(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="giac")
```

```
[Out] (f*x + e)*b*g^3*p*q*log(f*x + e)/f + 3/2*(f*x + e)^2*b*g^2*h*p*q*log(f*x +
e)/f^2 + (f*x + e)^3*b*g*h^2*p*q*log(f*x + e)/f^3 + 1/4*(f*x + e)^4*b*h^3*p
```

```
*q*log(f*x + e)/f^4 - 3*(f*x + e)*b*g^2*h*p*q*e*log(f*x + e)/f^2 - 3*(f*x +
 e)^2*b*g*h^2*p*q*e*log(f*x + e)/f^3 - (f*x + e)^3*b*h^3*p*q*e*log(f*x + e)
/f^4 - (f*x + e)*b*g^3*p*q/f - 3/4*(f*x + e)^2*b*g^2*h*p*q/f^2 - 1/3*(f*x +
 e)^3*b*g*h^2*p*q/f^3 - 1/16*(f*x + e)^4*b*h^3*p*q/f^4 + 3*(f*x + e)*b*g^2*
h*p*q*e/f^2 + 3/2*(f*x + e)^2*b*g*h^2*p*q*e/f^3 + 1/3*(f*x + e)^3*b*h^3*p*q
*e/f^4 + 3*(f*x + e)*b*g*h^2*p*q*e^2*log(f*x + e)/f^3 + 3/2*(f*x + e)^2*b*h
^3*p*q*e^2*log(f*x + e)/f^4 + (f*x + e)*b*g^3*q*log(d)/f + 3/2*(f*x + e)^2*
b*g^2*h*q*log(d)/f^2 + (f*x + e)^3*b*g*h^2*q*log(d)/f^3 + 1/4*(f*x + e)^4*b
*h^3*q*log(d)/f^4 - 3*(f*x + e)*b*g^2*h*q*e*log(d)/f^2 - 3*(f*x + e)^2*b*g*
h^2*q*e*log(d)/f^3 - (f*x + e)^3*b*h^3*q*e*log(d)/f^4 - 3*(f*x + e)*b*g*h^2
*p*q*e^2/f^3 - 3/4*(f*x + e)^2*b*h^3*p*q*e^2/f^4 - (f*x + e)*b*h^3*p*q*e^3*
log(f*x + e)/f^4 + (f*x + e)*b*g^3*log(c)/f + 3/2*(f*x + e)^2*b*g^2*h*log(c
)/f^2 + (f*x + e)^3*b*g*h^2*log(c)/f^3 + 1/4*(f*x + e)^4*b*h^3*log(c)/f^4 -
 3*(f*x + e)*b*g^2*h*e*log(c)/f^2 - 3*(f*x + e)^2*b*g*h^2*e*log(c)/f^3 - (f
*x + e)^3*b*h^3*e*log(c)/f^4 + 3*(f*x + e)*b*g*h^2*q*e^2*log(d)/f^3 + 3/2*(
f*x + e)^2*b*h^3*q*e^2*log(d)/f^4 + (f*x + e)*a*g^3/f + 3/2*(f*x + e)^2*a*g
^2*h/f^2 + (f*x + e)^3*a*g*h^2/f^3 + 1/4*(f*x + e)^4*a*h^3/f^4 + (f*x + e)*
b*h^3*p*q*e^3/f^4 - 3*(f*x + e)*a*g^2*h*e/f^2 - 3*(f*x + e)^2*a*g*h^2*e/f^3
 - (f*x + e)^3*a*h^3*e/f^4 + 3*(f*x + e)*b*g*h^2*e^2*log(c)/f^3 + 3/2*(f*x
+ e)^2*b*h^3*e^2*log(c)/f^4 - (f*x + e)*b*h^3*q*e^3*log(d)/f^4 + 3*(f*x + e
)*a*g*h^2*e^2/f^3 + 3/2*(f*x + e)^2*a*h^3*e^2/f^4 - (f*x + e)*b*h^3*e^3*log
(c)/f^4 - (f*x + e)*a*h^3*e^3/f^4
```

maple [F] time = 0.79, size = 0, normalized size = 0.00

$$\int \left(hx+g\right)^{3} \left(b\ln \left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)+a\right)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^3*(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

```
[Out] int((h*x+g)^3*(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

maxima [B] time = 0.53, size = 304, normalized size = 1.92

$$\frac{1}{4}\, bh^{3}x^{4}\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+\frac{1}{4}\, ah^{3}x^{4}-bfg^{3}pq\left(\frac{x}{f}-\frac{e\log\left(fx+e\right)}{f^{2}}\right)-\frac{1}{48}\, bfh^{3}pq\left(\frac{12\, e^{4}\log\left(fx+e\right)}{f^{5}}+\frac{3\, f^{3}x^{4}-4}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^3*(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="maxima")
```

```
[Out] 1/4*b*h^3*x^4*log(((f*x + e)^p*d)^q*c) + 1/4*a*h^3*x^4 - b*f*g^3*p*q*(x/f -
 e*log(f*x + e)/f^2) - 1/48*b*f*h^3*p*q*(12*e^4*log(f*x + e)/f^5 + (3*f^3*x
^4 - 4*e*f^2*x^3 + 6*e^2*f*x^2 - 12*e^3*x)/f^4) + 1/6*b*f*g*h^2*p*q*(6*e^3*
log(f*x + e)/f^4 - (2*f^2*x^3 - 3*e*f*x^2 + 6*e^2*x)/f^3) - 3/4*b*f*g^2*h*p
*q*(2*e^2*log(f*x + e)/f^3 + (f*x^2 - 2*e*x)/f^2) + b*g*h^2*x^3*log(((f*x +
 e)^p*d)^q*c) + a*g*h^2*x^3 + 3/2*b*g^2*h*x^2*log(((f*x + e)^p*d)^q*c) + 3/
2*a*g^2*h*x^2 + b*g^3*x*log(((f*x + e)^p*d)^q*c) + a*g^3*x
```

mupad [B] time = 0.42, size = 370, normalized size = 2.34

$$\ln\left(c\left(d\left(e+f\,x\right)^{p}\right)^{q}\right)\,\left(b\,g^{3}\,x+\frac{3\,b\,g^{2}\,h\,x^{2}}{2}+b\,g\,h^{2}\,x^{3}+\frac{b\,h^{3}\,x^{4}}{4}\right)-x^{2}\left(\frac{e\,\left(\frac{h^{2}\,\left(a\,e\,h+3\,a\,f\,g-b\,f\,g\,p\,q\right)}{f}-\frac{e\,h^{3}\,\left(4\,a-b\,p\,q\right)}{4\,f}\right)}{2\,f}-\frac{3\,g}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)^3*(a + b*log(c*(d*(e + f*x)^p)^q)),x)
```

```
[Out] log(c*(d*(e + f*x)^p)^q)*((b*h^3*x^4)/4 + b*g^3*x + (3*b*g^2*h*x^2)/2 + b*g
*h^2*x^3) - x^2*((e*((h^2*(a*e*h + 3*a*f*g - b*f*g*p*q))/f - (e*h^3*(4*a -
b*p*q))/(4*f)))/(2*f) - (3*g*h*(2*a*e*h + 2*a*f*g - b*f*g*p*q))/(4*f)) + x*
((4*a*f*g^3 + 12*a*e*g^2*h - 4*b*f*g^3*p*q)/(4*f) + (e*((e*((h^2*(a*e*h + 3
*a*f*g - b*f*g*p*q))/f - (e*h^3*(4*a - b*p*q))/(4*f)))/f - (3*g*h*(2*a*e*h
+ 2*a*f*g - b*f*g*p*q))/(2*f)))/f) + x^3*((h^2*(a*e*h + 3*a*f*g - b*f*g*p*q
))/(3*f) - (e*h^3*(4*a - b*p*q))/(12*f)) - (log(e + f*x)*(b*e^4*h^3*p*q - 4
*b*e*f^3*g^3*p*q + 6*b*e^2*f^2*g^2*h*p*q - 4*b*e^3*f*g*h^2*p*q))/(4*f^4) +
(h^3*x^4*(4*a - b*p*q))/16
```

sympy [A] time = 21.35, size = 546, normalized size = 3.46

$$\begin{cases} ag^3x + \frac{3ag^2hx^2}{2} + agh^2x^3 + \frac{ah^3x^4}{4} - \frac{be^4h^3pq\log(e+fx)}{4f^4} + \frac{be^3gh^2pq\log(e+fx)}{f^3} + \frac{be^3h^3pqx}{4f^3} - \frac{3be^2g^2hpq\log(e+fx)}{2f^2} - \frac{be^2gh^2pqx}{f^2} \\ \left(a+b\log\left(c\left(de^p\right)^q\right)\right)\left(g^3x + \frac{3g^2hx^2}{2} + gh^2x^3 + \frac{h^3x^4}{4}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**3*(a+b*ln(c*(d*(f*x+e)**p)**q)),x)
```

```
[Out] Piecewise((a*g**3*x + 3*a*g**2*h*x**2/2 + a*g*h**2*x**3 + a*h**3*x**4/4 - b
*e**4*h**3*p*q*log(e + f*x)/(4*f**4) + b*e**3*g*h**2*p*q*log(e + f*x)/f**3
+ b*e**3*h**3*p*q*x/(4*f**3) - 3*b*e**2*g**2*h*p*q*log(e + f*x)/(2*f**2) -
b*e**2*g*h**2*p*q*x/f**2 - b*e**2*h**3*p*q*x**2/(8*f**2) + b*e*g**3*p*q*log
(e + f*x)/f + 3*b*e*g**2*h*p*q*x/(2*f) + b*e*g*h**2*p*q*x**2/(2*f) + b*e*h*
*3*p*q*x**3/(12*f) + b*g**3*p*q*x*log(e + f*x) - b*g**3*p*q*x + b*g**3*q*x*
log(d) + b*g**3*x*log(c) + 3*b*g**2*h*p*q*x**2*log(e + f*x)/2 - 3*b*g**2*h*
p*q*x**2/4 + 3*b*g**2*h*q*x**2*log(d)/2 + 3*b*g**2*h*x**2*log(c)/2 + b*g*h*
*2*p*q*x**3*log(e + f*x) - b*g*h**2*p*q*x**3/3 + b*g*h**2*q*x**3*log(d) + b
*g*h**2*x**3*log(c) + b*h**3*p*q*x**4*log(e + f*x)/4 - b*h**3*p*q*x**4/16 +
 b*h**3*q*x**4*log(d)/4 + b*h**3*x**4*log(c)/4, Ne(f, 0)), ((a + b*log(c*(d
*e**p)**q))*(g**3*x + 3*g**2*h*x**2/2 + g*h**2*x**3 + h**3*x**4/4), True))
```

3.421 $\int (g+hx)^2 \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\,dx$

Optimal. Leaf size=128

$$\frac{(g+hx)^3\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{3h}-\frac{bpq(fg-eh)^3\log(e+fx)}{3f^3h}-\frac{bpqx(fg-eh)^2}{3f^2}-\frac{bpq(g+hx)^2(fg-eh)}{6fh}-\frac{bpq(}{}$$

```
[Out] -1/3*b*(-e*h+f*g)^2*p*q*x/f^2-1/6*b*(-e*h+f*g)*p*q*(h*x+g)^2/f/h-1/9*b*p*q*
(h*x+g)^3/h-1/3*b*(-e*h+f*g)^3*p*q*ln(f*x+e)/f^3/h+1/3*(h*x+g)^3*(a+b*ln(c*
(d*(f*x+e)^p)^q))/h
```

Rubi [A] time = 0.13, antiderivative size = 128, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.115, Rules used = {2395, 43, 2445}

$$\frac{(g+hx)^3\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{3h}-\frac{bpqx(fg-eh)^2}{3f^2}-\frac{bpq(fg-eh)^3\log(e+fx)}{3f^3h}-\frac{bpq(g+hx)^2(fg-eh)}{6fh}-\frac{bpq(}{}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q]),x]
```

```
[Out] -(b*(f*g - e*h)^2*p*q*x)/(3*f^2) - (b*(f*g - e*h)*p*q*(g + h*x)^2)/(6*f*h)
- (b*p*q*(g + h*x)^3)/(9*h) - (b*(f*g - e*h)^3*p*q*Log[e + f*x])/(3*f^3*h)
+ ((g + h*x)^3*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(3*h)
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int (g+hx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)dx=\text{Subst}\left(\int (g+hx)^2\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)dx,cd^q(e+fx)^{p\cdots}\right)$$

$$=\frac{(g+hx)^3\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{3h}-\text{Subst}\left(\frac{(bfpq)\int\frac{(g+hx\cdots}{e+fx\cdots}}{3h}\cdots\right)$$

$$=\frac{(g+hx)^3\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{3h}-\text{Subst}\left(\frac{(bfpq)\int\left(\frac{h(fg\cdots}{f\cdots}\cdots\right)}{\cdots}\right)$$

$$=-\frac{b(fg-eh)^2pqx}{3f^2}-\frac{b(fg-eh)pq(g+hx)^2}{6fh}-\frac{bpq(g+hx)^3}{9h}-\frac{b(\cdots}{\cdots}$$

Mathematica [A] time = 0.19, size = 156, normalized size = 1.22

$$\frac{f\left(x\left(6af^2\left(3g^2+3ghx+h^2x^2\right)-bpq\left(6e^2h^2-3efh(6g+hx)+f^2\left(18g^2+9ghx+2h^2x^2\right)\right)\right)+6bf\left(3eg^2+fx\cdots\right)\right)}{18f^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q]),x]
```

```
[Out] (6*b*e^2*h*(-3*f*g + e*h)*p*q*Log[e + f*x] + f*(x*(6*a*f^2*(3*g^2 + 3*g*h*x
 + h^2*x^2) - b*p*q*(6*e^2*h^2 - 3*e*f*h*(6*g + h*x) + f^2*(18*g^2 + 9*g*h*
x + 2*h^2*x^2))) + 6*b*f*(3*e*g^2 + f*x*(3*g^2 + 3*g*h*x + h^2*x^2))*Log[c*
(d*(e + f*x)^p)^q]))/(18*f^3)
```

fricas [B] time = 0.45, size = 268, normalized size = 2.09

$$-\frac{2\left(bf^3h^2pq-3\,af^3h^2\right)x^3-3\left(6\,af^3gh-\left(3\,bf^3gh-bef^2h^2\right)pq\right)x^2-6\left(3\,af^3g^2-\left(3\,bf^3g^2-3\,bef^2gh+be^2f\cdots\right)\cdots\right)\cdots}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2*(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="fricas")
```

```
[Out] -1/18*(2*(b*f^3*h^2*p*q - 3*a*f^3*h^2)*x^3 - 3*(6*a*f^3*g*h - (3*b*f^3*g*h
- b*e*f^2*h^2)*p*q)*x^2 - 6*(3*a*f^3*g^2 - (3*b*f^3*g^2 - 3*b*e*f^2*g*h + b
*e^2*f*h^2)*p*q)*x - 6*(b*f^3*h^2*p*q*x^3 + 3*b*f^3*g*h*p*q*x^2 + 3*b*f^3*g
^2*p*q*x + (3*b*e*f^2*g^2 - 3*b*e^2*f*g*h + b*e^3*h^2)*p*q)*log(f*x + e) -
6*(b*f^3*h^2*x^3 + 3*b*f^3*g*h*x^2 + 3*b*f^3*g^2*x)*log(c) - 6*(b*f^3*h^2*q
*x^3 + 3*b*f^3*g*h*q*x^2 + 3*b*f^3*g^2*q*x)*log(d))/f^3
```

giac [B] time = 0.20, size = 585, normalized size = 4.57

$$\frac{\left(fx+e\right)bg^2pq\log\left(fx+e\right)}{f}+\frac{\left(fx+e\right)^2bghpq\log\left(fx+e\right)}{f^2}+\frac{\left(fx+e\right)^3bh^2pq\log\left(fx+e\right)}{3\,f^3}-\frac{2\left(fx+e\right)bghpqe\log\cdots}{f^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2*(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="giac")
```

```
[Out] (f*x + e)*b*g^2*p*q*log(f*x + e)/f + (f*x + e)^2*b*g*h*p*q*log(f*x + e)/f^2
 + 1/3*(f*x + e)^3*b*h^2*p*q*log(f*x + e)/f^3 - 2*(f*x + e)*b*g*h*p*q*e*log
(f*x + e)/f^2 - (f*x + e)^2*b*h^2*p*q*e*log(f*x + e)/f^3 - (f*x + e)*b*g^2*
p*q/f - 1/2*(f*x + e)^2*b*g*h*p*q/f^2 - 1/9*(f*x + e)^3*b*h^2*p*q/f^3 + 2*(
```

```
f*x + e)*b*g*h*p*q*e/f^2 + 1/2*(f*x + e)^2*b*h^2*p*q*e/f^3 + (f*x + e)*b*h^
2*p*q*e^2*log(f*x + e)/f^3 + (f*x + e)*b*g^2*q*log(d)/f + (f*x + e)^2*b*g*h
*q*log(d)/f^2 + 1/3*(f*x + e)^3*b*h^2*q*log(d)/f^3 - 2*(f*x + e)*b*g*h*q*e*
log(d)/f^2 - (f*x + e)^2*b*h^2*q*e*log(d)/f^3 - (f*x + e)*b*h^2*p*q*e^2/f^3
 + (f*x + e)*b*g^2*log(c)/f + (f*x + e)^2*b*g*h*log(c)/f^2 + 1/3*(f*x + e)^
3*b*h^2*log(c)/f^3 - 2*(f*x + e)*b*g*h*e*log(c)/f^2 - (f*x + e)^2*b*h^2*e*l
og(c)/f^3 + (f*x + e)*b*h^2*q*e^2*log(d)/f^3 + (f*x + e)*a*g^2/f + (f*x + e
)^2*a*g*h/f^2 + 1/3*(f*x + e)^3*a*h^2/f^3 - 2*(f*x + e)*a*g*h*e/f^2 - (f*x
+ e)^2*a*h^2*e/f^3 + (f*x + e)*b*h^2*e^2*log(c)/f^3 + (f*x + e)*a*h^2*e^2/f
^3
```

maple [F] time = 0.33, size = 0, normalized size = 0.00

$$\int \left(hx+g\right)^{2} \left(b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)+a\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^2*(b*ln(c*(d*(f*x+e)^p)^q)+a),x)
```

```
[Out] int((h*x+g)^2*(b*ln(c*(d*(f*x+e)^p)^q)+a),x)
```

maxima [A] time = 0.53, size = 202, normalized size = 1.58

$$-bfg^2pq\left(\frac{x}{f}-\frac{e\log\left(fx+e\right)}{f^2}\right)+\frac{1}{18}\,bfh^2pq\left(\frac{6\,e^3\log\left(fx+e\right)}{f^4}-\frac{2\,f^2x^3-3\,efx^2+6\,e^2x}{f^3}\right)-\frac{1}{2}\,bfghpq\left(\frac{2\,e^2\log\left(fx+\right.}{f^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2*(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="maxima")
```

```
[Out] -b*f*g^2*p*q*(x/f - e*log(f*x + e)/f^2) + 1/18*b*f*h^2*p*q*(6*e^3*log(f*x +
 e)/f^4 - (2*f^2*x^3 - 3*e*f*x^2 + 6*e^2*x)/f^3) - 1/2*b*f*g*h*p*q*(2*e^2*l
og(f*x + e)/f^3 + (f*x^2 - 2*e*x)/f^2) + 1/3*b*h^2*x^3*log(((f*x + e)^p*d)^
q*c) + 1/3*a*h^2*x^3 + b*g*h*x^2*log(((f*x + e)^p*d)^q*c) + a*g*h*x^2 + b*g
^2*x*log(((f*x + e)^p*d)^q*c) + a*g^2*x
```

mupad [B] time = 0.35, size = 225, normalized size = 1.76

$$\ln\left(c\left(d\left(e+f\,x\right)^p\right)^q\right)\,\left(b\,g^2\,x+b\,g\,h\,x^2+\frac{b\,h^2\,x^3}{3}\right)+x^2\,\left(\frac{h\,\left(a\,e\,h+2\,a\,f\,g-b\,f\,g\,p\,q\right)}{2\,f}-\frac{e\,h^2\,\left(3\,a-b\,p\,q\right)}{6\,f}\right)+x\,\left(\frac{3\,a\,f}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)^2*(a + b*log(c*(d*(e + f*x)^p)^q)),x)
```

```
[Out] log(c*(d*(e + f*x)^p)^q)*((b*h^2*x^3)/3 + b*g^2*x + b*g*h*x^2) + x^2*((h*(a
*e*h + 2*a*f*g - b*f*g*p*q))/(2*f) - (e*h^2*(3*a - b*p*q))/(6*f)) + x*((3*a
*f*g^2 + 6*a*e*g*h - 3*b*f*g^2*p*q)/(3*f) - (e*((h*(a*e*h + 2*a*f*g - b*f*g
*p*q))/f - (e*h^2*(3*a - b*p*q))/(3*f)))/f) + (log(e + f*x)*(b*e^3*h^2*p*q
+ 3*b*e*f^2*g^2*p*q - 3*b*e^2*f*g*h*p*q))/(3*f^3) + (h^2*x^3*(3*a - b*p*q))
/9
```

sympy [A] time = 9.51, size = 342, normalized size = 2.67

$$\begin{cases} ag^2x+aghx^2+\frac{ah^2x^3}{3}+\frac{be^3h^2pq\log\left(e+fx\right)}{3f^3}-\frac{be^2ghpq\log\left(e+fx\right)}{f^2}-\frac{be^2h^2pqx}{3f^2}+\frac{beg^2pq\log\left(e+fx\right)}{f}+\frac{beghpqx}{f}+\frac{beh^2pqx^2}{6f}+bg^2pq \\ \left(a+b\log\left(c\left(de^p\right)^q\right)\right)\left(g^2x+ghx^2+\frac{h^2x^3}{3}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**2*(a+b*ln(c*(d*(f*x+e)**p)**q)),x)
```

```
[Out] Piecewise((a*g**2*x + a*g*h*x**2 + a*h**2*x**3/3 + b*e**3*h**2*p*q*log(e +
f*x)/(3*f**3) - b*e**2*g*h*p*q*log(e + f*x)/f**2 - b*e**2*h**2*p*q*x/(3*f**
2) + b*e*g**2*p*q*log(e + f*x)/f + b*e*g*h*p*q*x/f + b*e*h**2*p*q*x**2/(6*f
) + b*g**2*p*q*x*log(e + f*x) - b*g**2*p*q*x + b*g**2*q*x*log(d) + b*g**2*x
*log(c) + b*g*h*p*q*x**2*log(e + f*x) - b*g*h*p*q*x**2/2 + b*g*h*q*x**2*log
(d) + b*g*h*x**2*log(c) + b*h**2*p*q*x**3*log(e + f*x)/3 - b*h**2*p*q*x**3/
9 + b*h**2*q*x**3*log(d)/3 + b*h**2*x**3*log(c)/3, Ne(f, 0)), ((a + b*log(c
*(d*e**p)**q))*(g**2*x + g*h*x**2 + h**2*x**3/3), True))
```

3.422 $\int (g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\,dx$

Optimal. Leaf size=98

$$\frac{(g+hx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{2h}-\frac{bpq(fg-eh)^2\log(e+fx)}{2f^2h}-\frac{bpqx(fg-eh)}{2f}-\frac{bpq(g+hx)^2}{4h}$$

```
[Out] -1/2*b*(-e*h+f*g)*p*q*x/f-1/4*b*p*q*(h*x+g)^2/h-1/2*b*(-e*h+f*g)^2*p*q*ln(f
*x+e)/f^2/h+1/2*(h*x+g)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))/h
```

Rubi [A] time = 0.08, antiderivative size = 98, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {2395, 43, 2445}

$$\frac{(g+hx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{2h}-\frac{bpq(fg-eh)^2\log(e+fx)}{2f^2h}-\frac{bpqx(fg-eh)}{2f}-\frac{bpq(g+hx)^2}{4h}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q]),x]
```

```
[Out] -(b*(f*g - e*h)*p*q*x)/(2*f) - (b*p*q*(g + h*x)^2)/(4*h) - (b*(f*g - e*h)^2
*p*q*Log[e + f*x])/(2*f^2*h) + ((g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q]
))/(2*h)
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] && !IntegerQ[n] && !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int (g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)dx = \text{Subst}\left(\int (g+hx)\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)dx, cd^q(e+fx)^{pq},\right.$$
$$= \frac{(g+hx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{2h} - \text{Subst}\left(\frac{(bfpq)\int \frac{(g+hx)^2}{e+fx}}{2h}\right.$$
$$= \frac{(g+hx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{2h} - \text{Subst}\left(\frac{(bfpq)\int\left(\frac{h(fg-}{f^2}\right.}{}\right.$$
$$= -\frac{b(fg-eh)pqx}{2f} - \frac{bpq(g+hx)^2}{4h} - \frac{b(fg-eh)^2pq\log(e+fx)}{2f^2h} +$$

Mathematica [A] time = 0.06, size = 113, normalized size = 1.15

$$agx+\frac{1}{2}ahx^2+\frac{bg(e+fx)\log\left(c\left(d(e+fx)^p\right)^q\right)}{f}+\frac{1}{2}bhx^2\log\left(c\left(d(e+fx)^p\right)^q\right)-\frac{be^2hpq\log(e+fx)}{2f^2}+\frac{behpqx}{2f}-bgp$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q]),x]
```

```
[Out] a*g*x - b*g*p*q*x + (b*e*h*p*q*x)/(2*f) + (a*h*x^2)/2 - (b*h*p*q*x^2)/4 - (
b*e^2*h*p*q*Log[e + f*x])/(2*f^2) + (b*h*x^2*Log[c*(d*(e + f*x)^p)^q])/2 +
(b*g*(e + f*x)*Log[c*(d*(e + f*x)^p)^q])/f
```

fricas [A] time = 0.45, size = 148, normalized size = 1.51

$$-\frac{\left(bf^2hpq-2\,af^2h\right)x^2-2\left(2\,af^2g-\left(2\,bf^2g-befh\right)pq\right)x-2\left(bf^2hpqx^2+2\,bf^2gpqx+\left(2\,befg-be^2h\right)pq\right)\log}{4\,f^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="fricas")
```

```
[Out] -1/4*((b*f^2*h*p*q - 2*a*f^2*h)*x^2 - 2*(2*a*f^2*g - (2*b*f^2*g - b*e*f*h)*
p*q)*x - 2*(b*f^2*h*p*q*x^2 + 2*b*f^2*g*p*q*x + (2*b*e*f*g - b*e^2*h)*p*q)*
log(f*x + e) - 2*(b*f^2*h*x^2 + 2*b*f^2*g*x)*log(c) - 2*(b*f^2*h*q*x^2 + 2*
b*f^2*g*q*x)*log(d))/f^2
```

giac [B] time = 0.20, size = 259, normalized size = 2.64

$$\frac{(fx+e)bgpq\log(fx+e)}{f}+\frac{(fx+e)^2bhpq\log(fx+e)}{2\,f^2}-\frac{(fx+e)bhpqe\log(fx+e)}{f^2}-\frac{(fx+e)bgpq}{f}-\frac{(fx+e)}{4\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="giac")
```

```
[Out] (f*x + e)*b*g*p*q*log(f*x + e)/f + 1/2*(f*x + e)^2*b*h*p*q*log(f*x + e)/f^2
 - (f*x + e)*b*h*p*q*e*log(f*x + e)/f^2 - (f*x + e)*b*g*p*q/f - 1/4*(f*x +
e)^2*b*h*p*q/f^2 + (f*x + e)*b*h*p*q*e/f^2 + (f*x + e)*b*g*q*log(d)/f + 1/2
*(f*x + e)^2*b*h*q*log(d)/f^2 - (f*x + e)*b*h*q*e*log(d)/f^2 + (f*x + e)*b*
g*log(c)/f + 1/2*(f*x + e)^2*b*h*log(c)/f^2 - (f*x + e)*b*h*e*log(c)/f^2 +
(f*x + e)*a*g/f + 1/2*(f*x + e)^2*a*h/f^2 - (f*x + e)*a*h*e/f^2
```

maple [F] time = 0.10, size = 0, normalized size = 0.00

$$\int (hx+g)\left(b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)+a\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)*(b*ln(c*(d*(f*x+e)^p)^q)+a),x)
```

```
[Out] int((h*x+g)*(b*ln(c*(d*(f*x+e)^p)^q)+a),x)
```

maxima [A] time = 0.50, size = 112, normalized size = 1.14

$$-bfgpq\left(\frac{x}{f}-\frac{e\log\left(fx+e\right)}{f^2}\right)-\frac{1}{4}\,bfhpq\left(\frac{2\,e^2\log\left(fx+e\right)}{f^3}+\frac{fx^2-2\,ex}{f^2}\right)+\frac{1}{2}\,bhx^2\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+\frac{1}{2}\,ahx^2+b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="maxima")
```

```
[Out] -b*f*g*p*q*(x/f - e*log(f*x + e)/f^2) - 1/4*b*f*h*p*q*(2*e^2*log(f*x + e)/f
^3 + (f*x^2 - 2*e*x)/f^2) + 1/2*b*h*x^2*log(((f*x + e)^p*d)^q*c) + 1/2*a*h*
x^2 + b*g*x*log(((f*x + e)^p*d)^q*c) + a*g*x
```

mupad [B] time = 0.29, size = 113, normalized size = 1.15

$$\ln\left(c\left(d\left(e+f\,x\right)^{p}\right)^{q}\right)\left(\frac{b\,h\,x^2}{2}+b\,g\,x\right)+x\left(\frac{2\,a\,e\,h+2\,a\,f\,g-2\,b\,f\,g\,p\,q}{2\,f}-\frac{e\,h\,\left(2\,a-b\,p\,q\right)}{2\,f}\right)+\frac{h\,x^2\,\left(2\,a-b\,p\,q\right)}{4}-\frac{\ln(}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)*(a + b*log(c*(d*(e + f*x)^p)^q)),x)
```

```
[Out] log(c*(d*(e + f*x)^p)^q)*((b*h*x^2)/2 + b*g*x) + x*((2*a*e*h + 2*a*f*g - 2*
b*f*g*p*q)/(2*f) - (e*h*(2*a - b*p*q))/(2*f)) + (h*x^2*(2*a - b*p*q))/4 - (
log(e + f*x)*(b*e^2*h*p*q - 2*b*e*f*g*p*q))/(2*f^2)
```

sympy [A] time = 3.59, size = 187, normalized size = 1.91

$$\begin{cases} agx+\frac{ahx^2}{2}-\frac{be^2hpq\log\left(e+fx\right)}{2f^2}+\frac{begpq\log\left(e+fx\right)}{f}+\frac{behpqx}{2f}+bgpqx\log\left(e+fx\right)-bgpqx+bgqx\log\left(d\right)+bgx\log\left(c\right)+ \\ \left(a+b\log\left(c\left(de^{p}\right)^{q}\right)\right)\left(gx+\frac{hx^2}{2}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*ln(c*(d*(f*x+e)**p)**q)),x)
```

```
[Out] Piecewise((a*g*x + a*h*x**2/2 - b*e**2*h*p*q*log(e + f*x)/(2*f**2) + b*e*g*
p*q*log(e + f*x)/f + b*e*h*p*q*x/(2*f) + b*g*p*q*x*log(e + f*x) - b*g*p*q*x
 + b*g*q*x*log(d) + b*g*x*log(c) + b*h*p*q*x**2*log(e + f*x)/2 - b*h*p*q*x*
*2/4 + b*h*q*x**2*log(d)/2 + b*h*x**2*log(c)/2, Ne(f, 0)), ((a + b*log(c*(d
*e**p)**q))*(g*x + h*x**2/2), True))
```

3.423 $\int \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\,dx$

Optimal. Leaf size=34

$$ax+\frac{b(e+fx)\log\left(c\left(d(e+fx)^p\right)^q\right)}{f}-bpqx$$

```
[Out] a*x-b*p*q*x+b*(f*x+e)*ln(c*(d*(f*x+e)^p)^q)/f
```

Rubi [A] time = 0.03, antiderivative size = 34, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {2389, 2295, 2445}

$$ax+\frac{b(e+fx)\log\left(c\left(d(e+fx)^p\right)^q\right)}{f}-bpqx$$

Antiderivative was successfully verified.

```
[In] Int[a + b*Log[c*(d*(e + f*x)^p)^q],x]
```

```
[Out] a*x - b*p*q*x + (b*(e + f*x)*Log[c*(d*(e + f*x)^p)^q])/f
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] && !IntegerQ[n] && !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\begin{aligned}
\int \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\,dx &= ax+b\int \log\left(c\left(d(e+fx)^p\right)^q\right)\,dx\\
&= ax+b\,\text{Subst}\left(\int \log\left(cd^q(e+fx)^{pq}\right)\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)\\
&= ax+b\,\text{Subst}\left(\frac{\text{Subst}\left(\int \log\left(cd^qx^{pq}\right)\,dx, x, e+fx\right)}{f}, cd^q(e+fx)^{pq}, c\left(d(e-\right.\right.\\
&= ax-bpqx+\frac{b(e+fx)\log\left(c\left(d(e+fx)^p\right)^q\right)}{f}
\end{aligned}$$

Mathematica [A] time = 0.01, size = 34, normalized size = 1.00

$$ax+\frac{b(e+fx)\log\left(c\left(d(e+fx)^p\right)^q\right)}{f}-bpqx$$

Antiderivative was successfully verified.

```
[In] Integrate[a + b*Log[c*(d*(e + f*x)^p)^q],x]
```

```
[Out] a*x - b*p*q*x + (b*(e + f*x)*Log[c*(d*(e + f*x)^p)^q])/f
```

fricas [A] time = 0.46, size = 50, normalized size = 1.47

$$\frac{bfqx\log(d)+bfx\log(c)-\left(bfpq-af\right)x+\left(bfpqx+bepq\right)\log\left(fx+e\right)}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*log(c*(d*(f*x+e)^p)^q),x, algorithm="fricas")
```

```
[Out] (b*f*q*x*log(d) + b*f*x*log(c) - (b*f*p*q - a*f)*x + (b*f*p*q*x + b*e*p*q)*
log(f*x + e))/f
```

giac [A] time = 0.16, size = 64, normalized size = 1.88

$$\left(\frac{\left(fx+e\right)pq\log\left(fx+e\right)}{f}-\frac{\left(fx+e\right)pq}{f}+\frac{\left(fx+e\right)q\log(d)}{f}+\frac{\left(fx+e\right)\log(c)}{f}\right)b+ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*log(c*(d*(f*x+e)^p)^q),x, algorithm="giac")
```

```
[Out] ((f*x + e)*p*q*log(f*x + e)/f - (f*x + e)*p*q/f + (f*x + e)*q*log(d)/f + (f
*x + e)*log(c)/f)*b + a*x
```

maple [A] time = 0.05, size = 42, normalized size = 1.24

$$\frac{bepq\ln\left(fx+e\right)}{f}-bpqx+bx\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)+ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(b*ln(c*(d*(f*x+e)^p)^q)+a,x)
```

```
[Out] a*x+b*x*ln(c*(d*(f*x+e)^p)^q)-b*p*q*x+b*q*p/f*e*ln(f*x+e)
```

maxima [A] time = 0.46, size = 45, normalized size = 1.32

$$-bfpq\left(\frac{x}{f}-\frac{e\log\left(fx+e\right)}{f^2}\right)+bx\log\left(\left(\left(fx+e\right)^pd\right)^qc\right)+ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*log(c*(d*(f*x+e)^p)^q),x, algorithm="maxima")
```

```
[Out] -b*f*p*q*(x/f - e*log(f*x + e)/f^2) + b*x*log(((f*x + e)^p*d)^q*c) + a*x
```

mupad [B] time = 0.22, size = 41, normalized size = 1.21

$$x\,\left(a-b\,p\,q\right)+b\,x\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)+\frac{b\,e\,p\,q\,\ln\left(e+f\,x\right)}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(a + b*log(c*(d*(e + f*x)^p)^q),x)
```

```
[Out] x*(a - b*p*q) + b*x*log(c*(d*(e + f*x)^p)^q) + (b*e*p*q*log(e + f*x))/f
```

sympy [A] time = 0.92, size = 58, normalized size = 1.71

$$ax + b\left(\begin{cases} \frac{epq\log\left(e+fx\right)}{f} + pqx\log\left(e+fx\right) - pqx + qx\log\left(d\right) + x\log\left(c\right) & \text{for } f \neq 0 \\ x\log\left(c\left(de^{p}\right)^{q}\right) & \text{otherwise} \end{cases}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*ln(c*(d*(f*x+e)**p)**q),x)
```

```
[Out] a*x + b*Piecewise((e*p*q*log(e + f*x)/f + p*q*x*log(e + f*x) - p*q*x + q*x*
log(d) + x*log(c), Ne(f, 0)), (x*log(c*(d*e**p)**q), True))
```

3.424 $\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{g+hx}\,dx$

Optimal. Leaf size=68

$$\frac{\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h}+\frac{bpq\text{Li}_2\left(-\frac{h(e+fx)}{fg-eh}\right)}{h}$$

```
[Out] (a+b*ln(c*(d*(f*x+e)^p)^q))*ln(f*(h*x+g)/(-e*h+f*g))/h+b*p*q*polylog(2,-h*(
f*x+e)/(-e*h+f*g))/h
```

Rubi [A] time = 0.11, antiderivative size = 68, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {2394, 2393, 2391, 2445}

$$\frac{bpq\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)}{h}+\frac{\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x),x]
```

```
[Out] ((a + b*Log[c*(d*(e + f*x)^p)^q])*Log[(f*(g + h*x))/(f*g - e*h)])/h + (b*p*
q*PolyLog[2, -((h*(e + f*x))/(f*g - e*h))])/h
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{g+hx}\,dx = \text{Subst}\left(\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{g+hx}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} - \text{Subst}\left(\frac{(bfpq)\int \frac{\log\left(\frac{f(g+hx)}{fg-eh}\right)}{e+fx}\,dx}{h}\right.$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} - \text{Subst}\left(\frac{(bpq)\,\text{Subst}\left(\int \frac{\log(1+\ldots}{x}\right.}{h}\right.$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} + \frac{bpq\text{Li}_2\left(-\frac{h(e+fx)}{fg-eh}\right)}{h}$$

Mathematica [A] time = 0.02, size = 67, normalized size = 0.99

$$\frac{\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h} + \frac{bpq\text{Li}_2\left(\frac{h(e+fx)}{eh-fg}\right)}{h}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x),x]
```

```
[Out] ((a + b*Log[c*(d*(e + f*x)^p)^q])*Log[(f*(g + h*x))/(f*g - e*h)])/h + (b*p*
q*PolyLog[2, (h*(e + f*x))/(-(f*g) + e*h)])/h
```

fricas [F] time = 0.41, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a}{hx+g}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g),x, algorithm="fricas")
```

```
[Out] integral((b*log(((f*x + e)^p*d)^q*c) + a)/(h*x + g), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)/(h*x + g), x)
```

maple [F] time = 0.38, size = 0, normalized size = 0.00

$$\int \frac{b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)+a}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(d*(f*x+e)^p)^q)+a)/(h*x+g),x)
```

```
[Out] int((b*ln(c*(d*(f*x+e)^p)^q)+a)/(h*x+g),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$b\int \frac{q\log(d) + \log\left(\left(\left(fx+e\right)^{p}\right)^{q}\right) + \log(c)}{hx+g}\,dx + \frac{a\log\left(hx+g\right)}{h}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g),x, algorithm="maxima")
```

```
[Out] b*integrate((q*log(d) + log(((f*x + e)^p)^q) + log(c))/(h*x + g), x) + a*lo
g(h*x + g)/h
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a+b\,\ln\left(c\left(d\left(e+f\,x\right)^{p}\right)^{q}\right)}{g+h\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))/(g + h*x),x)
```

```
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))/(g + h*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)}{g+hx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))/(h*x+g),x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))/(g + h*x), x)
```

3.425 $\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{(g+hx)^2}\,dx$

Optimal. Leaf size=80

$$-\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{h(g+hx)}+\frac{bfpq\log(e+fx)}{h(fg-eh)}-\frac{bfpq\log(g+hx)}{h(fg-eh)}$$

```
[Out] b*f*p*q*ln(f*x+e)/h/(-e*h+f*g)+(-a-b*ln(c*(d*(f*x+e)^p)^q))/h/(h*x+g)-b*f*p
*q*ln(h*x+g)/h/(-e*h+f*g)
```

Rubi [A] time = 0.08, antiderivative size = 80, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {2395, 36, 31, 2445}

$$-\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{h(g+hx)}+\frac{bfpq\log(e+fx)}{h(fg-eh)}-\frac{bfpq\log(g+hx)}{h(fg-eh)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x)^2,x]
```

```
[Out] (b*f*p*q*Log[e + f*x])/(h*(f*g - e*h)) - (a + b*Log[c*(d*(e + f*x)^p)^q])/(
h*(g + h*x)) - (b*f*p*q*Log[g + h*x])/(h*(f*g - e*h))
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] && !IntegerQ[n] && !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{(g+hx)^2}\,dx = \text{Subst}\left(\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{(g+hx)^2}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= -\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{h(g+hx)} + \text{Subst}\left(\frac{(bfpq)\int \frac{1}{(e+fx)(g+hx)}\,dx}{h}, cd^q(e+fx)^{pq},\right.$$

$$= -\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{h(g+hx)} - \text{Subst}\left(\frac{(bfpq)\int \frac{1}{g+hx}\,dx}{fg-eh}, cd^q(e+fx)^{pq}, c\left(d(e\right.\right.$$

$$= \frac{bfpq\log(e+fx)}{h(fg-eh)} - \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{h(g+hx)} - \frac{bfpq\log(g+hx)}{h(fg-eh)}$$

Mathematica [A] time = 0.10, size = 69, normalized size = 0.86

$$\frac{-\frac{a}{g+hx} - \frac{b\log\left(c\left(d(e+fx)^p\right)^q\right)}{g+hx} + \frac{bfpq(\log(e+fx)-\log(g+hx))}{fg-eh}}{h}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x)^2,x]
```

```
[Out] (-(a/(g + h*x)) - (b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x) + (b*f*p*q*(Log[e
+ f*x] - Log[g + h*x]))/(f*g - e*h))/h
```

fricas [A] time = 0.45, size = 113, normalized size = 1.41

$$-\frac{afg - aeh + \left(bfg - beh\right)q\log(d) - \left(bfhpqx + behpq\right)\log\left(fx+e\right) + \left(bfhpqx + bfgpq\right)\log\left(hx+g\right) + \left(bfg - b\right.}{fg^2h - egh^2 + \left(fgh^2 - eh^3\right)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^2,x, algorithm="fricas")
```

```
[Out] -(a*f*g - a*e*h + (b*f*g - b*e*h)*q*log(d) - (b*f*h*p*q*x + b*e*h*p*q)*log(
f*x + e) + (b*f*h*p*q*x + b*f*g*p*q)*log(h*x + g) + (b*f*g - b*e*h)*log(c))
/(f*g^2*h - e*g*h^2 + (f*g*h^2 - e*h^3)*x)
```

giac [A] time = 0.17, size = 129, normalized size = 1.61

$$\frac{bfhpqx\log\left(fx+e\right) - bfhpqx\log\left(hx+g\right) + bhpqe\log\left(fx+e\right) - bfgpq\log\left(hx+g\right) - bfgq\log(d) + bhqe\log(}{fgh^2x - h^3xe + fg^2h - gh^2e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^2,x, algorithm="giac")
```

```
[Out] (b*f*h*p*q*x*log(f*x + e) - b*f*h*p*q*x*log(h*x + g) + b*h*p*q*e*log(f*x +
e) - b*f*g*p*q*log(h*x + g) - b*f*g*q*log(d) + b*h*q*e*log(d) - b*f*g*log(c
) + b*h*e*log(c) - a*f*g + a*h*e)/(f*g*h^2*x - h^3*x*e + f*g^2*h - g*h^2*e)
```

maple [F] time = 0.37, size = 0, normalized size = 0.00

$$\int \frac{b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)+a}{\left(hx+g\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(d*(f*x+e)^p)^q)+a)/(h*x+g)^2,x)
```

```
[Out] int((b*ln(c*(d*(f*x+e)^p)^q)+a)/(h*x+g)^2,x)
```

maxima [A] time = 0.51, size = 90, normalized size = 1.12

$$bfpq\left(\frac{\log\left(fx+e\right)}{fgh-eh^2}-\frac{\log\left(hx+g\right)}{fgh-eh^2}\right)-\frac{b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)}{h^2x+gh}-\frac{a}{h^2x+gh}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^2,x, algorithm="maxima")
```

```
[Out] b*f*p*q*(log(f*x + e)/(f*g*h - e*h^2) - log(h*x + g)/(f*g*h - e*h^2)) - b*l
og(((f*x + e)^p*d)^q*c)/(h^2*x + g*h) - a/(h^2*x + g*h)
```

mupad [B] time = 2.04, size = 89, normalized size = 1.11

$$-\frac{a}{x\,h^2+g\,h}-\frac{b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)}{h\,\left(g+h\,x\right)}+\frac{b\,f\,p\,q\,\mathrm{atan}\left(\frac{f\,g\,2{}\mathrm{i}+f\,h\,x\,2{}\mathrm{i}}{e\,h-f\,g}+1{}\mathrm{i}\right)\,2{}\mathrm{i}}{h\,\left(e\,h-f\,g\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))/(g + h*x)^2,x)
```

```
[Out] (b*f*p*q*atan((f*g*2i + f*h*x*2i)/(e*h - f*g) + 1i)*2i)/(h*(e*h - f*g)) - (
b*log(c*(d*(e + f*x)^p)^q))/(h*(g + h*x)) - a/(g*h + h^2*x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))/(h*x+g)**2,x)
```

```
[Out] Exception raised: NotImplementedError
```

3.426 $\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{(g+hx)^3}\,dx$

Optimal. Leaf size=119

$$-\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{2h(g+hx)^2}+\frac{bf^2pq\log(e+fx)}{2h(fg-eh)^2}-\frac{bf^2pq\log(g+hx)}{2h(fg-eh)^2}+\frac{bfpq}{2h(g+hx)(fg-eh)}$$

```
[Out] 1/2*b*f*p*q/h/(-e*h+f*g)/(h*x+g)+1/2*b*f^2*p*q*ln(f*x+e)/h/(-e*h+f*g)^2+1/2
*(-a-b*ln(c*(d*(f*x+e)^p)^q))/h/(h*x+g)^2-1/2*b*f^2*p*q*ln(h*x+g)/h/(-e*h+f
*g)^2
```

Rubi [A] time = 0.13, antiderivative size = 119, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.115, Rules used = {2395, 44, 2445}

$$-\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{2h(g+hx)^2}+\frac{bf^2pq\log(e+fx)}{2h(fg-eh)^2}-\frac{bf^2pq\log(g+hx)}{2h(fg-eh)^2}+\frac{bfpq}{2h(g+hx)(fg-eh)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x)^3,x]
```

```
[Out] (b*f*p*q)/(2*h*(f*g - e*h)*(g + h*x)) + (b*f^2*p*q*Log[e + f*x])/(2*h*(f*g
- e*h)^2) - (a + b*Log[c*(d*(e + f*x)^p)^q])/(2*h*(g + h*x)^2) - (b*f^2*p*q
*Log[g + h*x])/(2*h*(f*g - e*h)^2)
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{(g+hx)^3}\,dx = \text{Subst}\left(\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{(g+hx)^3}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$
$$= -\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{2h(g+hx)^2} + \text{Subst}\left(\frac{(bfpq)\int \frac{1}{(e+fx)(g+hx)^2}\,dx}{2h}, cd^q(e+fx\right.$$
$$= -\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{2h(g+hx)^2} + \text{Subst}\left(\frac{(bfpq)\int\left(\frac{f^2}{(fg-eh)^2(e+fx)} - \frac{h}{(fg-eh)(g+hx}\right.}{2h}\right.$$
$$= \frac{bfpq}{2h(fg-eh)(g+hx)} + \frac{bf^2pq\log(e+fx)}{2h(fg-eh)^2} - \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{2h(g+hx)^2} -$$

Mathematica [A] time = 0.16, size = 88, normalized size = 0.74

$$-\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right) - \frac{bfpq(g+hx)(f(g+hx)\log(e+fx)-eh-f(g+hx)\log(g+hx)+fg)}{(fg-eh)^2}}{2h(g+hx)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x)^3,x]
```

```
[Out] -1/2*(a + b*Log[c*(d*(e + f*x)^p)^q] - (b*f*p*q*(g + h*x)*(f*g - e*h + f*(g
 + h*x)*Log[e + f*x] - f*(g + h*x)*Log[g + h*x]))/(f*g - e*h)^2)/(h*(g + h*
x)^2)
```

fricas [B] time = 0.47, size = 310, normalized size = 2.61

$$-\frac{af^2g^2 - 2\,aefgh + ae^2h^2 - \left(bf^2gh - befh^2\right)pqx - \left(bf^2g^2 - befgh\right)pq + \left(bf^2g^2 - 2\,befgh + be^2h^2\right)q\log(d) -}{2\left(f^2g^4h - 2\,efg^3h^2 + e^2g\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^3,x, algorithm="fricas")
```

```
[Out] -1/2*(a*f^2*g^2 - 2*a*e*f*g*h + a*e^2*h^2 - (b*f^2*g*h - b*e*f*h^2)*p*q*x -
 (b*f^2*g^2 - b*e*f*g*h)*p*q + (b*f^2*g^2 - 2*b*e*f*g*h + b*e^2*h^2)*q*log(
d) - (b*f^2*h^2*p*q*x^2 + 2*b*f^2*g*h*p*q*x + (2*b*e*f*g*h - b*e^2*h^2)*p*q
)*log(f*x + e) + (b*f^2*h^2*p*q*x^2 + 2*b*f^2*g*h*p*q*x + b*f^2*g^2*p*q)*lo
g(h*x + g) + (b*f^2*g^2 - 2*b*e*f*g*h + b*e^2*h^2)*log(c))/(f^2*g^4*h - 2*e
*f*g^3*h^2 + e^2*g^2*h^3 + (f^2*g^2*h^3 - 2*e*f*g*h^4 + e^2*h^5)*x^2 + 2*(f
^2*g^3*h^2 - 2*e*f*g^2*h^3 + e^2*g*h^4)*x)
```

giac [B] time = 0.18, size = 359, normalized size = 3.02

$$\frac{bf^2h^2pqx^2\log\left(fx+e\right) - bf^2h^2pqx^2\log\left(hx+g\right) + 2\,bf^2ghpqx\log\left(fx+e\right) - 2\,bf^2ghpqx\log\left(hx+g\right) + bf^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^3,x, algorithm="giac")
```

```
[Out] 1/2*(b*f^2*h^2*p*q*x^2*log(f*x + e) - b*f^2*h^2*p*q*x^2*log(h*x + g) + 2*b*
f^2*g*h*p*q*x*log(f*x + e) - 2*b*f^2*g*h*p*q*x*log(h*x + g) + b*f^2*g*h*p*q
*x - b*f*h^2*p*q*x*e + 2*b*f*g*h*p*q*e*log(f*x + e) - b*f^2*g^2*p*q*log(h*x
```

```
 + g) + b*f^2*g^2*p*q - b*f*g*h*p*q*e - b*h^2*p*q*e^2*log(f*x + e) - b*f^2*
g^2*q*log(d) + 2*b*f*g*h*q*e*log(d) - b*f^2*g^2*log(c) + 2*b*f*g*h*e*log(c)
 - b*h^2*q*e^2*log(d) - a*f^2*g^2 + 2*a*f*g*h*e - b*h^2*e^2*log(c) - a*h^2*
e^2)/(f^2*g^2*h^3*x^2 - 2*f*g*h^4*x^2*e + 2*f^2*g^3*h^2*x + h^5*x^2*e^2 - 4
*f*g^2*h^3*x*e + f^2*g^4*h + 2*g*h^4*x*e^2 - 2*f*g^3*h^2*e + g^2*h^3*e^2)
```

maple [F] time = 0.36, size = 0, normalized size = 0.00

$$\int \frac{b \ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)+a}{\left(hx+g\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(d*(f*x+e)^p)^q)+a)/(h*x+g)^3,x)
```

```
[Out] int((b*ln(c*(d*(f*x+e)^p)^q)+a)/(h*x+g)^3,x)
```

maxima [A] time = 0.50, size = 172, normalized size = 1.45

$$\frac{1}{2}\,bfpq\left(\frac{f\log\left(fx+e\right)}{f^{2}g^{2}h-2\,efgh^{2}+e^{2}h^{3}}-\frac{f\log\left(hx+g\right)}{f^{2}g^{2}h-2\,efgh^{2}+e^{2}h^{3}}+\frac{1}{fg^{2}h-egh^{2}+\left(fgh^{2}-eh^{3}\right)x}\right)-\frac{b\log\left(\left(\left(fx+e\right)^{p}d\right)\right.}{2\left(h^{3}x^{2}+2\,gh^{2}x+g\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^3,x, algorithm="maxima")
```

```
[Out] 1/2*b*f*p*q*(f*log(f*x + e)/(f^2*g^2*h - 2*e*f*g*h^2 + e^2*h^3) - f*log(h*x
 + g)/(f^2*g^2*h - 2*e*f*g*h^2 + e^2*h^3) + 1/(f*g^2*h - e*g*h^2 + (f*g*h^2
 - e*h^3)*x)) - 1/2*b*log(((f*x + e)^p*d)^q*c)/(h^3*x^2 + 2*g*h^2*x + g^2*h
) - 1/2*a/(h^3*x^2 + 2*g*h^2*x + g^2*h)
```

mupad [B] time = 2.26, size = 180, normalized size = 1.51

$$\frac{b\,f^2\,p\,q\,\mathrm{atanh}\left(\frac{2\,e^2\,h^3-2\,f^2\,g^2\,h}{2\,h\,{\left(e\,h-f\,g\right)}^2}+\frac{2\,f\,h\,x}{e\,h-f\,g}\right)}{h\,{\left(e\,h-f\,g\right)}^2}-\frac{b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)}{2\,h\,\left(g^2+2\,g\,h\,x+h^2\,x^2\right)}-\frac{\frac{a\,e\,h-a\,f\,g+b\,f\,g\,p\,q}{e\,h-f\,g}+\frac{b\,f\,h\,p\,q\,x}{e\,h-f\,g}}{2\,g^2\,h+4\,g\,h^2\,x+2\,h^3\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))/(g + h*x)^3,x)
```

```
[Out] (b*f^2*p*q*atanh((2*e^2*h^3 - 2*f^2*g^2*h)/(2*h*(e*h - f*g)^2) + (2*f*h*x)/
(e*h - f*g)))/(h*(e*h - f*g)^2) - (b*log(c*(d*(e + f*x)^p)^q))/(2*h*(g^2 +
h^2*x^2 + 2*g*h*x)) - ((a*e*h - a*f*g + b*f*g*p*q)/(e*h - f*g) + (b*f*h*p*q
*x)/(e*h - f*g))/(2*g^2*h + 2*h^3*x^2 + 4*g*h^2*x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))/(h*x+g)**3,x)
```

```
[Out] Exception raised: NotImplementedError
```

3.427 $\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{(g+hx)^4}\,dx$

Optimal. Leaf size=149

$$-\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{3h(g+hx)^3}+\frac{bf^3pq\log(e+fx)}{3h(fg-eh)^3}-\frac{bf^3pq\log(g+hx)}{3h(fg-eh)^3}+\frac{bf^2pq}{3h(g+hx)(fg-eh)^2}+\frac{bfpq}{6h(g+hx)^2(fg-$$

```
[Out] 1/6*b*f*p*q/h/(-e*h+f*g)/(h*x+g)^2+1/3*b*f^2*p*q/h/(-e*h+f*g)^2/(h*x+g)+1/3
*b*f^3*p*q*ln(f*x+e)/h/(-e*h+f*g)^3+1/3*(-a-b*ln(c*(d*(f*x+e)^p)^q))/h/(h*x
+g)^3-1/3*b*f^3*p*q*ln(h*x+g)/h/(-e*h+f*g)^3
```

Rubi [A] time = 0.17, antiderivative size = 149, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.115, Rules used = {2395, 44, 2445}

$$-\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{3h(g+hx)^3}+\frac{bf^2pq}{3h(g+hx)(fg-eh)^2}+\frac{bf^3pq\log(e+fx)}{3h(fg-eh)^3}-\frac{bf^3pq\log(g+hx)}{3h(fg-eh)^3}+\frac{bfpq}{6h(g+hx)^2(fg-$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x)^4,x]
```

```
[Out] (b*f*p*q)/(6*h*(f*g - e*h)*(g + h*x)^2) + (b*f^2*p*q)/(3*h*(f*g - e*h)^2*(g
 + h*x)) + (b*f^3*p*q*Log[e + f*x])/(3*h*(f*g - e*h)^3) - (a + b*Log[c*(d*(
e + f*x)^p)^q])/(3*h*(g + h*x)^3) - (b*f^3*p*q*Log[g + h*x])/(3*h*(f*g - e*
h)^3)
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{(g+hx)^4}\,dx = \text{Subst}\left(\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{(g+hx)^4}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= -\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{3h(g+hx)^3} + \text{Subst}\left(\frac{(bfpq)\int \frac{1}{(e+fx)(g+hx)^3}\,dx}{3h}, cd^q(e+fx)^{pq}\right.$$

$$= -\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{3h(g+hx)^3} + \text{Subst}\left(\frac{(bfpq)\int \left(\frac{f^3}{(fg-eh)^3(e+fx)} - \frac{h}{(fg-eh)(g+hx)^3}\right.}{3h}\right.$$

$$= \frac{bfpq}{6h(fg-eh)(g+hx)^2} + \frac{bf^2pq}{3h(fg-eh)^2(g+hx)} + \frac{bf^3pq\log(e+fx)}{3h(fg-eh)^3} - \frac{a+b\log}{3}$$

Mathematica [**A**] time = 0.20, size = 115, normalized size = 0.77

$$\frac{-2a-2b\log\left(c\left(d(e+fx)^p\right)^q\right)+\frac{bfpq(g+hx)\left(2f^2(g+hx)^2\log(e+fx)+(fg-eh)(-eh+3fg+2fhx)-2f^2(g+hx)^2\log(g+hx)\right)}{(fg-eh)^3}}{6h(g+hx)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x)^4,x]
```

```
[Out] (-2*a - 2*b*Log[c*(d*(e + f*x)^p)^q] + (b*f*p*q*(g + h*x)*((f*g - e*h)*(3*f
*g - e*h + 2*f*h*x) + 2*f^2*(g + h*x)^2*Log[e + f*x] - 2*f^2*(g + h*x)^2*Lo
g[g + h*x]))/(f*g - e*h)^3)/(6*h*(g + h*x)^3)
```

fricas [**B**] time = 0.49, size = 563, normalized size = 3.78

$$-\frac{2\,af^3g^3 - 6\,aef^2g^2h + 6\,ae^2fgh^2 - 2\,ae^3h^3 - 2\left(bf^3gh^2 - bef^2h^3\right)pqx^2 - \left(5\,bf^3g^2h - 6\,bef^2gh^2 + be^2fh^3\right)pqx -}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^4,x, algorithm="fricas")
```

```
[Out] -1/6*(2*a*f^3*g^3 - 6*a*e*f^2*g^2*h + 6*a*e^2*f*g*h^2 - 2*a*e^3*h^3 - 2*(b*
f^3*g*h^2 - b*e*f^2*h^3)*p*q*x^2 - (5*b*f^3*g^2*h - 6*b*e*f^2*g*h^2 + b*e^2
*f*h^3)*p*q*x - (3*b*f^3*g^3 - 4*b*e*f^2*g^2*h + b*e^2*f*g*h^2)*p*q + 2*(b*
f^3*g^3 - 3*b*e*f^2*g^2*h + 3*b*e^2*f*g*h^2 - b*e^3*h^3)*q*log(d) - 2*(b*f^
3*h^3*p*q*x^3 + 3*b*f^3*g*h^2*p*q*x^2 + 3*b*f^3*g^2*h*p*q*x + (3*b*e*f^2*g^
2*h - 3*b*e^2*f*g*h^2 + b*e^3*h^3)*p*q)*log(f*x + e) + 2*(b*f^3*h^3*p*q*x^3
 + 3*b*f^3*g*h^2*p*q*x^2 + 3*b*f^3*g^2*h*p*q*x + b*f^3*g^3*p*q)*log(h*x + g
) + 2*(b*f^3*g^3 - 3*b*e*f^2*g^2*h + 3*b*e^2*f*g*h^2 - b*e^3*h^3)*log(c))/(
f^3*g^6*h - 3*e*f^2*g^5*h^2 + 3*e^2*f*g^4*h^3 - e^3*g^3*h^4 + (f^3*g^3*h^4
- 3*e*f^2*g^2*h^5 + 3*e^2*f*g*h^6 - e^3*h^7)*x^3 + 3*(f^3*g^4*h^3 - 3*e*f^2
*g^3*h^4 + 3*e^2*f*g^2*h^5 - e^3*g*h^6)*x^2 + 3*(f^3*g^5*h^2 - 3*e*f^2*g^4*
h^3 + 3*e^2*f*g^3*h^4 - e^3*g^2*h^5)*x)
```

giac [**B**] time = 0.20, size = 643, normalized size = 4.32

$$\frac{2\,bf^3h^3pqx^3\log\left(fx+e\right) - 2\,bf^3h^3pqx^3\log\left(hx+g\right) + 6\,bf^3gh^2pqx^2\log\left(fx+e\right) - 6\,bf^3gh^2pqx^2\log\left(hx+g\right) +}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^4,x, algorithm="giac")
```

```
[Out] 1/6*(2*b*f^3*h^3*p*q*x^3*log(f*x + e) - 2*b*f^3*h^3*p*q*x^3*log(h*x + g) +
6*b*f^3*g*h^2*p*q*x^2*log(f*x + e) - 6*b*f^3*g*h^2*p*q*x^2*log(h*x + g) + 2
*b*f^3*g*h^2*p*q*x^2 - 2*b*f^2*h^3*p*q*x^2*e + 6*b*f^3*g^2*h*p*q*x*log(f*x
+ e) - 6*b*f^3*g^2*h*p*q*x*log(h*x + g) + 5*b*f^3*g^2*h*p*q*x - 6*b*f^2*g*h
^2*p*q*x*e + 6*b*f^2*g^2*h*p*q*e*log(f*x + e) - 2*b*f^3*g^3*p*q*log(h*x + g
) + 3*b*f^3*g^3*p*q + b*f*h^3*p*q*x*e^2 - 4*b*f^2*g^2*h*p*q*e - 6*b*f*g*h^2
*p*q*e^2*log(f*x + e) - 2*b*f^3*g^3*q*log(d) + 6*b*f^2*g^2*h*q*e*log(d) + b
*f*g*h^2*p*q*e^2 + 2*b*h^3*p*q*e^3*log(f*x + e) - 2*b*f^3*g^3*log(c) + 6*b*
f^2*g^2*h*e*log(c) - 6*b*f*g*h^2*q*e^2*log(d) - 2*a*f^3*g^3 + 6*a*f^2*g^2*h
*e - 6*b*f*g*h^2*e^2*log(c) + 2*b*h^3*q*e^3*log(d) - 6*a*f*g*h^2*e^2 + 2*b*
h^3*e^3*log(c) + 2*a*h^3*e^3)/(f^3*g^3*h^4*x^3 - 3*f^2*g^2*h^5*x^3*e + 3*f^
3*g^4*h^3*x^2 + 3*f*g*h^6*x^3*e^2 - 9*f^2*g^3*h^4*x^2*e + 3*f^3*g^5*h^2*x -
 h^7*x^3*e^3 + 9*f*g^2*h^5*x^2*e^2 - 9*f^2*g^4*h^3*x*e + f^3*g^6*h - 3*g*h^
6*x^2*e^3 + 9*f*g^3*h^4*x*e^2 - 3*f^2*g^5*h^2*e - 3*g^2*h^5*x*e^3 + 3*f*g^4
*h^3*e^2 - g^3*h^4*e^3)
```

maple [F] time = 0.38, size = 0, normalized size = 0.00

$$\int \frac{b \ln\left(c \left(d \left(f x+e\right)^{p}\right)^{q}\right)+a}{\left(h x+g\right)^{4}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(d*(f*x+e)^p)^q)+a)/(h*x+g)^4,x)
```

```
[Out] int((b*ln(c*(d*(f*x+e)^p)^q)+a)/(h*x+g)^4,x)
```

maxima [B] time = 0.53, size = 306, normalized size = 2.05

$$\frac{1}{6}\left(\frac{2 f^2 \log\left(fx+e\right)}{f^3g^3h-3\,ef^2g^2h^2+3\,e^2fgh^3-e^3h^4}-\frac{2 f^2 \log\left(hx+g\right)}{f^3g^3h-3\,ef^2g^2h^2+3\,e^2fgh^3-e^3h^4}+\frac{}{f^2g^4h-2\,efg^3h^2+e^2g^2h^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^4,x, algorithm="maxima")
```

```
[Out] 1/6*(2*f^2*log(f*x + e)/(f^3*g^3*h - 3*e*f^2*g^2*h^2 + 3*e^2*f*g*h^3 - e^3*
h^4) - 2*f^2*log(h*x + g)/(f^3*g^3*h - 3*e*f^2*g^2*h^2 + 3*e^2*f*g*h^3 - e^
3*h^4) + (2*f*h*x + 3*f*g - e*h)/(f^2*g^4*h - 2*e*f*g^3*h^2 + e^2*g^2*h^3 +
 (f^2*g^2*h^3 - 2*e*f*g*h^4 + e^2*h^5)*x^2 + 2*(f^2*g^3*h^2 - 2*e*f*g^2*h^3
 + e^2*g*h^4)*x))*b*f*p*q - 1/3*b*log(((f*x + e)^p*d)^q*c)/(h^4*x^3 + 3*g*h
^3*x^2 + 3*g^2*h^2*x + g^3*h) - 1/3*a/(h^4*x^3 + 3*g*h^3*x^2 + 3*g^2*h^2*x
+ g^3*h)
```

mupad [B] time = 2.48, size = 293, normalized size = 1.97

$$\frac{2\,a\,e\,f\,g}{3\,{\left(g+h\,x\right)}^3\,{\left(e\,h-f\,g\right)}^2}-\frac{a\,e^2\,h}{3\,{\left(g+h\,x\right)}^3\,{\left(e\,h-f\,g\right)}^2}-\frac{b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)}{3\,h\,{\left(g+h\,x\right)}^3}-\frac{a\,f^2\,g^2}{3\,h\,{\left(g+h\,x\right)}^3\,{\left(e\,h-f\,g\right)}^2}+\frac{b}{3\,(g+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))/(g + h*x)^4,x)
```

```
[Out] (2*a*e*f*g)/(3*(g + h*x)^3*(e*h - f*g)^2) - (a*e^2*h)/(3*(g + h*x)^3*(e*h -
 f*g)^2) - (b*log(c*(d*(e + f*x)^p)^q))/(3*h*(g + h*x)^3) - (a*f^2*g^2)/(3*
```

```
h*(g + h*x)^3*(e*h - f*g)^2) + (b*f^3*p*q*atan((e*h*1i + f*g*1i + f*h*x*2i)
/(e*h - f*g))*2i)/(3*h*(e*h - f*g)^3) + (b*f^2*h*p*q*x^2)/(3*(g + h*x)^3*(e
*h - f*g)^2) - (b*e*f*g*p*q)/(6*(g + h*x)^3*(e*h - f*g)^2) + (b*f^2*g^2*p*q
)/(2*h*(g + h*x)^3*(e*h - f*g)^2) + (5*b*f^2*g*p*q*x)/(6*(g + h*x)^3*(e*h -
 f*g)^2) - (b*e*f*h*p*q*x)/(6*(g + h*x)^3*(e*h - f*g)^2)
```

sympy [A] time = 131.75, size = 8709, normalized size = 58.45

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))/(h*x+g)**4,x)
```

```
[Out] Piecewise((-3*a/(9*g**3*h + 27*g**2*h**2*x + 27*g*h**3*x**2 + 9*h**4*x**3)
- 3*b*p*q*log(f*g/h + f*x)/(9*g**3*h + 27*g**2*h**2*x + 27*g*h**3*x**2 + 9*
h**4*x**3) - b*p*q/(9*g**3*h + 27*g**2*h**2*x + 27*g*h**3*x**2 + 9*h**4*x**
3) - 3*b*q*log(d)/(9*g**3*h + 27*g**2*h**2*x + 27*g*h**3*x**2 + 9*h**4*x**3
) - 3*b*log(c)/(9*g**3*h + 27*g**2*h**2*x + 27*g*h**3*x**2 + 9*h**4*x**3),
Eq(e, f*g/h)), ((a*x + b*e*p*q*log(e + f*x)/f + b*p*q*x*log(e + f*x) - b*p*
q*x + b*q*x*log(d) + b*x*log(c))/g**4, Eq(h, 0)), (-2*a*e**3*h**3/(6*e**3*g
**3*h**4 + 18*e**3*g**2*h**5*x + 18*e**3*g*h**6*x**2 + 6*e**3*h**7*x**3 - 1
8*e**2*f*g**4*h**3 - 54*e**2*f*g**3*h**4*x - 54*e**2*f*g**2*h**5*x**2 - 18*
e**2*f*g*h**6*x**3 + 18*e*f**2*g**5*h**2 + 54*e*f**2*g**4*h**3*x + 54*e*f**
2*g**3*h**4*x**2 + 18*e*f**2*g**2*h**5*x**3 - 6*f**3*g**6*h - 18*f**3*g**5*
h**2*x - 18*f**3*g**4*h**3*x**2 - 6*f**3*g**3*h**4*x**3) + 6*a*e**2*f*g*h**
2/(6*e**3*g**3*h**4 + 18*e**3*g**2*h**5*x + 18*e**3*g*h**6*x**2 + 6*e**3*h*
*7*x**3 - 18*e**2*f*g**4*h**3 - 54*e**2*f*g**3*h**4*x - 54*e**2*f*g**2*h**5
*x**2 - 18*e**2*f*g*h**6*x**3 + 18*e*f**2*g**5*h**2 + 54*e*f**2*g**4*h**3*x
 + 54*e*f**2*g**3*h**4*x**2 + 18*e*f**2*g**2*h**5*x**3 - 6*f**3*g**6*h - 18
*f**3*g**5*h**2*x - 18*f**3*g**4*h**3*x**2 - 6*f**3*g**3*h**4*x**3) - 6*a*e
*f**2*g**2*h/(6*e**3*g**3*h**4 + 18*e**3*g**2*h**5*x + 18*e**3*g*h**6*x**2
+ 6*e**3*h**7*x**3 - 18*e**2*f*g**4*h**3 - 54*e**2*f*g**3*h**4*x - 54*e**2*
f*g**2*h**5*x**2 - 18*e**2*f*g*h**6*x**3 + 18*e*f**2*g**5*h**2 + 54*e*f**2*
g**4*h**3*x + 54*e*f**2*g**3*h**4*x**2 + 18*e*f**2*g**2*h**5*x**3 - 6*f**3*
g**6*h - 18*f**3*g**5*h**2*x - 18*f**3*g**4*h**3*x**2 - 6*f**3*g**3*h**4*x*
*3) + 2*a*f**3*g**3/(6*e**3*g**3*h**4 + 18*e**3*g**2*h**5*x + 18*e**3*g*h**
6*x**2 + 6*e**3*h**7*x**3 - 18*e**2*f*g**4*h**3 - 54*e**2*f*g**3*h**4*x - 5
4*e**2*f*g**2*h**5*x**2 - 18*e**2*f*g*h**6*x**3 + 18*e*f**2*g**5*h**2 + 54*
e*f**2*g**4*h**3*x + 54*e*f**2*g**3*h**4*x**2 + 18*e*f**2*g**2*h**5*x**3 -
6*f**3*g**6*h - 18*f**3*g**5*h**2*x - 18*f**3*g**4*h**3*x**2 - 6*f**3*g**3*
h**4*x**3) - 2*b*e**3*h**3*p*q*log(e + f*x)/(6*e**3*g**3*h**4 + 18*e**3*g**
2*h**5*x + 18*e**3*g*h**6*x**2 + 6*e**3*h**7*x**3 - 18*e**2*f*g**4*h**3 - 5
4*e**2*f*g**3*h**4*x - 54*e**2*f*g**2*h**5*x**2 - 18*e**2*f*g*h**6*x**3 + 1
8*e*f**2*g**5*h**2 + 54*e*f**2*g**4*h**3*x + 54*e*f**2*g**3*h**4*x**2 + 18*
e*f**2*g**2*h**5*x**3 - 6*f**3*g**6*h - 18*f**3*g**5*h**2*x - 18*f**3*g**4*
h**3*x**2 - 6*f**3*g**3*h**4*x**3) - 2*b*e**3*h**3*q*log(d)/(6*e**3*g**3*h*
*4 + 18*e**3*g**2*h**5*x + 18*e**3*g*h**6*x**2 + 6*e**3*h**7*x**3 - 18*e**2
*f*g**4*h**3 - 54*e**2*f*g**3*h**4*x - 54*e**2*f*g**2*h**5*x**2 - 18*e**2*f
*g*h**6*x**3 + 18*e*f**2*g**5*h**2 + 54*e*f**2*g**4*h**3*x + 54*e*f**2*g**3
*h**4*x**2 + 18*e*f**2*g**2*h**5*x**3 - 6*f**3*g**6*h - 18*f**3*g**5*h**2*x
 - 18*f**3*g**4*h**3*x**2 - 6*f**3*g**3*h**4*x**3) - 2*b*e**3*h**3*log(c)/(
6*e**3*g**3*h**4 + 18*e**3*g**2*h**5*x + 18*e**3*g*h**6*x**2 + 6*e**3*h**7*
x**3 - 18*e**2*f*g**4*h**3 - 54*e**2*f*g**3*h**4*x - 54*e**2*f*g**2*h**5*x*
*2 - 18*e**2*f*g*h**6*x**3 + 18*e*f**2*g**5*h**2 + 54*e*f**2*g**4*h**3*x +
54*e*f**2*g**3*h**4*x**2 + 18*e*f**2*g**2*h**5*x**3 - 6*f**3*g**6*h - 18*f*
*3*g**5*h**2*x - 18*f**3*g**4*h**3*x**2 - 6*f**3*g**3*h**4*x**3) + 6*b*e**2
*f*g*h**2*p*q*log(e + f*x)/(6*e**3*g**3*h**4 + 18*e**3*g**2*h**5*x + 18*e**
3*g*h**6*x**2 + 6*e**3*h**7*x**3 - 18*e**2*f*g**4*h**3 - 54*e**2*f*g**3*h**
4*x - 54*e**2*f*g**2*h**5*x**2 - 18*e**2*f*g*h**6*x**3 + 18*e*f**2*g**5*h**
2 + 54*e*f**2*g**4*h**3*x + 54*e*f**2*g**3*h**4*x**2 + 18*e*f**2*g**2*h**5*
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x**3 - 6*f**3*g**6*h - 18*f**3*g**5*h**2*x - 18*f**3*g**4*h**3*x**2 - 6*f**
3*g**3*h**4*x**3) - b*e**2*f*g*h**2*p*q/(6*e**3*g**3*h**4 + 18*e**3*g**2*h*
*5*x + 18*e**3*g*h**6*x**2 + 6*e**3*h**7*x**3 - 18*e**2*f*g**4*h**3 - 54*e*
*2*f*g**3*h**4*x - 54*e**2*f*g**2*h**5*x**2 - 18*e**2*f*g*h**6*x**3 + 18*e*
f**2*g**5*h**2 + 54*e*f**2*g**4*h**3*x + 54*e*f**2*g**3*h**4*x**2 + 18*e*f*
*2*g**2*h**5*x**3 - 6*f**3*g**6*h - 18*f**3*g**5*h**2*x - 18*f**3*g**4*h**3
*x**2 - 6*f**3*g**3*h**4*x**3) + 6*b*e**2*f*g*h**2*q*log(d)/(6*e**3*g**3*h*
*4 + 18*e**3*g**2*h**5*x + 18*e**3*g*h**6*x**2 + 6*e**3*h**7*x**3 - 18*e**2
*f*g**4*h**3 - 54*e**2*f*g**3*h**4*x - 54*e**2*f*g**2*h**5*x**2 - 18*e**2*f
*g*h**6*x**3 + 18*e*f**2*g**5*h**2 + 54*e*f**2*g**4*h**3*x + 54*e*f**2*g**3
*h**4*x**2 + 18*e*f**2*g**2*h**5*x**3 - 6*f**3*g**6*h - 18*f**3*g**5*h**2*x
 - 18*f**3*g**4*h**3*x**2 - 6*f**3*g**3*h**4*x**3) + 6*b*e**2*f*g*h**2*log(
c)/(6*e**3*g**3*h**4 + 18*e**3*g**2*h**5*x + 18*e**3*g*h**6*x**2 + 6*e**3*h
**7*x**3 - 18*e**2*f*g**4*h**3 - 54*e**2*f*g**3*h**4*x - 54*e**2*f*g**2*h**
5*x**2 - 18*e**2*f*g*h**6*x**3 + 18*e*f**2*g**5*h**2 + 54*e*f**2*g**4*h**3*
x + 54*e*f**2*g**3*h**4*x**2 + 18*e*f**2*g**2*h**5*x**3 - 6*f**3*g**6*h - 1
8*f**3*g**5*h**2*x - 18*f**3*g**4*h**3*x**2 - 6*f**3*g**3*h**4*x**3) - b*e*
*2*f*h**3*p*q*x/(6*e**3*g**3*h**4 + 18*e**3*g**2*h**5*x + 18*e**3*g*h**6*x*
*2 + 6*e**3*h**7*x**3 - 18*e**2*f*g**4*h**3 - 54*e**2*f*g**3*h**4*x - 54*e*
*2*f*g**2*h**5*x**2 - 18*e**2*f*g*h**6*x**3 + 18*e*f**2*g**5*h**2 + 54*e*f*
*2*g**4*h**3*x + 54*e*f**2*g**3*h**4*x**2 + 18*e*f**2*g**2*h**5*x**3 - 6*f*
*3*g**6*h - 18*f**3*g**5*h**2*x - 18*f**3*g**4*h**3*x**2 - 6*f**3*g**3*h**4
*x**3) - 6*b*e*f**2*g**2*h*p*q*log(e + f*x)/(6*e**3*g**3*h**4 + 18*e**3*g**
2*h**5*x + 18*e**3*g*h**6*x**2 + 6*e**3*h**7*x**3 - 18*e**2*f*g**4*h**3 - 5
4*e**2*f*g**3*h**4*x - 54*e**2*f*g**2*h**5*x**2 - 18*e**2*f*g*h**6*x**3 + 1
8*e*f**2*g**5*h**2 + 54*e*f**2*g**4*h**3*x + 54*e*f**2*g**3*h**4*x**2 + 18*
e*f**2*g**2*h**5*x**3 - 6*f**3*g**6*h - 18*f**3*g**5*h**2*x - 18*f**3*g**4*
h**3*x**2 - 6*f**3*g**3*h**4*x**3) + 4*b*e*f**2*g**2*h*p*q/(6*e**3*g**3*h**
4 + 18*e**3*g**2*h**5*x + 18*e**3*g*h**6*x**2 + 6*e**3*h**7*x**3 - 18*e**2*
f*g**4*h**3 - 54*e**2*f*g**3*h**4*x - 54*e**2*f*g**2*h**5*x**2 - 18*e**2*f*
g*h**6*x**3 + 18*e*f**2*g**5*h**2 + 54*e*f**2*g**4*h**3*x + 54*e*f**2*g**3*
h**4*x**2 + 18*e*f**2*g**2*h**5*x**3 - 6*f**3*g**6*h - 18*f**3*g**5*h**2*x
 - 18*f**3*g**4*h**3*x**2 - 6*f**3*g**3*h**4*x**3) - 6*b*e*f**2*g**2*h*q*log
(d)/(6*e**3*g**3*h**4 + 18*e**3*g**2*h**5*x + 18*e**3*g*h**6*x**2 + 6*e**3*
h**7*x**3 - 18*e**2*f*g**4*h**3 - 54*e**2*f*g**3*h**4*x - 54*e**2*f*g**2*h*
*5*x**2 - 18*e**2*f*g*h**6*x**3 + 18*e*f**2*g**5*h**2 + 54*e*f**2*g**4*h**3
*x + 54*e*f**2*g**3*h**4*x**2 + 18*e*f**2*g**2*h**5*x**3 - 6*f**3*g**6*h -
18*f**3*g**5*h**2*x - 18*f**3*g**4*h**3*x**2 - 6*f**3*g**3*h**4*x**3) - 6*b
*e*f**2*g**2*h*log(c)/(6*e**3*g**3*h**4 + 18*e**3*g**2*h**5*x + 18*e**3*g*h
**6*x**2 + 6*e**3*h**7*x**3 - 18*e**2*f*g**4*h**3 - 54*e**2*f*g**3*h**4*x -
 54*e**2*f*g**2*h**5*x**2 - 18*e**2*f*g*h**6*x**3 + 18*e*f**2*g**5*h**2 + 5
4*e*f**2*g**4*h**3*x + 54*e*f**2*g**3*h**4*x**2 + 18*e*f**2*g**2*h**5*x**3
 - 6*f**3*g**6*h - 18*f**3*g**5*h**2*x - 18*f**3*g**4*h**3*x**2 - 6*f**3*g**
3*h**4*x**3) + 6*b*e*f**2*g*h**2*p*q*x/(6*e**3*g**3*h**4 + 18*e**3*g**2*h**
5*x + 18*e**3*g*h**6*x**2 + 6*e**3*h**7*x**3 - 18*e**2*f*g**4*h**3 - 54*e**
2*f*g**3*h**4*x - 54*e**2*f*g**2*h**5*x**2 - 18*e**2*f*g*h**6*x**3 + 18*e*f
**2*g**5*h**2 + 54*e*f**2*g**4*h**3*x + 54*e*f**2*g**3*h**4*x**2 + 18*e*f**
2*g**2*h**5*x**3 - 6*f**3*g**6*h - 18*f**3*g**5*h**2*x - 18*f**3*g**4*h**3*
x**2 - 6*f**3*g**3*h**4*x**3) + 2*b*e*f**2*h**3*p*q*x**2/(6*e**3*g**3*h**4
 + 18*e**3*g**2*h**5*x + 18*e**3*g*h**6*x**2 + 6*e**3*h**7*x**3 - 18*e**2*f*
g**4*h**3 - 54*e**2*f*g**3*h**4*x - 54*e**2*f*g**2*h**5*x**2 - 18*e**2*f*g*
h**6*x**3 + 18*e*f**2*g**5*h**2 + 54*e*f**2*g**4*h**3*x + 54*e*f**2*g**3*h*
*4*x**2 + 18*e*f**2*g**2*h**5*x**3 - 6*f**3*g**6*h - 18*f**3*g**5*h**2*x -
18*f**3*g**4*h**3*x**2 - 6*f**3*g**3*h**4*x**3) + 2*b*f**3*g**3*p*q*log(g/h
 + x)/(6*e**3*g**3*h**4 + 18*e**3*g**2*h**5*x + 18*e**3*g*h**6*x**2 + 6*e**
3*h**7*x**3 - 18*e**2*f*g**4*h**3 - 54*e**2*f*g**3*h**4*x - 54*e**2*f*g**2*
h**5*x**2 - 18*e**2*f*g*h**6*x**3 + 18*e*f**2*g**5*h**2 + 54*e*f**2*g**4*h*
*3*x + 54*e*f**2*g**3*h**4*x**2 + 18*e*f**2*g**2*h**5*x**3 - 6*f**3*g**6*h
 - 18*f**3*g**5*h**2*x - 18*f**3*g**4*h**3*x**2 - 6*f**3*g**3*h**4*x**3) - 3
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*b*f**3*g**3*p*q/(6*e**3*g**3*h**4 + 18*e**3*g**2*h**5*x + 18*e**3*g*h**6*x
**2 + 6*e**3*h**7*x**3 - 18*e**2*f*g**4*h**3 - 54*e**2*f*g**3*h**4*x - 54*e
**2*f*g**2*h**5*x**2 - 18*e**2*f*g*h**6*x**3 + 18*e*f**2*g**5*h**2 + 54*e*f
**2*g**4*h**3*x + 54*e*f**2*g**3*h**4*x**2 + 18*e*f**2*g**2*h**5*x**3 - 6*f
**3*g**6*h - 18*f**3*g**5*h**2*x - 18*f**3*g**4*h**3*x**2 - 6*f**3*g**3*h**
4*x**3) - 6*b*f**3*g**2*h*p*q*x*log(e + f*x)/(6*e**3*g**3*h**4 + 18*e**3*g*
*2*h**5*x + 18*e**3*g*h**6*x**2 + 6*e**3*h**7*x**3 - 18*e**2*f*g**4*h**3 -
54*e**2*f*g**3*h**4*x - 54*e**2*f*g**2*h**5*x**2 - 18*e**2*f*g*h**6*x**3 +
18*e*f**2*g**5*h**2 + 54*e*f**2*g**4*h**3*x + 54*e*f**2*g**3*h**4*x**2 + 18
*e*f**2*g**2*h**5*x**3 - 6*f**3*g**6*h - 18*f**3*g**5*h**2*x - 18*f**3*g**4
*h**3*x**2 - 6*f**3*g**3*h**4*x**3) + 6*b*f**3*g**2*h*p*q*x*log(g/h + x)/(6
*e**3*g**3*h**4 + 18*e**3*g**2*h**5*x + 18*e**3*g*h**6*x**2 + 6*e**3*h**7*x
**3 - 18*e**2*f*g**4*h**3 - 54*e**2*f*g**3*h**4*x - 54*e**2*f*g**2*h**5*x**
2 - 18*e**2*f*g*h**6*x**3 + 18*e*f**2*g**5*h**2 + 54*e*f**2*g**4*h**3*x + 5
4*e*f**2*g**3*h**4*x**2 + 18*e*f**2*g**2*h**5*x**3 - 6*f**3*g**6*h - 18*f**
3*g**5*h**2*x - 18*f**3*g**4*h**3*x**2 - 6*f**3*g**3*h**4*x**3) - 5*b*f**3*
g**2*h*p*q*x/(6*e**3*g**3*h**4 + 18*e**3*g**2*h**5*x + 18*e**3*g*h**6*x**2
+ 6*e**3*h**7*x**3 - 18*e**2*f*g**4*h**3 - 54*e**2*f*g**3*h**4*x - 54*e**2*
f*g**2*h**5*x**2 - 18*e**2*f*g*h**6*x**3 + 18*e*f**2*g**5*h**2 + 54*e*f**2*
g**4*h**3*x + 54*e*f**2*g**3*h**4*x**2 + 18*e*f**2*g**2*h**5*x**3 - 6*f**3*
g**6*h - 18*f**3*g**5*h**2*x - 18*f**3*g**4*h**3*x**2 - 6*f**3*g**3*h**4*x*
*3) - 6*b*f**3*g**2*h*q*x*log(d)/(6*e**3*g**3*h**4 + 18*e**3*g**2*h**5*x +
18*e**3*g*h**6*x**2 + 6*e**3*h**7*x**3 - 18*e**2*f*g**4*h**3 - 54*e**2*f*g*
*3*h**4*x - 54*e**2*f*g**2*h**5*x**2 - 18*e**2*f*g*h**6*x**3 + 18*e*f**2*g*
*5*h**2 + 54*e*f**2*g**4*h**3*x + 54*e*f**2*g**3*h**4*x**2 + 18*e*f**2*g**2
*h**5*x**3 - 6*f**3*g**6*h - 18*f**3*g**5*h**2*x - 18*f**3*g**4*h**3*x**2 -
 6*f**3*g**3*h**4*x**3) - 6*b*f**3*g**2*h*x*log(c)/(6*e**3*g**3*h**4 + 18*e
**3*g**2*h**5*x + 18*e**3*g*h**6*x**2 + 6*e**3*h**7*x**3 - 18*e**2*f*g**4*h
**3 - 54*e**2*f*g**3*h**4*x - 54*e**2*f*g**2*h**5*x**2 - 18*e**2*f*g*h**6*x
**3 + 18*e*f**2*g**5*h**2 + 54*e*f**2*g**4*h**3*x + 54*e*f**2*g**3*h**4*x**
2 + 18*e*f**2*g**2*h**5*x**3 - 6*f**3*g**6*h - 18*f**3*g**5*h**2*x - 18*f**
3*g**4*h**3*x**2 - 6*f**3*g**3*h**4*x**3) - 6*b*f**3*g*h**2*p*q*x**2*log(e
+ f*x)/(6*e**3*g**3*h**4 + 18*e**3*g**2*h**5*x + 18*e**3*g*h**6*x**2 + 6*e*
*3*h**7*x**3 - 18*e**2*f*g**4*h**3 - 54*e**2*f*g**3*h**4*x - 54*e**2*f*g**2
*h**5*x**2 - 18*e**2*f*g*h**6*x**3 + 18*e*f**2*g**5*h**2 + 54*e*f**2*g**4*h
**3*x + 54*e*f**2*g**3*h**4*x**2 + 18*e*f**2*g**2*h**5*x**3 - 6*f**3*g**6*h
 - 18*f**3*g**5*h**2*x - 18*f**3*g**4*h**3*x**2 - 6*f**3*g**3*h**4*x**3) +
6*b*f**3*g*h**2*p*q*x**2*log(g/h + x)/(6*e**3*g**3*h**4 + 18*e**3*g**2*h**5
*x + 18*e**3*g*h**6*x**2 + 6*e**3*h**7*x**3 - 18*e**2*f*g**4*h**3 - 54*e**2
*f*g**3*h**4*x - 54*e**2*f*g**2*h**5*x**2 - 18*e**2*f*g*h**6*x**3 + 18*e*f*
*2*g**5*h**2 + 54*e*f**2*g**4*h**3*x + 54*e*f**2*g**3*h**4*x**2 + 18*e*f**2
*g**2*h**5*x**3 - 6*f**3*g**6*h - 18*f**3*g**5*h**2*x - 18*f**3*g**4*h**3*x
**2 - 6*f**3*g**3*h**4*x**3) - 2*b*f**3*g*h**2*p*q*x**2/(6*e**3*g**3*h**4 +
 18*e**3*g**2*h**5*x + 18*e**3*g*h**6*x**2 + 6*e**3*h**7*x**3 - 18*e**2*f*g
**4*h**3 - 54*e**2*f*g**3*h**4*x - 54*e**2*f*g**2*h**5*x**2 - 18*e**2*f*g*h
**6*x**3 + 18*e*f**2*g**5*h**2 + 54*e*f**2*g**4*h**3*x + 54*e*f**2*g**3*h**
4*x**2 + 18*e*f**2*g**2*h**5*x**3 - 6*f**3*g**6*h - 18*f**3*g**5*h**2*x - 1
8*f**3*g**4*h**3*x**2 - 6*f**3*g**3*h**4*x**3) - 6*b*f**3*g*h**2*q*x**2*log
(d)/(6*e**3*g**3*h**4 + 18*e**3*g**2*h**5*x + 18*e**3*g*h**6*x**2 + 6*e**3*
h**7*x**3 - 18*e**2*f*g**4*h**3 - 54*e**2*f*g**3*h**4*x - 54*e**2*f*g**2*h*
*5*x**2 - 18*e**2*f*g*h**6*x**3 + 18*e*f**2*g**5*h**2 + 54*e*f**2*g**4*h**3
*x + 54*e*f**2*g**3*h**4*x**2 + 18*e*f**2*g**2*h**5*x**3 - 6*f**3*g**6*h -
18*f**3*g**5*h**2*x - 18*f**3*g**4*h**3*x**2 - 6*f**3*g**3*h**4*x**3) - 6*b
*f**3*g*h**2*x**2*log(c)/(6*e**3*g**3*h**4 + 18*e**3*g**2*h**5*x + 18*e**3*
g*h**6*x**2 + 6*e**3*h**7*x**3 - 18*e**2*f*g**4*h**3 - 54*e**2*f*g**3*h**4*
x - 54*e**2*f*g**2*h**5*x**2 - 18*e**2*f*g*h**6*x**3 + 18*e*f**2*g**5*h**2
+ 54*e*f**2*g**4*h**3*x + 54*e*f**2*g**3*h**4*x**2 + 18*e*f**2*g**2*h**5*x*
*3 - 6*f**3*g**6*h - 18*f**3*g**5*h**2*x - 18*f**3*g**4*h**3*x**2 - 6*f**3*
g**3*h**4*x**3) - 2*b*f**3*h**3*p*q*x**3*log(e + f*x)/(6*e**3*g**3*h**4 + 1
```

```
8*e**3*g**2*h**5*x + 18*e**3*g*h**6*x**2 + 6*e**3*h**7*x**3 - 18*e**2*f*g**
4*h**3 - 54*e**2*f*g**3*h**4*x - 54*e**2*f*g**2*h**5*x**2 - 18*e**2*f*g*h**
6*x**3 + 18*e*f**2*g**5*h**2 + 54*e*f**2*g**4*h**3*x + 54*e*f**2*g**3*h**4*
x**2 + 18*e*f**2*g**2*h**5*x**3 - 6*f**3*g**6*h - 18*f**3*g**5*h**2*x - 18*
f**3*g**4*h**3*x**2 - 6*f**3*g**3*h**4*x**3) + 2*b*f**3*h**3*p*q*x**3*log(g
/h + x)/(6*e**3*g**3*h**4 + 18*e**3*g**2*h**5*x + 18*e**3*g*h**6*x**2 + 6*e
**3*h**7*x**3 - 18*e**2*f*g**4*h**3 - 54*e**2*f*g**3*h**4*x - 54*e**2*f*g**
2*h**5*x**2 - 18*e**2*f*g*h**6*x**3 + 18*e*f**2*g**5*h**2 + 54*e*f**2*g**4*
h**3*x + 54*e*f**2*g**3*h**4*x**2 + 18*e*f**2*g**2*h**5*x**3 - 6*f**3*g**6*
h - 18*f**3*g**5*h**2*x - 18*f**3*g**4*h**3*x**2 - 6*f**3*g**3*h**4*x**3) -
 2*b*f**3*h**3*q*x**3*log(d)/(6*e**3*g**3*h**4 + 18*e**3*g**2*h**5*x + 18*e
**3*g*h**6*x**2 + 6*e**3*h**7*x**3 - 18*e**2*f*g**4*h**3 - 54*e**2*f*g**3*h
**4*x - 54*e**2*f*g**2*h**5*x**2 - 18*e**2*f*g*h**6*x**3 + 18*e*f**2*g**5*h
**2 + 54*e*f**2*g**4*h**3*x + 54*e*f**2*g**3*h**4*x**2 + 18*e*f**2*g**2*h**
5*x**3 - 6*f**3*g**6*h - 18*f**3*g**5*h**2*x - 18*f**3*g**4*h**3*x**2 - 6*f
**3*g**3*h**4*x**3) - 2*b*f**3*h**3*x**3*log(c)/(6*e**3*g**3*h**4 + 18*e**3
*g**2*h**5*x + 18*e**3*g*h**6*x**2 + 6*e**3*h**7*x**3 - 18*e**2*f*g**4*h**3
 - 54*e**2*f*g**3*h**4*x - 54*e**2*f*g**2*h**5*x**2 - 18*e**2*f*g*h**6*x**3
 + 18*e*f**2*g**5*h**2 + 54*e*f**2*g**4*h**3*x + 54*e*f**2*g**3*h**4*x**2 +
 18*e*f**2*g**2*h**5*x**3 - 6*f**3*g**6*h - 18*f**3*g**5*h**2*x - 18*f**3*g
**4*h**3*x**2 - 6*f**3*g**3*h**4*x**3), True))
```

3.428 $\int (g+hx)^3 \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2 dx$

Optimal. Leaf size=409

$$-\frac{2bh^2pq(e+fx)^3(fg-eh)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{3f^4}-\frac{bpq(fg-eh)^4\log(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{2f^4h}$$

```
[Out] 2*b^2*(-e*h+f*g)^3*p^2*q^2*x/f^3+3/4*b^2*h*(-e*h+f*g)^2*p^2*q^2*(f*x+e)^2/f
^4+2/9*b^2*h^2*(-e*h+f*g)*p^2*q^2*(f*x+e)^3/f^4+1/32*b^2*h^3*p^2*q^2*(f*x+e
)^4/f^4+1/4*b^2*(-e*h+f*g)^4*p^2*q^2*ln(f*x+e)^2/f^4/h-2*b*(-e*h+f*g)^3*p*q
*(f*x+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))/f^4-3/2*b*h*(-e*h+f*g)^2*p*q*(f*x+e)^2
*(a+b*ln(c*(d*(f*x+e)^p)^q))/f^4-2/3*b*h^2*(-e*h+f*g)*p*q*(f*x+e)^3*(a+b*ln
(c*(d*(f*x+e)^p)^q))/f^4-1/8*b*h^3*p*q*(f*x+e)^4*(a+b*ln(c*(d*(f*x+e)^p)^q)
)/f^4-1/2*b*(-e*h+f*g)^4*p*q*ln(f*x+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))/f^4/h+1/
4*(h*x+g)^4*(a+b*ln(c*(d*(f*x+e)^p)^q))^2/h
```

Rubi [A] time = 1.04, antiderivative size = 325, normalized size of antiderivative = 0.79, number of steps used = 7, number of rules used = 7, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.250$, Rules used = {2398, 2411, 43, 2334, 12, 2301, 2445}

$$-\frac{bpq\left(\frac{36h^2(e+fx)^2(fg-eh)^2}{f^4}+\frac{16h^3(e+fx)^3(fg-eh)}{f^4}+\frac{48h(e+fx)(fg-eh)^3}{f^4}+\frac{12(fg-eh)^4\log(e+fx)}{f^4}+\frac{3h^4(e+fx)^4}{f^4}\right)\left(a+b\log\left(c\left(d(e+\right.\right.\right.}{24h}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)^3*(a + b*Log[c*(d*(e + f*x)^p)^q])^2,x]
```

```
[Out] (2*b^2*(f*g - e*h)^3*p^2*q^2*x)/f^3 + (3*b^2*h*(f*g - e*h)^2*p^2*q^2*(e + f
*x)^2)/(4*f^4) + (2*b^2*h^2*(f*g - e*h)*p^2*q^2*(e + f*x)^3)/(9*f^4) + (b^2
*h^3*p^2*q^2*(e + f*x)^4)/(32*f^4) + (b^2*(f*g - e*h)^4*p^2*q^2*Log[e + f*x
]^2)/(4*f^4*h) - (b*p*q*((48*h*(f*g - e*h)^3*(e + f*x))/f^4 + (36*h^2*(f*g
- e*h)^2*(e + f*x)^2)/f^4 + (16*h^3*(f*g - e*h)*(e + f*x)^3)/f^4 + (3*h^4*(
e + f*x)^4)/f^4 + (12*(f*g - e*h)^4*Log[e + f*x])/f^4)*(a + b*Log[c*(d*(e +
 f*x)^p)^q]))/(24*h) + ((g + h*x)^4*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/(4*
h)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2334

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*(x_)^(m_.)*((d_) + (e_.)*(x_)^(r_
.))^(q_.), x_Symbol] :> With[{u = IntHide[x^m*(d + e*x^r)^q, x]}, Simp[u*(a
```

```
 + b*Log[c*x^n]), x] - Dist[b*n, Int[SimplifyIntegrand[u/x, x], x], x]] /;
FreeQ[{a, b, c, d, e, n, r}, x] && IGtQ[q, 0] && IntegerQ[m] &&  !(EqQ[q, 1
] && EqQ[m, -1])
```

Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int (g+hx)^3 \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2 dx = \text{Subst}\left(\int (g+hx)^3 \left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2 dx, cd^q(e+fx)^{pq}\right.$$

$$= \frac{(g+hx)^4 \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{4h} - \text{Subst}\left(\frac{(bfpq)\int \frac{(g+hx)^4}{}}{}\right.$$

$$= \frac{(g+hx)^4 \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{4h} - \text{Subst}\left(\frac{(bpq)\,\text{Subst}\left(\int\right.}{}\right.$$

$$= -\frac{bpq\left(\frac{48h(fg-eh)^3(e+fx)}{f^4} + \frac{36h^2(fg-eh)^2(e+fx)^2}{f^4} + \frac{16h^3(fg-eh)(e+fx)^3}{f^4} + \frac{3h}{}\right.}{24h}$$

$$= -\frac{bpq\left(\frac{48h(fg-eh)^3(e+fx)}{f^4} + \frac{36h^2(fg-eh)^2(e+fx)^2}{f^4} + \frac{16h^3(fg-eh)(e+fx)^3}{f^4} + \frac{3h}{}\right.}{24h}$$

$$= \frac{2b^2(fg-eh)^3p^2q^2x}{f^3} + \frac{3b^2h(fg-eh)^2p^2q^2(e+fx)^2}{4f^4} + \frac{2b^2h^2(fg-}{}$$

$$= \frac{2b^2(fg-eh)^3p^2q^2x}{f^3} + \frac{3b^2h(fg-eh)^2p^2q^2(e+fx)^2}{4f^4} + \frac{2b^2h^2(fg-}{}$$

Mathematica [A] time = 0.29, size = 400, normalized size = 0.98

$$\frac{64bh^2pq(fg-eh)\left(bfpqx\left(3e^2+3efx+f^2x^2\right)-3(e+fx)^3\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\right)+9bh^3pq\left(bfpqx\left(4e^3+\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)^3*(a + b*Log[c*(d*(e + f*x)^p)^q])^2,x]
```

```
[Out] (288*(f*g - e*h)^3*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2 + 432*h*(f*
g - e*h)^2*(e + f*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2 + 288*h^2*(f*g -
e*h)*(e + f*x)^3*(a + b*Log[c*(d*(e + f*x)^p)^q])^2 + 72*h^3*(e + f*x)^4*(a
 + b*Log[c*(d*(e + f*x)^p)^q])^2 - 576*b*(f*g - e*h)^3*p*q*(f*(a - b*p*q)*x
 + b*(e + f*x)*Log[c*(d*(e + f*x)^p)^q]) + 216*b*h*(f*g - e*h)^2*p*q*(b*f*p
*q*x*(2*e + f*x) - 2*(e + f*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])) + 64*b*h
^2*(f*g - e*h)*p*q*(b*f*p*q*x*(3*e^2 + 3*e*f*x + f^2*x^2) - 3*(e + f*x)^3*(
a + b*Log[c*(d*(e + f*x)^p)^q])) + 9*b*h^3*p*q*(b*f*p*q*x*(4*e^3 + 6*e^2*f*
x + 4*e*f^2*x^2 + f^3*x^3) - 4*(e + f*x)^4*(a + b*Log[c*(d*(e + f*x)^p)^q])
))/(288*f^4)
```

fricas [B] time = 0.58, size = 1742, normalized size = 4.26

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^3*(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="fricas")
```

```
[Out] 1/288*(9*(b^2*f^4*h^3*p^2*q^2 - 4*a*b*f^4*h^3*p*q + 8*a^2*f^4*h^3)*x^4 + 4*
(72*a^2*f^4*g*h^2 + (16*b^2*f^4*g*h^2 - 7*b^2*e*f^3*h^3)*p^2*q^2 - 12*(4*a*
b*f^4*g*h^2 - a*b*e*f^3*h^3)*p*q)*x^3 + 6*(72*a^2*f^4*g^2*h + (36*b^2*f^4*g
^2*h - 40*b^2*e*f^3*g*h^2 + 13*b^2*e^2*f^2*h^3)*p^2*q^2 - 12*(6*a*b*f^4*g^2
*h - 4*a*b*e*f^3*g*h^2 + a*b*e^2*f^2*h^3)*p*q)*x^2 + 72*(b^2*f^4*h^3*p^2*q^
2*x^4 + 4*b^2*f^4*g*h^2*p^2*q^2*x^3 + 6*b^2*f^4*g^2*h*p^2*q^2*x^2 + 4*b^2*f
^4*g^3*p^2*q^2*x + (4*b^2*e*f^3*g^3 - 6*b^2*e^2*f^2*g^2*h + 4*b^2*e^3*f*g*h
^2 - b^2*e^4*h^3)*p^2*q^2)*log(f*x + e)^2 + 72*(b^2*f^4*h^3*x^4 + 4*b^2*f^4
*g*h^2*x^3 + 6*b^2*f^4*g^2*h*x^2 + 4*b^2*f^4*g^3*x)*log(c)^2 + 72*(b^2*f^4*
h^3*q^2*x^4 + 4*b^2*f^4*g*h^2*q^2*x^3 + 6*b^2*f^4*g^2*h*q^2*x^2 + 4*b^2*f^4
*g^3*q^2*x)*log(d)^2 + 12*(24*a^2*f^4*g^3 + (48*b^2*f^4*g^3 - 108*b^2*e*f^3
*g^2*h + 88*b^2*e^2*f^2*g*h^2 - 25*b^2*e^3*f*h^3)*p^2*q^2 - 12*(4*a*b*f^4*g
^3 - 6*a*b*e*f^3*g^2*h + 4*a*b*e^2*f^2*g*h^2 - a*b*e^3*f*h^3)*p*q)*x - 12*(
(48*b^2*e*f^3*g^3 - 108*b^2*e^2*f^2*g^2*h + 88*b^2*e^3*f*g*h^2 - 25*b^2*e^4
*h^3)*p^2*q^2 + 3*(b^2*f^4*h^3*p^2*q^2 - 4*a*b*f^4*h^3*p*q)*x^4 - 4*(12*a*b
*f^4*g*h^2*p*q - (4*b^2*f^4*g*h^2 - b^2*e*f^3*h^3)*p^2*q^2)*x^3 - 12*(4*a*b
*e*f^3*g^3 - 6*a*b*e^2*f^2*g^2*h + 4*a*b*e^3*f*g*h^2 - a*b*e^4*h^3)*p*q - 6
*(12*a*b*f^4*g^2*h*p*q - (6*b^2*f^4*g^2*h - 4*b^2*e*f^3*g*h^2 + b^2*e^2*f^2
*h^3)*p^2*q^2)*x^2 - 12*(4*a*b*f^4*g^3*p*q - (4*b^2*f^4*g^3 - 6*b^2*e*f^3*g
^2*h + 4*b^2*e^2*f^2*g*h^2 - b^2*e^3*f*h^3)*p^2*q^2)*x - 12*(b^2*f^4*h^3*p*
q*x^4 + 4*b^2*f^4*g*h^2*p*q*x^3 + 6*b^2*f^4*g^2*h*p*q*x^2 + 4*b^2*f^4*g^3*p
*q*x + (4*b^2*e*f^3*g^3 - 6*b^2*e^2*f^2*g^2*h + 4*b^2*e^3*f*g*h^2 - b^2*e^4
*h^3)*p*q)*log(c) - 12*(b^2*f^4*h^3*p*q^2*x^4 + 4*b^2*f^4*g*h^2*p*q^2*x^3 +
 6*b^2*f^4*g^2*h*p*q^2*x^2 + 4*b^2*f^4*g^3*p*q^2*x + (4*b^2*e*f^3*g^3 - 6*b
^2*e^2*f^2*g^2*h + 4*b^2*e^3*f*g*h^2 - b^2*e^4*h^3)*p*q^2)*log(d))*log(f*x
+ e) - 12*(3*(b^2*f^4*h^3*p*q - 4*a*b*f^4*h^3)*x^4 - 4*(12*a*b*f^4*g*h^2 -
(4*b^2*f^4*g*h^2 - b^2*e*f^3*h^3)*p*q)*x^3 - 6*(12*a*b*f^4*g^2*h - (6*b^2*f
^4*g^2*h - 4*b^2*e*f^3*g*h^2 + b^2*e^2*f^2*h^3)*p*q)*x^2 - 12*(4*a*b*f^4*g^
3 - (4*b^2*f^4*g^3 - 6*b^2*e*f^3*g^2*h + 4*b^2*e^2*f^2*g*h^2 - b^2*e^3*f*h^
3)*p*q)*x)*log(c) - 12*(3*(b^2*f^4*h^3*p*q^2 - 4*a*b*f^4*h^3*q)*x^4 - 4*(12
*a*b*f^4*g*h^2*q - (4*b^2*f^4*g*h^2 - b^2*e*f^3*h^3)*p*q^2)*x^3 - 6*(12*a*b
*f^4*g^2*h*q - (6*b^2*f^4*g^2*h - 4*b^2*e*f^3*g*h^2 + b^2*e^2*f^2*h^3)*p*q^
2)*x^2 - 12*(4*a*b*f^4*g^3*q - (4*b^2*f^4*g^3 - 6*b^2*e*f^3*g^2*h + 4*b^2*e
^2*f^2*g*h^2 - b^2*e^3*f*h^3)*p*q^2)*x - 12*(b^2*f^4*h^3*q*x^4 + 4*b^2*f^4*
g*h^2*q*x^3 + 6*b^2*f^4*g^2*h*q*x^2 + 4*b^2*f^4*g^3*q*x)*log(c))*log(d))/f^
4
```

giac [B] time = 0.49, size = 3938, normalized size = 9.63

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^3*(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="giac")
```

```
[Out] (f*x + e)*b^2*g^3*p^2*q^2*log(f*x + e)^2/f + 3/2*(f*x + e)^2*b^2*g^2*h*p^2*
q^2*log(f*x + e)^2/f^2 + (f*x + e)^3*b^2*g*h^2*p^2*q^2*log(f*x + e)^2/f^3 +
 1/4*(f*x + e)^4*b^2*h^3*p^2*q^2*log(f*x + e)^2/f^4 - 3*(f*x + e)*b^2*g^2*h
*p^2*q^2*e*log(f*x + e)^2/f^2 - 3*(f*x + e)^2*b^2*g*h^2*p^2*q^2*e*log(f*x +
 e)^2/f^3 - (f*x + e)^3*b^2*h^3*p^2*q^2*e*log(f*x + e)^2/f^4 - 2*(f*x + e)*
b^2*g^3*p^2*q^2*log(f*x + e)/f - 3/2*(f*x + e)^2*b^2*g^2*h*p^2*q^2*log(f*x
+ e)/f^2 - 2/3*(f*x + e)^3*b^2*g*h^2*p^2*q^2*log(f*x + e)/f^3 - 1/8*(f*x +
e)^4*b^2*h^3*p^2*q^2*log(f*x + e)/f^4 + 6*(f*x + e)*b^2*g^2*h*p^2*q^2*e*log
(f*x + e)/f^2 + 3*(f*x + e)^2*b^2*g*h^2*p^2*q^2*e*log(f*x + e)/f^3 + 2/3*(f
*x + e)^3*b^2*h^3*p^2*q^2*e*log(f*x + e)/f^4 + 3*(f*x + e)*b^2*g*h^2*p^2*q^
2*e^2*log(f*x + e)^2/f^3 + 3/2*(f*x + e)^2*b^2*h^3*p^2*q^2*e^2*log(f*x + e)
^2/f^4 + 2*(f*x + e)*b^2*g^3*p*q^2*log(f*x + e)*log(d)/f + 3*(f*x + e)^2*b^
2*g^2*h*p*q^2*log(f*x + e)*log(d)/f^2 + 2*(f*x + e)^3*b^2*g*h^2*p*q^2*log(f
*x + e)*log(d)/f^3 + 1/2*(f*x + e)^4*b^2*h^3*p*q^2*log(f*x + e)*log(d)/f^4
```

- 6*(f*x + e)*b^2*g^2*h*p*q^2*e*log(f*x + e)*log(d)/f^2 - 6*(f*x + e)^2*b^2
*g*h^2*p*q^2*e*log(f*x + e)*log(d)/f^3 - 2*(f*x + e)^3*b^2*h^3*p*q^2*e*log(
f*x + e)*log(d)/f^4 + 2*(f*x + e)*b^2*g^3*p^2*q^2/f + 3/4*(f*x + e)^2*b^2*g
^2*h*p^2*q^2/f^2 + 2/9*(f*x + e)^3*b^2*g*h^2*p^2*q^2/f^3 + 1/32*(f*x + e)^4
*b^2*h^3*p^2*q^2/f^4 - 6*(f*x + e)*b^2*g^2*h*p^2*q^2*e/f^2 - 3/2*(f*x + e)^
2*b^2*g*h^2*p^2*q^2*e/f^3 - 2/9*(f*x + e)^3*b^2*h^3*p^2*q^2*e/f^4 - 6*(f*x
+ e)*b^2*g*h^2*p^2*q^2*e^2*log(f*x + e)/f^3 - 3/2*(f*x + e)^2*b^2*h^3*p^2*q
^2*e^2*log(f*x + e)/f^4 - (f*x + e)*b^2*h^3*p^2*q^2*e^3*log(f*x + e)^2/f^4
+ 2*(f*x + e)*b^2*g^3*p*q*log(f*x + e)*log(c)/f + 3*(f*x + e)^2*b^2*g^2*h*p
*q*log(f*x + e)*log(c)/f^2 + 2*(f*x + e)^3*b^2*g*h^2*p*q*log(f*x + e)*log(c
)/f^3 + 1/2*(f*x + e)^4*b^2*h^3*p*q*log(f*x + e)*log(c)/f^4 - 6*(f*x + e)*b
^2*g^2*h*p*q*e*log(f*x + e)*log(c)/f^2 - 6*(f*x + e)^2*b^2*g*h^2*p*q*e*log(
f*x + e)*log(c)/f^3 - 2*(f*x + e)^3*b^2*h^3*p*q*e*log(f*x + e)*log(c)/f^4 -
2*(f*x + e)*b^2*g^3*p*q^2*log(d)/f - 3/2*(f*x + e)^2*b^2*g^2*h*p*q^2*log(d
)/f^2 - 2/3*(f*x + e)^3*b^2*g*h^2*p*q^2*log(d)/f^3 - 1/8*(f*x + e)^4*b^2*h^
3*p*q^2*log(d)/f^4 + 6*(f*x + e)*b^2*g^2*h*p*q^2*e*log(d)/f^2 + 3*(f*x + e)
^2*b^2*g*h^2*p*q^2*e*log(d)/f^3 + 2/3*(f*x + e)^3*b^2*h^3*p*q^2*e*log(d)/f^
4 + 6*(f*x + e)*b^2*g*h^2*p*q^2*e^2*log(f*x + e)*log(d)/f^3 + 3*(f*x + e)^2
*b^2*h^3*p*q^2*e^2*log(f*x + e)*log(d)/f^4 + (f*x + e)*b^2*g^3*q^2*log(d)^2
/f + 3/2*(f*x + e)^2*b^2*g^2*h*q^2*log(d)^2/f^2 + (f*x + e)^3*b^2*g*h^2*q^2
log(d)^2/f^3 + 1/4(f*x + e)^4*b^2*h^3*q^2*log(d)^2/f^4 - 3*(f*x + e)*b^2*
g^2*h*q^2*e*log(d)^2/f^2 - 3*(f*x + e)^2*b^2*g*h^2*q^2*e*log(d)^2/f^3 - (f*
x + e)^3*b^2*h^3*q^2*e*log(d)^2/f^4 + 6*(f*x + e)*b^2*g*h^2*p^2*q^2*e^2/f^3
+ 3/4*(f*x + e)^2*b^2*h^3*p^2*q^2*e^2/f^4 + 2*(f*x + e)*a*b*g^3*p*q*log(f*
x + e)/f + 3*(f*x + e)^2*a*b*g^2*h*p*q*log(f*x + e)/f^2 + 2*(f*x + e)^3*a*b
*g*h^2*p*q*log(f*x + e)/f^3 + 1/2*(f*x + e)^4*a*b*h^3*p*q*log(f*x + e)/f^4
+ 2*(f*x + e)*b^2*h^3*p^2*q^2*e^3*log(f*x + e)/f^4 - 6*(f*x + e)*a*b*g^2*h*
p*q*e*log(f*x + e)/f^2 - 6*(f*x + e)^2*a*b*g*h^2*p*q*e*log(f*x + e)/f^3 - 2
*(f*x + e)^3*a*b*h^3*p*q*e*log(f*x + e)/f^4 - 2*(f*x + e)*b^2*g^3*p*q*log(c
)/f - 3/2*(f*x + e)^2*b^2*g^2*h*p*q*log(c)/f^2 - 2/3*(f*x + e)^3*b^2*g*h^2*
p*q*log(c)/f^3 - 1/8*(f*x + e)^4*b^2*h^3*p*q*log(c)/f^4 + 6*(f*x + e)*b^2*g
^2*h*p*q*e*log(c)/f^2 + 3*(f*x + e)^2*b^2*g*h^2*p*q*e*log(c)/f^3 + 2/3*(f*x
+ e)^3*b^2*h^3*p*q*e*log(c)/f^4 + 6*(f*x + e)*b^2*g*h^2*p*q*e^2*log(f*x +
e)*log(c)/f^3 + 3*(f*x + e)^2*b^2*h^3*p*q*e^2*log(f*x + e)*log(c)/f^4 - 6*(
f*x + e)*b^2*g*h^2*p*q^2*e^2*log(d)/f^3 - 3/2*(f*x + e)^2*b^2*h^3*p*q^2*e^2
log(d)/f^4 - 2(f*x + e)*b^2*h^3*p*q^2*e^3*log(f*x + e)*log(d)/f^4 + 2*(f*
x + e)*b^2*g^3*q*log(c)*log(d)/f + 3*(f*x + e)^2*b^2*g^2*h*q*log(c)*log(d)/
f^2 + 2*(f*x + e)^3*b^2*g*h^2*q*log(c)*log(d)/f^3 + 1/2*(f*x + e)^4*b^2*h^3
*q*log(c)*log(d)/f^4 - 6*(f*x + e)*b^2*g^2*h*q*e*log(c)*log(d)/f^2 - 6*(f*x
+ e)^2*b^2*g*h^2*q*e*log(c)*log(d)/f^3 - 2*(f*x + e)^3*b^2*h^3*q*e*log(c)*
log(d)/f^4 + 3*(f*x + e)*b^2*g*h^2*q^2*e^2*log(d)^2/f^3 + 3/2*(f*x + e)^2*b
^2*h^3*q^2*e^2*log(d)^2/f^4 - 2*(f*x + e)*a*b*g^3*p*q/f - 3/2*(f*x + e)^2*a
*b*g^2*h*p*q/f^2 - 2/3*(f*x + e)^3*a*b*g*h^2*p*q/f^3 - 1/8*(f*x + e)^4*a*b*
h^3*p*q/f^4 - 2*(f*x + e)*b^2*h^3*p^2*q^2*e^3/f^4 + 6*(f*x + e)*a*b*g^2*h*p
*q*e/f^2 + 3*(f*x + e)^2*a*b*g*h^2*p*q*e/f^3 + 2/3*(f*x + e)^3*a*b*h^3*p*q*
e/f^4 + 6*(f*x + e)*a*b*g*h^2*p*q*e^2*log(f*x + e)/f^3 + 3*(f*x + e)^2*a*b*
h^3*p*q*e^2*log(f*x + e)/f^4 - 6*(f*x + e)*b^2*g*h^2*p*q*e^2*log(c)/f^3 - 3
/2*(f*x + e)^2*b^2*h^3*p*q*e^2*log(c)/f^4 - 2*(f*x + e)*b^2*h^3*p*q*e^3*log
(f*x + e)*log(c)/f^4 + (f*x + e)*b^2*g^3*log(c)^2/f + 3/2*(f*x + e)^2*b^2*g
^2*h*log(c)^2/f^2 + (f*x + e)^3*b^2*g*h^2*log(c)^2/f^3 + 1/4*(f*x + e)^4*b^
2*h^3*log(c)^2/f^4 - 3*(f*x + e)*b^2*g^2*h*e*log(c)^2/f^2 - 3*(f*x + e)^2*b
^2*g*h^2*e*log(c)^2/f^3 - (f*x + e)^3*b^2*h^3*e*log(c)^2/f^4 + 2*(f*x + e)*
a*b*g^3*q*log(d)/f + 3*(f*x + e)^2*a*b*g^2*h*q*log(d)/f^2 + 2*(f*x + e)^3*a
*b*g*h^2*q*log(d)/f^3 + 1/2*(f*x + e)^4*a*b*h^3*q*log(d)/f^4 + 2*(f*x + e)*
b^2*h^3*p*q^2*e^3*log(d)/f^4 - 6*(f*x + e)*a*b*g^2*h*q*e*log(d)/f^2 - 6*(f*
x + e)^2*a*b*g*h^2*q*e*log(d)/f^3 - 2*(f*x + e)^3*a*b*h^3*q*e*log(d)/f^4 +
6*(f*x + e)*b^2*g*h^2*q*e^2*log(c)*log(d)/f^3 + 3*(f*x + e)^2*b^2*h^3*q*e^2
*log(c)*log(d)/f^4 - (f*x + e)*b^2*h^3*q^2*e^3*log(d)^2/f^4 - 6*(f*x + e)*a
*b*g*h^2*p*q*e^2/f^3 - 3/2*(f*x + e)^2*a*b*h^3*p*q*e^2/f^4 - 2*(f*x + e)*a*

```
b*h^3*p*q*e^3*log(f*x + e)/f^4 + 2*(f*x + e)*a*b*g^3*log(c)/f + 3*(f*x + e)
^2*a*b*g^2*h*log(c)/f^2 + 2*(f*x + e)^3*a*b*g*h^2*log(c)/f^3 + 1/2*(f*x + e
)^4*a*b*h^3*log(c)/f^4 + 2*(f*x + e)*b^2*h^3*p*q*e^3*log(c)/f^4 - 6*(f*x +
e)*a*b*g^2*h*e*log(c)/f^2 - 6*(f*x + e)^2*a*b*g*h^2*e*log(c)/f^3 - 2*(f*x +
 e)^3*a*b*h^3*e*log(c)/f^4 + 3*(f*x + e)*b^2*g*h^2*e^2*log(c)^2/f^3 + 3/2*(
f*x + e)^2*b^2*h^3*e^2*log(c)^2/f^4 + 6*(f*x + e)*a*b*g*h^2*q*e^2*log(d)/f^
3 + 3*(f*x + e)^2*a*b*h^3*q*e^2*log(d)/f^4 - 2*(f*x + e)*b^2*h^3*q*e^3*log(
c)*log(d)/f^4 + (f*x + e)*a^2*g^3/f + 3/2*(f*x + e)^2*a^2*g^2*h/f^2 + (f*x
+ e)^3*a^2*g*h^2/f^3 + 1/4*(f*x + e)^4*a^2*h^3/f^4 + 2*(f*x + e)*a*b*h^3*p*
q*e^3/f^4 - 3*(f*x + e)*a^2*g^2*h*e/f^2 - 3*(f*x + e)^2*a^2*g*h^2*e/f^3 - (
f*x + e)^3*a^2*h^3*e/f^4 + 6*(f*x + e)*a*b*g*h^2*e^2*log(c)/f^3 + 3*(f*x +
e)^2*a*b*h^3*e^2*log(c)/f^4 - (f*x + e)*b^2*h^3*e^3*log(c)^2/f^4 - 2*(f*x +
 e)*a*b*h^3*q*e^3*log(d)/f^4 + 3*(f*x + e)*a^2*g*h^2*e^2/f^3 + 3/2*(f*x + e
)^2*a^2*h^3*e^2/f^4 - 2*(f*x + e)*a*b*h^3*e^3*log(c)/f^4 - (f*x + e)*a^2*h^
3*e^3/f^4
```

maple [F] time = 0.36, size = 0, normalized size = 0.00

$$\int \left(hx+g\right)^{3} \left(b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)+a\right)^{2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^3*(b*ln(c*(d*(f*x+e)^p)^q)+a)^2,x)
```

```
[Out] int((h*x+g)^3*(b*ln(c*(d*(f*x+e)^p)^q)+a)^2,x)
```

maxima [B] time = 0.69, size = 895, normalized size = 2.19

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^3*(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="maxima")
```

```
[Out] 1/4*b^2*h^3*x^4*log(((f*x + e)^p*d)^q*c)^2 + 1/2*a*b*h^3*x^4*log(((f*x + e)
^p*d)^q*c) + b^2*g*h^2*x^3*log(((f*x + e)^p*d)^q*c)^2 + 1/4*a^2*h^3*x^4 - 2
*a*b*f*g^3*p*q*(x/f - e*log(f*x + e)/f^2) - 1/24*a*b*f*h^3*p*q*(12*e^4*log(
f*x + e)/f^5 + (3*f^3*x^4 - 4*e*f^2*x^3 + 6*e^2*f*x^2 - 12*e^3*x)/f^4) + 1/
3*a*b*f*g*h^2*p*q*(6*e^3*log(f*x + e)/f^4 - (2*f^2*x^3 - 3*e*f*x^2 + 6*e^2*
x)/f^3) - 3/2*a*b*f*g^2*h*p*q*(2*e^2*log(f*x + e)/f^3 + (f*x^2 - 2*e*x)/f^2
) + 2*a*b*g*h^2*x^3*log(((f*x + e)^p*d)^q*c) + 3/2*b^2*g^2*h*x^2*log(((f*x
+ e)^p*d)^q*c)^2 + a^2*g*h^2*x^3 + 3*a*b*g^2*h*x^2*log(((f*x + e)^p*d)^q*c)
 + b^2*g^3*x*log(((f*x + e)^p*d)^q*c)^2 + 3/2*a^2*g^2*h*x^2 + 2*a*b*g^3*x*l
og(((f*x + e)^p*d)^q*c) - (2*f*p*q*(x/f - e*log(f*x + e)/f^2)*log(((f*x + e
)^p*d)^q*c) + (e*log(f*x + e)^2 - 2*f*x + 2*e*log(f*x + e))*p^2*q^2/f)*b^2*
g^3 - 3/4*(2*f*p*q*(2*e^2*log(f*x + e)/f^3 + (f*x^2 - 2*e*x)/f^2)*log(((f*x
 + e)^p*d)^q*c) - (f^2*x^2 + 2*e^2*log(f*x + e)^2 - 6*e*f*x + 6*e^2*log(f*x
 + e))*p^2*q^2/f^2)*b^2*g^2*h + 1/18*(6*f*p*q*(6*e^3*log(f*x + e)/f^4 - (2*
f^2*x^3 - 3*e*f*x^2 + 6*e^2*x)/f^3)*log(((f*x + e)^p*d)^q*c) + (4*f^3*x^3 -
 15*e*f^2*x^2 - 18*e^3*log(f*x + e)^2 + 66*e^2*f*x - 66*e^3*log(f*x + e))*p
^2*q^2/f^3)*b^2*g*h^2 - 1/288*(12*f*p*q*(12*e^4*log(f*x + e)/f^5 + (3*f^3*x
^4 - 4*e*f^2*x^3 + 6*e^2*f*x^2 - 12*e^3*x)/f^4)*log(((f*x + e)^p*d)^q*c) -
(9*f^4*x^4 - 28*e*f^3*x^3 + 78*e^2*f^2*x^2 + 72*e^4*log(f*x + e)^2 - 300*e^
3*f*x + 300*e^4*log(f*x + e))*p^2*q^2/f^4)*b^2*h^3 + a^2*g^3*x
```

mupad [B] time = 0.92, size = 1154, normalized size = 2.82

$$x^3\left(\frac{h^2\left(6a^2eh+18a^2fg-b^2ehp^2q^2+4b^2fgp^2q^2-12abfgpq\right)}{18f}-\frac{eh^3\left(8a^2-4abpq+b^2p^2q^2\right)}{24f}\right)+\ln\Big(c$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)^3*(a + b*log(c*(d*(e + f*x)^p)^q))^2,x)
```

```
[Out] x^3*((h^2*(6*a^2*e*h + 18*a^2*f*g - b^2*e*h*p^2*q^2 + 4*b^2*f*g*p^2*q^2 - 1
2*a*b*f*g*p*q))/(18*f) - (e*h^3*(8*a^2 + b^2*p^2*q^2 - 4*a*b*p*q))/(24*f))
+ log(c*(d*(e + f*x)^p)^q)*((x*((e*((e*((4*b*h^2*(a*e*h + 3*a*f*g - b*f*g*p
*q))/f - (b*e*h^3*(4*a - b*p*q))/f))/f - (6*b*g*h*(2*a*e*h + 2*a*f*g - b*f*
g*p*q))/f))/f + (4*b*g^2*(3*a*e*h + a*f*g - b*f*g*p*q))/f))/2 + (x^3*((4*b*
h^2*(a*e*h + 3*a*f*g - b*f*g*p*q))/(3*f) - (b*e*h^3*(4*a - b*p*q))/(3*f)))/
2 - (x^2*((e*((4*b*h^2*(a*e*h + 3*a*f*g - b*f*g*p*q))/f - (b*e*h^3*(4*a - b
*p*q))/f))/(2*f) - (3*b*g*h*(2*a*e*h + 2*a*f*g - b*f*g*p*q))/f))/2 + (b*h^3
*x^4*(4*a - b*p*q))/8) + log(c*(d*(e + f*x)^p)^q)^2*(b^2*g^3*x - (e*(b^2*e^
3*h^3 - 4*b^2*f^3*g^3 + 6*b^2*e*f^2*g^2*h - 4*b^2*e^2*f*g*h^2))/(4*f^4) + (
b^2*h^3*x^4)/4 + (3*b^2*g^2*h*x^2)/2 + b^2*g*h^2*x^3) + x*((24*a^2*f^3*g^3
- 12*b^2*e^3*h^3*p^2*q^2 + 48*b^2*f^3*g^3*p^2*q^2 + 72*a^2*e*f^2*g^2*h - 48
*a*b*f^3*g^3*p*q - 72*b^2*e*f^2*g^2*h*p^2*q^2 + 48*b^2*e^2*f*g*h^2*p^2*q^2)
/(24*f^3) + (e*((e*((h^2*(6*a^2*e*h + 18*a^2*f*g - b^2*e*h*p^2*q^2 + 4*b^2*
f*g*p^2*q^2 - 12*a*b*f*g*p*q))/(6*f) - (e*h^3*(8*a^2 + b^2*p^2*q^2 - 4*a*b*
p*q))/(8*f)))/f - (h*(12*a^2*f^2*g^2 + b^2*e^2*h^2*p^2*q^2 + 6*b^2*f^2*g^2*
p^2*q^2 + 12*a^2*e*f*g*h - 12*a*b*f^2*g^2*p*q - 4*b^2*e*f*g*h*p^2*q^2))/(4*
f^2)))/f) - x^2*((e*((h^2*(6*a^2*e*h + 18*a^2*f*g - b^2*e*h*p^2*q^2 + 4*b^2
*f*g*p^2*q^2 - 12*a*b*f*g*p*q))/(6*f) - (e*h^3*(8*a^2 + b^2*p^2*q^2 - 4*a*b
*p*q))/(8*f)))/(2*f) - (h*(12*a^2*f^2*g^2 + b^2*e^2*h^2*p^2*q^2 + 6*b^2*f^2
*g^2*p^2*q^2 + 12*a^2*e*f*g*h - 12*a*b*f^2*g^2*p*q - 4*b^2*e*f*g*h*p^2*q^2)
)/(8*f^2)) + (log(e + f*x)*(25*b^2*e^4*h^3*p^2*q^2 - 12*a*b*e^4*h^3*p*q - 4
8*b^2*e*f^3*g^3*p^2*q^2 - 88*b^2*e^3*f*g*h^2*p^2*q^2 + 108*b^2*e^2*f^2*g^2*
h*p^2*q^2 + 48*a*b*e*f^3*g^3*p*q + 48*a*b*e^3*f*g*h^2*p*q - 72*a*b*e^2*f^2*
g^2*h*p*q))/(24*f^4) + (h^3*x^4*(8*a^2 + b^2*p^2*q^2 - 4*a*b*p*q))/32
```

sympy [A] time = 67.67, size = 2623, normalized size = 6.41

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**3*(a+b*ln(c*(d*(f*x+e)**p)**q))**2,x)
```

```
[Out] Piecewise((a**2*g**3*x + 3*a**2*g**2*h*x**2/2 + a**2*g*h**2*x**3 + a**2*h**
3*x**4/4 - a*b*e**4*h**3*p*q*log(e + f*x)/(2*f**4) + 2*a*b*e**3*g*h**2*p*q*
log(e + f*x)/f**3 + a*b*e**3*h**3*p*q*x/(2*f**3) - 3*a*b*e**2*g**2*h*p*q*lo
g(e + f*x)/f**2 - 2*a*b*e**2*g*h**2*p*q*x/f**2 - a*b*e**2*h**3*p*q*x**2/(4*
f**2) + 2*a*b*e*g**3*p*q*log(e + f*x)/f + 3*a*b*e*g**2*h*p*q*x/f + a*b*e*g*
h**2*p*q*x**2/f + a*b*e*h**3*p*q*x**3/(6*f) + 2*a*b*g**3*p*q*x*log(e + f*x)
 - 2*a*b*g**3*p*q*x + 2*a*b*g**3*q*x*log(d) + 2*a*b*g**3*x*log(c) + 3*a*b*g
```

```
**2*h*p*q*x**2*log(e + f*x) - 3*a*b*g**2*h*p*q*x**2/2 + 3*a*b*g**2*h*q*x**2
*log(d) + 3*a*b*g**2*h*x**2*log(c) + 2*a*b*g*h**2*p*q*x**3*log(e + f*x) - 2
*a*b*g*h**2*p*q*x**3/3 + 2*a*b*g*h**2*q*x**3*log(d) + 2*a*b*g*h**2*x**3*log
(c) + a*b*h**3*p*q*x**4*log(e + f*x)/2 - a*b*h**3*p*q*x**4/8 + a*b*h**3*q*x
**4*log(d)/2 + a*b*h**3*x**4*log(c)/2 - b**2*e**4*h**3*p**2*q**2*log(e + f*
x)**2/(4*f**4) + 25*b**2*e**4*h**3*p**2*q**2*log(e + f*x)/(24*f**4) - b**2*
e**4*h**3*p*q**2*log(d)*log(e + f*x)/(2*f**4) - b**2*e**4*h**3*p*q*log(c)*l
og(e + f*x)/(2*f**4) + b**2*e**3*g*h**2*p**2*q**2*log(e + f*x)**2/f**3 - 11
*b**2*e**3*g*h**2*p**2*q**2*log(e + f*x)/(3*f**3) + 2*b**2*e**3*g*h**2*p*q*
*2*log(d)*log(e + f*x)/f**3 + 2*b**2*e**3*g*h**2*p*q*log(c)*log(e + f*x)/f*
*3 + b**2*e**3*h**3*p**2*q**2*x*log(e + f*x)/(2*f**3) - 25*b**2*e**3*h**3*p
**2*q**2*x/(24*f**3) + b**2*e**3*h**3*p*q**2*x*log(d)/(2*f**3) + b**2*e**3*
h**3*p*q*x*log(c)/(2*f**3) - 3*b**2*e**2*g**2*h*p**2*q**2*log(e + f*x)**2/(
2*f**2) + 9*b**2*e**2*g**2*h*p**2*q**2*log(e + f*x)/(2*f**2) - 3*b**2*e**2*
g**2*h*p*q**2*log(d)*log(e + f*x)/f**2 - 3*b**2*e**2*g**2*h*p*q*log(c)*log(
e + f*x)/f**2 - 2*b**2*e**2*g*h**2*p**2*q**2*x*log(e + f*x)/f**2 + 11*b**2*
e**2*g*h**2*p**2*q**2*x/(3*f**2) - 2*b**2*e**2*g*h**2*p*q**2*x*log(d)/f**2
- 2*b**2*e**2*g*h**2*p*q*x*log(c)/f**2 - b**2*e**2*h**3*p**2*q**2*x**2*log(
e + f*x)/(4*f**2) + 13*b**2*e**2*h**3*p**2*q**2*x**2/(48*f**2) - b**2*e**2*
h**3*p*q**2*x**2*log(d)/(4*f**2) - b**2*e**2*h**3*p*q*x**2*log(c)/(4*f**2)
+ b**2*e*g**3*p**2*q**2*log(e + f*x)**2/f - 2*b**2*e*g**3*p**2*q**2*log(e +
 f*x)/f + 2*b**2*e*g**3*p*q**2*log(d)*log(e + f*x)/f + 2*b**2*e*g**3*p*q*lo
g(c)*log(e + f*x)/f + 3*b**2*e*g**2*h*p**2*q**2*x*log(e + f*x)/f - 9*b**2*e
*g**2*h*p**2*q**2*x/(2*f) + 3*b**2*e*g**2*h*p*q**2*x*log(d)/f + 3*b**2*e*g*
*2*h*p*q*x*log(c)/f + b**2*e*g*h**2*p**2*q**2*x**2*log(e + f*x)/f - 5*b**2*
e*g*h**2*p**2*q**2*x**2/(6*f) + b**2*e*g*h**2*p*q**2*x**2*log(d)/f + b**2*e
*g*h**2*p*q*x**2*log(c)/f + b**2*e*h**3*p**2*q**2*x**3*log(e + f*x)/(6*f) -
 7*b**2*e*h**3*p**2*q**2*x**3/(72*f) + b**2*e*h**3*p*q**2*x**3*log(d)/(6*f)
 + b**2*e*h**3*p*q*x**3*log(c)/(6*f) + b**2*g**3*p**2*q**2*x*log(e + f*x)**
2 - 2*b**2*g**3*p**2*q**2*x*log(e + f*x) + 2*b**2*g**3*p**2*q**2*x + 2*b**2
*g**3*p*q**2*x*log(d)*log(e + f*x) - 2*b**2*g**3*p*q**2*x*log(d) + 2*b**2*g
**3*p*q*x*log(c)*log(e + f*x) - 2*b**2*g**3*p*q*x*log(c) + b**2*g**3*q**2*x
*log(d)**2 + 2*b**2*g**3*q*x*log(c)*log(d) + b**2*g**3*x*log(c)**2 + 3*b**2
*g**2*h*p**2*q**2*x**2*log(e + f*x)**2/2 - 3*b**2*g**2*h*p**2*q**2*x**2*log
(e + f*x)/2 + 3*b**2*g**2*h*p**2*q**2*x**2/4 + 3*b**2*g**2*h*p*q**2*x**2*lo
g(d)*log(e + f*x) - 3*b**2*g**2*h*p*q**2*x**2*log(d)/2 + 3*b**2*g**2*h*p*q*
x**2*log(c)*log(e + f*x) - 3*b**2*g**2*h*p*q*x**2*log(c)/2 + 3*b**2*g**2*h*
q**2*x**2*log(d)**2/2 + 3*b**2*g**2*h*q*x**2*log(c)*log(d) + 3*b**2*g**2*h*
x**2*log(c)**2/2 + b**2*g*h**2*p**2*q**2*x**3*log(e + f*x)**2 - 2*b**2*g*h*
*2*p**2*q**2*x**3*log(e + f*x)/3 + 2*b**2*g*h**2*p**2*q**2*x**3/9 + 2*b**2*
g*h**2*p*q**2*x**3*log(d)*log(e + f*x) - 2*b**2*g*h**2*p*q**2*x**3*log(d)/3
 + 2*b**2*g*h**2*p*q*x**3*log(c)*log(e + f*x) - 2*b**2*g*h**2*p*q*x**3*log(
c)/3 + b**2*g*h**2*q**2*x**3*log(d)**2 + 2*b**2*g*h**2*q*x**3*log(c)*log(d)
 + b**2*g*h**2*x**3*log(c)**2 + b**2*h**3*p**2*q**2*x**4*log(e + f*x)**2/4
- b**2*h**3*p**2*q**2*x**4*log(e + f*x)/8 + b**2*h**3*p**2*q**2*x**4/32 + b
**2*h**3*p*q**2*x**4*log(d)*log(e + f*x)/2 - b**2*h**3*p*q**2*x**4*log(d)/8
 + b**2*h**3*p*q*x**4*log(c)*log(e + f*x)/2 - b**2*h**3*p*q*x**4*log(c)/8 +
 b**2*h**3*q**2*x**4*log(d)**2/4 + b**2*h**3*q*x**4*log(c)*log(d)/2 + b**2*
h**3*x**4*log(c)**2/4, Ne(f, 0)), ((a + b*log(c*(d*e**p)**q))**2*(g**3*x +
3*g**2*h*x**2/2 + g*h**2*x**3 + h**3*x**4/4), True))
```

3.429 $\int (g+hx)^2 \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2\,dx$

Optimal. Leaf size=323

$$-\frac{2bpq(fg-eh)^3\log(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{3f^3h}-\frac{2bpq(e+fx)(fg-eh)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{f^3}-$$

```
[Out] 2*b^2*(-e*h+f*g)^2*p^2*q^2*x/f^2+1/2*b^2*h*(-e*h+f*g)*p^2*q^2*(f*x+e)^2/f^3
+2/27*b^2*h^2*p^2*q^2*(f*x+e)^3/f^3+1/3*b^2*(-e*h+f*g)^3*p^2*q^2*ln(f*x+e)^
2/f^3/h-2*b*(-e*h+f*g)^2*p*q*(f*x+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))/f^3-b*h*(-
e*h+f*g)*p*q*(f*x+e)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))/f^3-2/9*b*h^2*p*q*(f*x+e
)^3*(a+b*ln(c*(d*(f*x+e)^p)^q))/f^3-2/3*b*(-e*h+f*g)^3*p*q*ln(f*x+e)*(a+b*l
n(c*(d*(f*x+e)^p)^q))/f^3/h+1/3*(h*x+g)^3*(a+b*ln(c*(d*(f*x+e)^p)^q))^2/h
```

Rubi [A] time = 0.83, antiderivative size = 264, normalized size of antiderivative = 0.82, number of steps used = 9, number of rules used = 8, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.286$, Rules used = {2398, 2411, 43, 2334, 12, 14, 2301, 2445}

$$-\frac{bpq\left(\frac{9h^2(e+fx)^2(fg-eh)}{f^3}+\frac{18h(e+fx)(fg-eh)^2}{f^3}+\frac{6(fg-eh)^3\log(e+fx)}{f^3}+\frac{2h^3(e+fx)^3}{f^3}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{9h}+\frac{(g+hx)^3\left(\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2,x]
```

```
[Out] (2*b^2*(f*g - e*h)^2*p^2*q^2*x)/f^2 + (b^2*h*(f*g - e*h)*p^2*q^2*(e + f*x)^
2)/(2*f^3) + (2*b^2*h^2*p^2*q^2*(e + f*x)^3)/(27*f^3) + (b^2*(f*g - e*h)^3*
p^2*q^2*Log[e + f*x]^2)/(3*f^3*h) - (b*p*q*((18*h*(f*g - e*h)^2*(e + f*x))/
f^3 + (9*h^2*(f*g - e*h)*(e + f*x)^2)/f^3 + (2*h^3*(e + f*x)^3)/f^3 + (6*(f
*g - e*h)^3*Log[e + f*x])/f^3)*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(9*h) + ((
g + h*x)^3*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/(3*h)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2334

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*(x_)^(m_.)*((d_) + (e_.)*(x_)^(r_
.))^(q_.), x_Symbol] :> With[{u = IntHide[x^m*(d + e*x^r)^q, x]}, Simp[u*(a
 + b*Log[c*x^n]), x] - Dist[b*n, Int[SimplifyIntegrand[u/x, x], x], x]] /;
FreeQ[{a, b, c, d, e, n, r}, x] && IGtQ[q, 0] && IntegerQ[m] &&  !(EqQ[q, 1
] && EqQ[m, -1])
```

Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int (g+hx)^2 \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2 dx = \text{Subst}\left(\int (g+hx)^2 \left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2 dx, cd^q(e+fx)^{pq}\right.$$

$$= \frac{(g+hx)^3 \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{3h} - \text{Subst}\left((2bfpq)\int \frac{(g+hx}{}\right.$$

$$= \frac{(g+hx)^3 \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{3h} - \text{Subst}\left(\frac{(2bpq)\,\text{Subst}\left(\right.}{}\right.$$

$$= -\frac{bpq\left(\frac{18h(fg-eh)^2(e+fx)}{f^3} + \frac{9h^2(fg-eh)(e+fx)^2}{f^3} + \frac{2h^3(e+fx)^3}{f^3} + \frac{6(fg-eh)^3\log}{f^3}\right.}{9h}$$

$$= -\frac{bpq\left(\frac{18h(fg-eh)^2(e+fx)}{f^3} + \frac{9h^2(fg-eh)(e+fx)^2}{f^3} + \frac{2h^3(e+fx)^3}{f^3} + \frac{6(fg-eh)^3\log}{f^3}\right.}{9h}$$

$$= -\frac{bpq\left(\frac{18h(fg-eh)^2(e+fx)}{f^3} + \frac{9h^2(fg-eh)(e+fx)^2}{f^3} + \frac{2h^3(e+fx)^3}{f^3} + \frac{6(fg-eh)^3\log}{f^3}\right.}{9h}$$

$$= -\frac{bpq\left(\frac{18h(fg-eh)^2(e+fx)}{f^3} + \frac{9h^2(fg-eh)(e+fx)^2}{f^3} + \frac{2h^3(e+fx)^3}{f^3} + \frac{6(fg-eh)^3\log}{f^3}\right.}{9h}$$

$$= \frac{2b^2(fg-eh)^2p^2q^2x}{f^2} + \frac{b^2h(fg-eh)p^2q^2(e+fx)^2}{2f^3} + \frac{2b^2h^2p^2q^2(e}{27f^3}$$

Mathematica [A] time = 0.21, size = 277, normalized size = 0.86

$$\frac{4bh^2pq\left(bfpqx\left(3e^2+3efx+f^2x^2\right)-3(e+fx)^3\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\right)+54h(e+fx)^2(fg-eh)\left(a+b\log\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2,x]
```

```
[Out] (54*(f*g - e*h)^2*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2 + 54*h*(f*g
 - e*h)*(e + f*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2 + 18*h^2*(e + f*x)^3*
(a + b*Log[c*(d*(e + f*x)^p)^q])^2 - 108*b*(f*g - e*h)^2*p*q*(f*(a - b*p*q)
*x + b*(e + f*x)*Log[c*(d*(e + f*x)^p)^q]) + 27*b*h*(f*g - e*h)*p*q*(b*f*p*
q*x*(2*e + f*x) - 2*(e + f*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])) + 4*b*h^2
*p*q*(b*f*p*q*x*(3*e^2 + 3*e*f*x + f^2*x^2) - 3*(e + f*x)^3*(a + b*Log[c*(d
*(e + f*x)^p)^q])))/(54*f^3)
```

fricas [B] time = 0.49, size = 1137, normalized size = 3.52

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="fricas")
```

```
[Out] 1/54*(2*(2*b^2*f^3*h^2*p^2*q^2 - 6*a*b*f^3*h^2*p*q + 9*a^2*f^3*h^2)*x^3 + 3
*(18*a^2*f^3*g*h + (9*b^2*f^3*g*h - 5*b^2*e*f^2*h^2)*p^2*q^2 - 6*(3*a*b*f^3
*g*h - a*b*e*f^2*h^2)*p*q)*x^2 + 18*(b^2*f^3*h^2*p^2*q^2*x^3 + 3*b^2*f^3*g*
h*p^2*q^2*x^2 + 3*b^2*f^3*g^2*p^2*q^2*x + (3*b^2*e*f^2*g^2 - 3*b^2*e^2*f*g*
h + b^2*e^3*h^2)*p^2*q^2)*log(f*x + e)^2 + 18*(b^2*f^3*h^2*x^3 + 3*b^2*f^3*
g*h*x^2 + 3*b^2*f^3*g^2*x)*log(c)^2 + 18*(b^2*f^3*h^2*q^2*x^3 + 3*b^2*f^3*g
*h*q^2*x^2 + 3*b^2*f^3*g^2*q^2*x)*log(d)^2 + 6*(9*a^2*f^3*g^2 + (18*b^2*f^3
*g^2 - 27*b^2*e*f^2*g*h + 11*b^2*e^2*f*h^2)*p^2*q^2 - 6*(3*a*b*f^3*g^2 - 3*
a*b*e*f^2*g*h + a*b*e^2*f*h^2)*p*q)*x - 6*((18*b^2*e*f^2*g^2 - 27*b^2*e^2*f
*g*h + 11*b^2*e^3*h^2)*p^2*q^2 + 2*(b^2*f^3*h^2*p^2*q^2 - 3*a*b*f^3*h^2*p*q
)*x^3 - 6*(3*a*b*e*f^2*g^2 - 3*a*b*e^2*f*g*h + a*b*e^3*h^2)*p*q - 3*(6*a*b*
f^3*g*h*p*q - (3*b^2*f^3*g*h - b^2*e*f^2*h^2)*p^2*q^2)*x^2 - 6*(3*a*b*f^3*g
^2*p*q - (3*b^2*f^3*g^2 - 3*b^2*e*f^2*g*h + b^2*e^2*f*h^2)*p^2*q^2)*x - 6*(
b^2*f^3*h^2*p*q*x^3 + 3*b^2*f^3*g*h*p*q*x^2 + 3*b^2*f^3*g^2*p*q*x + (3*b^2*
e*f^2*g^2 - 3*b^2*e^2*f*g*h + b^2*e^3*h^2)*p*q)*log(c) - 6*(b^2*f^3*h^2*p*q
^2*x^3 + 3*b^2*f^3*g*h*p*q^2*x^2 + 3*b^2*f^3*g^2*p*q^2*x + (3*b^2*e*f^2*g^2
 - 3*b^2*e^2*f*g*h + b^2*e^3*h^2)*p*q^2)*log(d))*log(f*x + e) - 6*(2*(b^2*f
^3*h^2*p*q - 3*a*b*f^3*h^2)*x^3 - 3*(6*a*b*f^3*g*h - (3*b^2*f^3*g*h - b^2*e
*f^2*h^2)*p*q)*x^2 - 6*(3*a*b*f^3*g^2 - (3*b^2*f^3*g^2 - 3*b^2*e*f^2*g*h +
b^2*e^2*f*h^2)*p*q)*x)*log(c) - 6*(2*(b^2*f^3*h^2*p*q^2 - 3*a*b*f^3*h^2*q)*
x^3 - 3*(6*a*b*f^3*g*h*q - (3*b^2*f^3*g*h - b^2*e*f^2*h^2)*p*q^2)*x^2 - 6*(
3*a*b*f^3*g^2*q - (3*b^2*f^3*g^2 - 3*b^2*e*f^2*g*h + b^2*e^2*f*h^2)*p*q^2)*
x - 6*(b^2*f^3*h^2*q*x^3 + 3*b^2*f^3*g*h*q*x^2 + 3*b^2*f^3*g^2*q*x)*log(c))
*log(d))/f^3
```

giac [B] time = 0.39, size = 2241, normalized size = 6.94

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="giac")
```

```
[Out] (f*x + e)*b^2*g^2*p^2*q^2*log(f*x + e)^2/f + (f*x + e)^2*b^2*g*h*p^2*q^2*lo
g(f*x + e)^2/f^2 + 1/3*(f*x + e)^3*b^2*h^2*p^2*q^2*log(f*x + e)^2/f^3 - 2*(
f*x + e)*b^2*g*h*p^2*q^2*e*log(f*x + e)^2/f^2 - (f*x + e)^2*b^2*h^2*p^2*q^2
*e*log(f*x + e)^2/f^3 - 2*(f*x + e)*b^2*g^2*p^2*q^2*log(f*x + e)/f - (f*x +
 e)^2*b^2*g*h*p^2*q^2*log(f*x + e)/f^2 - 2/9*(f*x + e)^3*b^2*h^2*p^2*q^2*lo
g(f*x + e)/f^3 + 4*(f*x + e)*b^2*g*h*p^2*q^2*e*log(f*x + e)/f^2 + (f*x + e)
^2*b^2*h^2*p^2*q^2*e*log(f*x + e)/f^3 + (f*x + e)*b^2*h^2*p^2*q^2*e^2*log(f
*x + e)^2/f^3 + 2*(f*x + e)*b^2*g^2*p*q^2*log(f*x + e)*log(d)/f + 2*(f*x +
e)^2*b^2*g*h*p*q^2*log(f*x + e)*log(d)/f^2 + 2/3*(f*x + e)^3*b^2*h^2*p*q^2*
log(f*x + e)*log(d)/f^3 - 4*(f*x + e)*b^2*g*h*p*q^2*e*log(f*x + e)*log(d)/f
^2 - 2*(f*x + e)^2*b^2*h^2*p*q^2*e*log(f*x + e)*log(d)/f^3 + 2*(f*x + e)*b^
2*g^2*p^2*q^2/f + 1/2*(f*x + e)^2*b^2*g*h*p^2*q^2/f^2 + 2/27*(f*x + e)^3*b^
2*h^2*p^2*q^2/f^3 - 4*(f*x + e)*b^2*g*h*p^2*q^2*e/f^2 - 1/2*(f*x + e)^2*b^2
*h^2*p^2*q^2*e/f^3 - 2*(f*x + e)*b^2*h^2*p^2*q^2*e^2*log(f*x + e)/f^3 + 2*(
f*x + e)*b^2*g^2*p*q*log(f*x + e)*log(c)/f + 2*(f*x + e)^2*b^2*g*h*p*q*log(
f*x + e)*log(c)/f^2 + 2/3*(f*x + e)^3*b^2*h^2*p*q*log(f*x + e)*log(c)/f^3 -
 4*(f*x + e)*b^2*g*h*p*q*e*log(f*x + e)*log(c)/f^2 - 2*(f*x + e)^2*b^2*h^2*
p*q*e*log(f*x + e)*log(c)/f^3 - 2*(f*x + e)*b^2*g^2*p*q^2*log(d)/f - (f*x +
 e)^2*b^2*g*h*p*q^2*log(d)/f^2 - 2/9*(f*x + e)^3*b^2*h^2*p*q^2*log(d)/f^3 +
 4*(f*x + e)*b^2*g*h*p*q^2*e*log(d)/f^2 + (f*x + e)^2*b^2*h^2*p*q^2*e*log(d
)/f^3 + 2*(f*x + e)*b^2*h^2*p*q^2*e^2*log(f*x + e)*log(d)/f^3 + (f*x + e)*b
^2*g^2*q^2*log(d)^2/f + (f*x + e)^2*b^2*g*h*q^2*log(d)^2/f^2 + 1/3*(f*x + e
)^3*b^2*h^2*q^2*log(d)^2/f^3 - 2*(f*x + e)*b^2*g*h*q^2*e*log(d)^2/f^2 - (f*
x + e)^2*b^2*h^2*q^2*e*log(d)^2/f^3 + 2*(f*x + e)*b^2*h^2*p^2*q^2*e^2/f^3 +
 2*(f*x + e)*a*b*g^2*p*q*log(f*x + e)/f + 2*(f*x + e)^2*a*b*g*h*p*q*log(f*x
 + e)/f^2 + 2/3*(f*x + e)^3*a*b*h^2*p*q*log(f*x + e)/f^3 - 4*(f*x + e)*a*b*
```

```
g*h*p*q*e*log(f*x + e)/f^2 - 2*(f*x + e)^2*a*b*h^2*p*q*e*log(f*x + e)/f^3 -
 2*(f*x + e)*b^2*g^2*p*q*log(c)/f - (f*x + e)^2*b^2*g*h*p*q*log(c)/f^2 - 2/
9*(f*x + e)^3*b^2*h^2*p*q*log(c)/f^3 + 4*(f*x + e)*b^2*g*h*p*q*e*log(c)/f^2
 + (f*x + e)^2*b^2*h^2*p*q*e*log(c)/f^3 + 2*(f*x + e)*b^2*h^2*p*q*e^2*log(f
*x + e)*log(c)/f^3 - 2*(f*x + e)*b^2*h^2*p*q^2*e^2*log(d)/f^3 + 2*(f*x + e)
*b^2*g^2*q*log(c)*log(d)/f + 2*(f*x + e)^2*b^2*g*h*q*log(c)*log(d)/f^2 + 2/
3*(f*x + e)^3*b^2*h^2*q*log(c)*log(d)/f^3 - 4*(f*x + e)*b^2*g*h*q*e*log(c)*
log(d)/f^2 - 2*(f*x + e)^2*b^2*h^2*q*e*log(c)*log(d)/f^3 + (f*x + e)*b^2*h^
2*q^2*e^2*log(d)^2/f^3 - 2*(f*x + e)*a*b*g^2*p*q/f - (f*x + e)^2*a*b*g*h*p*
q/f^2 - 2/9*(f*x + e)^3*a*b*h^2*p*q/f^3 + 4*(f*x + e)*a*b*g*h*p*q*e/f^2 + (
f*x + e)^2*a*b*h^2*p*q*e/f^3 + 2*(f*x + e)*a*b*h^2*p*q*e^2*log(f*x + e)/f^3
 - 2*(f*x + e)*b^2*h^2*p*q*e^2*log(c)/f^3 + (f*x + e)*b^2*g^2*log(c)^2/f +
(f*x + e)^2*b^2*g*h*log(c)^2/f^2 + 1/3*(f*x + e)^3*b^2*h^2*log(c)^2/f^3 - 2
*(f*x + e)*b^2*g*h*e*log(c)^2/f^2 - (f*x + e)^2*b^2*h^2*e*log(c)^2/f^3 + 2*
(f*x + e)*a*b*g^2*q*log(d)/f + 2*(f*x + e)^2*a*b*g*h*q*log(d)/f^2 + 2/3*(f*
x + e)^3*a*b*h^2*q*log(d)/f^3 - 4*(f*x + e)*a*b*g*h*q*e*log(d)/f^2 - 2*(f*x
 + e)^2*a*b*h^2*q*e*log(d)/f^3 + 2*(f*x + e)*b^2*h^2*q*e^2*log(c)*log(d)/f^
3 - 2*(f*x + e)*a*b*h^2*p*q*e^2/f^3 + 2*(f*x + e)*a*b*g^2*log(c)/f + 2*(f*x
 + e)^2*a*b*g*h*log(c)/f^2 + 2/3*(f*x + e)^3*a*b*h^2*log(c)/f^3 - 4*(f*x +
e)*a*b*g*h*e*log(c)/f^2 - 2*(f*x + e)^2*a*b*h^2*e*log(c)/f^3 + (f*x + e)*b^
2*h^2*e^2*log(c)^2/f^3 + 2*(f*x + e)*a*b*h^2*q*e^2*log(d)/f^3 + (f*x + e)*a
^2*g^2/f + (f*x + e)^2*a^2*g*h/f^2 + 1/3*(f*x + e)^3*a^2*h^2/f^3 - 2*(f*x +
 e)*a^2*g*h*e/f^2 - (f*x + e)^2*a^2*h^2*e/f^3 + 2*(f*x + e)*a*b*h^2*e^2*log
(c)/f^3 + (f*x + e)*a^2*h^2*e^2/f^3
```

maple [F] time = 0.34, size = 0, normalized size = 0.00

$$\int \left(hx+g\right)^{2} \left(b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)+a\right)^{2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^2*(b*ln(c*(d*(f*x+e)^p)^q)+a)^2,x)
```

```
[Out] int((h*x+g)^2*(b*ln(c*(d*(f*x+e)^p)^q)+a)^2,x)
```

maxima [A] time = 0.62, size = 605, normalized size = 1.87

$$\frac{1}{3}\, b^{2}h^{2}x^{3}\log\left(\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)^{2} - 2\, abfg^{2}pq\left(\frac{x}{f}-\frac{e\log\left(fx+e\right)}{f^{2}}\right)+\frac{1}{9}\, abfh^{2}pq\left(\frac{6\,e^{3}\log\left(fx+e\right)}{f^{4}}-\frac{2\,f^{2}x^{3}-3\,efx^{2}}{f^{3}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="maxima")
```

```
[Out] 1/3*b^2*h^2*x^3*log(((f*x + e)^p*d)^q*c)^2 - 2*a*b*f*g^2*p*q*(x/f - e*log(f
*x + e)/f^2) + 1/9*a*b*f*h^2*p*q*(6*e^3*log(f*x + e)/f^4 - (2*f^2*x^3 - 3*e
*f*x^2 + 6*e^2*x)/f^3) - a*b*f*g*h*p*q*(2*e^2*log(f*x + e)/f^3 + (f*x^2 - 2
*e*x)/f^2) + 2/3*a*b*h^2*x^3*log(((f*x + e)^p*d)^q*c) + b^2*g*h*x^2*log(((f
*x + e)^p*d)^q*c)^2 + 1/3*a^2*h^2*x^3 + 2*a*b*g*h*x^2*log(((f*x + e)^p*d)^q
*c) + b^2*g^2*x*log(((f*x + e)^p*d)^q*c)^2 + a^2*g*h*x^2 + 2*a*b*g^2*x*log(
((f*x + e)^p*d)^q*c) - (2*f*p*q*(x/f - e*log(f*x + e)/f^2)*log(((f*x + e)^p
*d)^q*c) + (e*log(f*x + e)^2 - 2*f*x + 2*e*log(f*x + e))*p^2*q^2/f)*b^2*g^2
 - 1/2*(2*f*p*q*(2*e^2*log(f*x + e)/f^3 + (f*x^2 - 2*e*x)/f^2)*log(((f*x +
e)^p*d)^q*c) - (f^2*x^2 + 2*e^2*log(f*x + e)^2 - 6*e*f*x + 6*e^2*log(f*x +
e))*p^2*q^2/f^2)*b^2*g*h + 1/54*(6*f*p*q*(6*e^3*log(f*x + e)/f^4 - (2*f^2*x
^3 - 3*e*f*x^2 + 6*e^2*x)/f^3)*log(((f*x + e)^p*d)^q*c) + (4*f^3*x^3 - 15*e
*f^2*x^2 - 18*e^3*log(f*x + e)^2 + 66*e^2*f*x - 66*e^3*log(f*x + e))*p^2*q^
2/f^3)*b^2*h^2 + a^2*g^2*x
```

mupad [B] time = 0.69, size = 652, normalized size = 2.02

$$\ln\left(c\left(d\left(e+fx\right)^p\right)^q\right)^2\left(b^2g^2x+\frac{b^2h^2x^3}{3}+\frac{e\left(b^2e^2h^2-3b^2efgh+3b^2f^2g^2\right)}{3f^3}+b^2ghx^2\right)+\ln\left(c\left(d\left(e+fx\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)^2*(a + b*log(c*(d*(e + f*x)^p)^q))^2,x)
```

```
[Out] log(c*(d*(e + f*x)^p)^q)^2*(b^2*g^2*x + (b^2*h^2*x^3)/3 + (e*(b^2*e^2*h^2 +
 3*b^2*f^2*g^2 - 3*b^2*e*f*g*h))/(3*f^3) + b^2*g*h*x^2) + log(c*(d*(e + f*x
)^p)^q)*((x^2*((3*b*h*(a*e*h + 2*a*f*g - b*f*g*p*q))/f - (b*e*h^2*(3*a - b*
p*q))/f))/3 - (x*((e*((6*b*h*(a*e*h + 2*a*f*g - b*f*g*p*q))/f - (2*b*e*h^2*
(3*a - b*p*q))/f))/f - (6*b*g*(2*a*e*h + a*f*g - b*f*g*p*q))/f))/3 + (2*b*h
^2*x^3*(3*a - b*p*q))/9) + x*((9*a^2*f^2*g^2 + 6*b^2*e^2*h^2*p^2*q^2 + 18*b
^2*f^2*g^2*p^2*q^2 + 18*a^2*e*f*g*h - 18*a*b*f^2*g^2*p*q - 18*b^2*e*f*g*h*p
^2*q^2)/(9*f^2) - (e*((h*(3*a^2*e*h + 6*a^2*f*g - b^2*e*h*p^2*q^2 + 3*b^2*f
*g*p^2*q^2 - 6*a*b*f*g*p*q))/(3*f) - (e*h^2*(9*a^2 + 2*b^2*p^2*q^2 - 6*a*b*
p*q))/(9*f)))/f) + x^2*((h*(3*a^2*e*h + 6*a^2*f*g - b^2*e*h*p^2*q^2 + 3*b^2
*f*g*p^2*q^2 - 6*a*b*f*g*p*q))/(6*f) - (e*h^2*(9*a^2 + 2*b^2*p^2*q^2 - 6*a*
b*p*q))/(18*f)) - (log(e + f*x)*(11*b^2*e^3*h^2*p^2*q^2 - 6*a*b*e^3*h^2*p*q
 + 18*b^2*e*f^2*g^2*p^2*q^2 - 27*b^2*e^2*f*g*h*p^2*q^2 - 18*a*b*e*f^2*g^2*p
*q + 18*a*b*e^2*f*g*h*p*q))/(9*f^3) + (h^2*x^3*(9*a^2 + 2*b^2*p^2*q^2 - 6*a
*b*p*q))/27
```

sympy [A] time = 32.83, size = 1692, normalized size = 5.24

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**2*(a+b*ln(c*(d*(f*x+e)**p)**q))**2,x)
```

```
[Out] Piecewise((a**2*g**2*x + a**2*g*h*x**2 + a**2*h**2*x**3/3 + 2*a*b*e**3*h**2
*p*q*log(e + f*x)/(3*f**3) - 2*a*b*e**2*g*h*p*q*log(e + f*x)/f**2 - 2*a*b*e
**2*h**2*p*q*x/(3*f**2) + 2*a*b*e*g**2*p*q*log(e + f*x)/f + 2*a*b*e*g*h*p*q
*x/f + a*b*e*h**2*p*q*x**2/(3*f) + 2*a*b*g**2*p*q*x*log(e + f*x) - 2*a*b*g*
*2*p*q*x + 2*a*b*g**2*q*x*log(d) + 2*a*b*g**2*x*log(c) + 2*a*b*g*h*p*q*x**2
*log(e + f*x) - a*b*g*h*p*q*x**2 + 2*a*b*g*h*q*x**2*log(d) + 2*a*b*g*h*x**2
*log(c) + 2*a*b*h**2*p*q*x**3*log(e + f*x)/3 - 2*a*b*h**2*p*q*x**3/9 + 2*a*
b*h**2*q*x**3*log(d)/3 + 2*a*b*h**2*x**3*log(c)/3 + b**2*e**3*h**2*p**2*q**
2*log(e + f*x)**2/(3*f**3) - 11*b**2*e**3*h**2*p**2*q**2*log(e + f*x)/(9*f*
*3) + 2*b**2*e**3*h**2*p*q**2*log(d)*log(e + f*x)/(3*f**3) + 2*b**2*e**3*h*
*2*p*q*log(c)*log(e + f*x)/(3*f**3) - b**2*e**2*g*h*p**2*q**2*log(e + f*x)*
*2/f**2 + 3*b**2*e**2*g*h*p**2*q**2*log(e + f*x)/f**2 - 2*b**2*e**2*g*h*p*q
**2*log(d)*log(e + f*x)/f**2 - 2*b**2*e**2*g*h*p*q*log(c)*log(e + f*x)/f**2
 - 2*b**2*e**2*h**2*p**2*q**2*x*log(e + f*x)/(3*f**2) + 11*b**2*e**2*h**2*p
**2*q**2*x/(9*f**2) - 2*b**2*e**2*h**2*p*q**2*x*log(d)/(3*f**2) - 2*b**2*e*
*2*h**2*p*q*x*log(c)/(3*f**2) + b**2*e*g**2*p**2*q**2*log(e + f*x)**2/f - 2
*b**2*e*g**2*p**2*q**2*log(e + f*x)/f + 2*b**2*e*g**2*p*q**2*log(d)*log(e +
 f*x)/f + 2*b**2*e*g**2*p*q*log(c)*log(e + f*x)/f + 2*b**2*e*g*h*p**2*q**2*
x*log(e + f*x)/f - 3*b**2*e*g*h*p**2*q**2*x/f + 2*b**2*e*g*h*p*q**2*x*log(d
)/f + 2*b**2*e*g*h*p*q*x*log(c)/f + b**2*e*h**2*p**2*q**2*x**2*log(e + f*x)
/(3*f) - 5*b**2*e*h**2*p**2*q**2*x**2/(18*f) + b**2*e*h**2*p*q**2*x**2*log(
d)/(3*f) + b**2*e*h**2*p*q*x**2*log(c)/(3*f) + b**2*g**2*p**2*q**2*x*log(e
+ f*x)**2 - 2*b**2*g**2*p**2*q**2*x*log(e + f*x) + 2*b**2*g**2*p**2*q**2*x
```

```
+ 2*b**2*g**2*p*q**2*x*log(d)*log(e + f*x) - 2*b**2*g**2*p*q**2*x*log(d) +
2*b**2*g**2*p*q*x*log(c)*log(e + f*x) - 2*b**2*g**2*p*q*x*log(c) + b**2*g**
2*q**2*x*log(d)**2 + 2*b**2*g**2*q*x*log(c)*log(d) + b**2*g**2*x*log(c)**2
+ b**2*g*h*p**2*q**2*x**2*log(e + f*x)**2 - b**2*g*h*p**2*q**2*x**2*log(e +
 f*x) + b**2*g*h*p**2*q**2*x**2/2 + 2*b**2*g*h*p*q**2*x**2*log(d)*log(e + f
*x) - b**2*g*h*p*q**2*x**2*log(d) + 2*b**2*g*h*p*q*x**2*log(c)*log(e + f*x)
 - b**2*g*h*p*q*x**2*log(c) + b**2*g*h*q**2*x**2*log(d)**2 + 2*b**2*g*h*q*x
**2*log(c)*log(d) + b**2*g*h*x**2*log(c)**2 + b**2*h**2*p**2*q**2*x**3*log(
e + f*x)**2/3 - 2*b**2*h**2*p**2*q**2*x**3*log(e + f*x)/9 + 2*b**2*h**2*p**
2*q**2*x**3/27 + 2*b**2*h**2*p*q**2*x**3*log(d)*log(e + f*x)/3 - 2*b**2*h**
2*p*q**2*x**3*log(d)/9 + 2*b**2*h**2*p*q*x**3*log(c)*log(e + f*x)/3 - 2*b**
2*h**2*p*q*x**3*log(c)/9 + b**2*h**2*q**2*x**3*log(d)**2/3 + 2*b**2*h**2*q*
x**3*log(c)*log(d)/3 + b**2*h**2*x**3*log(c)**2/3, Ne(f, 0)), ((a + b*log(c
*(d*e**p)**q))**2*(g**2*x + g*h*x**2 + h**2*x**3/3), True))
```

3.430 $\int (g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2\,dx$

Optimal. Leaf size=211

$$\frac{(e+fx)(fg-eh)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{f^2}-\frac{bhpq(e+fx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{2f^2}+\frac{h(e+fx)^2\left(a+\right.}{}$$

```
[Out] -2*a*b*(-e*h+f*g)*p*q*x/f+2*b^2*(-e*h+f*g)*p^2*q^2*x/f+1/4*b^2*h*p^2*q^2*(f
*x+e)^2/f^2-2*b^2*(-e*h+f*g)*p*q*(f*x+e)*ln(c*(d*(f*x+e)^p)^q)/f^2-1/2*b*h*
p*q*(f*x+e)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))/f^2+(-e*h+f*g)*(f*x+e)*(a+b*ln(c*
(d*(f*x+e)^p)^q))^2/f^2+1/2*h*(f*x+e)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))^2/f^2
```

Rubi [A] time = 0.39, antiderivative size = 211, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 8, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.308$, Rules used = {2401, 2389, 2296, 2295, 2390, 2305, 2304, 2445}

$$\frac{(e+fx)(fg-eh)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{f^2}-\frac{bhpq(e+fx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{2f^2}+\frac{h(e+fx)^2\left(a+\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2,x]
```

```
[Out] (-2*a*b*(f*g - e*h)*p*q*x)/f + (2*b^2*(f*g - e*h)*p^2*q^2*x)/f + (b^2*h*p^2
*q^2*(e + f*x)^2)/(4*f^2) - (2*b^2*(f*g - e*h)*p*q*(e + f*x)*Log[c*(d*(e +
f*x)^p)^q])/f^2 - (b*h*p*q*(e + f*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(2
*f^2) + ((f*g - e*h)*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/f^2 + (h
*(e + f*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/(2*f^2)
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
```

```
, b, c, d, e, n, p}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\begin{aligned}
\int (g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2\,dx &= \text{Subst}\left(\int (g+hx)\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2\,dx, cd^q(e+fx)^{pq}, c\right.\\
&= \text{Subst}\left(\int\left(\frac{(fg-eh)\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}{f}+\frac{h(e+fx)\left(a+\right.}{}\right.\right.\\
&= \text{Subst}\left(\frac{h\int(e+fx)\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2\,dx}{f}, cd^q(e+fx)^{pq},\right.\\
&= \text{Subst}\left(\frac{h\,\text{Subst}\left(\int x\left(a+b\log\left(cd^qx^{pq}\right)\right)^2\,dx, x, e+fx\right)}{f^2}, cd^q(e+f\right.\\
&= \frac{(fg-eh)(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{f^2}+\frac{h(e+fx)^2\left(a+\right.}{}\\
&= -\frac{2ab(fg-eh)pqx}{f}+\frac{b^2hp^2q^2(e+fx)^2}{4f^2}-\frac{bhpq(e+fx)^2\left(a+b\log\right.}{2f^2}\\
&= -\frac{2ab(fg-eh)pqx}{f}+\frac{2b^2(fg-eh)p^2q^2x}{f}+\frac{b^2hp^2q^2(e+fx)^2}{4f^2}-\frac{2b^2}{}
\end{aligned}$$

Mathematica [A] time = 0.11, size = 164, normalized size = 0.78

$$\frac{4(e+fx)(fg-eh)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2-8bpq(fg-eh)\left(fx(a-bpq)+b(e+fx)\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{4f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2,x]
```

```
[Out] (4*(f*g - e*h)*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2 + 2*h*(e + f*x)
^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2 - 8*b*(f*g - e*h)*p*q*(f*(a - b*p*q)*
x + b*(e + f*x)*Log[c*(d*(e + f*x)^p)^q]) + b*h*p*q*(b*f*p*q*x*(2*e + f*x)
- 2*(e + f*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])))/(4*f^2)
```

fricas [B] time = 0.46, size = 622, normalized size = 2.95

$$\frac{\left(b^2f^2hp^2q^2-2\,abf^2hpq+2\,a^2f^2h\right)x^2+2\left(b^2f^2hp^2q^2x^2+2\,b^2f^2gp^2q^2x+\left(2\,b^2efg-b^2e^2h\right)p^2q^2\right)\log\left(fx+e\right)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="fricas")
```

```
[Out] 1/4*((b^2*f^2*h*p^2*q^2 - 2*a*b*f^2*h*p*q + 2*a^2*f^2*h)*x^2 + 2*(b^2*f^2*h
*p^2*q^2*x^2 + 2*b^2*f^2*g*p^2*q^2*x + (2*b^2*e*f*g - b^2*e^2*h)*p^2*q^2)*l
og(f*x + e)^2 + 2*(b^2*f^2*h*x^2 + 2*b^2*f^2*g*x)*log(c)^2 + 2*(b^2*f^2*h*q
^2*x^2 + 2*b^2*f^2*g*q^2*x)*log(d)^2 + 2*(2*a^2*f^2*g + (4*b^2*f^2*g - 3*b^
2*e*f*h)*p^2*q^2 - 2*(2*a*b*f^2*g - a*b*e*f*h)*p*q)*x - 2*((4*b^2*e*f*g - 3
*b^2*e^2*h)*p^2*q^2 - 2*(2*a*b*e*f*g - a*b*e^2*h)*p*q + (b^2*f^2*h*p^2*q^2
- 2*a*b*f^2*h*p*q)*x^2 - 2*(2*a*b*f^2*g*p*q - (2*b^2*f^2*g - b^2*e*f*h)*p^2
*q^2)*x - 2*(b^2*f^2*h*p*q*x^2 + 2*b^2*f^2*g*p*q*x + (2*b^2*e*f*g - b^2*e^2
*h)*p*q)*log(c) - 2*(b^2*f^2*h*p*q^2*x^2 + 2*b^2*f^2*g*p*q^2*x + (2*b^2*e*f
*g - b^2*e^2*h)*p*q^2)*log(d))*log(f*x + e) - 2*((b^2*f^2*h*p*q - 2*a*b*f^2
*h)*x^2 - 2*(2*a*b*f^2*g - (2*b^2*f^2*g - b^2*e*f*h)*p*q)*x)*log(c) - 2*((b
^2*f^2*h*p*q^2 - 2*a*b*f^2*h*q)*x^2 - 2*(2*a*b*f^2*g*q - (2*b^2*f^2*g - b^2
*e*f*h)*p*q^2)*x - 2*(b^2*f^2*h*q*x^2 + 2*b^2*f^2*g*q*x)*log(c))*log(d))/f^
2
```

giac [B] time = 0.24, size = 1014, normalized size = 4.81

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="giac")
```

```
[Out] (f*x + e)*b^2*g*p^2*q^2*log(f*x + e)^2/f + 1/2*(f*x + e)^2*b^2*h*p^2*q^2*lo
g(f*x + e)^2/f^2 - (f*x + e)*b^2*h*p^2*q^2*e*log(f*x + e)^2/f^2 - 2*(f*x +
e)*b^2*g*p^2*q^2*log(f*x + e)/f - 1/2*(f*x + e)^2*b^2*h*p^2*q^2*log(f*x + e
)/f^2 + 2*(f*x + e)*b^2*h*p^2*q^2*e*log(f*x + e)/f^2 + 2*(f*x + e)*b^2*g*p*
q^2*log(f*x + e)*log(d)/f + (f*x + e)^2*b^2*h*p*q^2*log(f*x + e)*log(d)/f^2
 - 2*(f*x + e)*b^2*h*p*q^2*e*log(f*x + e)*log(d)/f^2 + 2*(f*x + e)*b^2*g*p^
2*q^2/f + 1/4*(f*x + e)^2*b^2*h*p^2*q^2/f^2 - 2*(f*x + e)*b^2*h*p^2*q^2*e/f
^2 + 2*(f*x + e)*b^2*g*p*q*log(f*x + e)*log(c)/f + (f*x + e)^2*b^2*h*p*q*lo
g(f*x + e)*log(c)/f^2 - 2*(f*x + e)*b^2*h*p*q*e*log(f*x + e)*log(c)/f^2 - 2
*(f*x + e)*b^2*g*p*q^2*log(d)/f - 1/2*(f*x + e)^2*b^2*h*p*q^2*log(d)/f^2 +
2*(f*x + e)*b^2*h*p*q^2*e*log(d)/f^2 + (f*x + e)*b^2*g*q^2*log(d)^2/f + 1/2
*(f*x + e)^2*b^2*h*q^2*log(d)^2/f^2 - (f*x + e)*b^2*h*q^2*e*log(d)^2/f^2 +
2*(f*x + e)*a*b*g*p*q*log(f*x + e)/f + (f*x + e)^2*a*b*h*p*q*log(f*x + e)/f
^2 - 2*(f*x + e)*a*b*h*p*q*e*log(f*x + e)/f^2 - 2*(f*x + e)*b^2*g*p*q*log(c
)/f - 1/2*(f*x + e)^2*b^2*h*p*q*log(c)/f^2 + 2*(f*x + e)*b^2*h*p*q*e*log(c)
/f^2 + 2*(f*x + e)*b^2*g*q*log(c)*log(d)/f + (f*x + e)^2*b^2*h*q*log(c)*log
(d)/f^2 - 2*(f*x + e)*b^2*h*q*e*log(c)*log(d)/f^2 - 2*(f*x + e)*a*b*g*p*q/f
 - 1/2*(f*x + e)^2*a*b*h*p*q/f^2 + 2*(f*x + e)*a*b*h*p*q*e/f^2 + (f*x + e)*
b^2*g*log(c)^2/f + 1/2*(f*x + e)^2*b^2*h*log(c)^2/f^2 - (f*x + e)*b^2*h*e*l
og(c)^2/f^2 + 2*(f*x + e)*a*b*g*q*log(d)/f + (f*x + e)^2*a*b*h*q*log(d)/f^2
 - 2*(f*x + e)*a*b*h*q*e*log(d)/f^2 + 2*(f*x + e)*a*b*g*log(c)/f + (f*x + e
)^2*a*b*h*log(c)/f^2 - 2*(f*x + e)*a*b*h*e*log(c)/f^2 + (f*x + e)*a^2*g/f +
 1/2*(f*x + e)^2*a^2*h/f^2 - (f*x + e)*a^2*h*e/f^2
```

maple [F] time = 0.10, size = 0, normalized size = 0.00

$$\int \left(hx+g\right)\left(b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)+a\right)^{2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)*(b*ln(c*(d*(f*x+e)^p)^q)+a)^2,x)
```

```
[Out] int((h*x+g)*(b*ln(c*(d*(f*x+e)^p)^q)+a)^2,x)
```

maxima [A] time = 0.58, size = 348, normalized size = 1.65

$$-2\,abfgpq\left(\frac{x}{f}-\frac{e\log\left(fx+e\right)}{f^2}\right)-\frac{1}{2}\,abfhpq\left(\frac{2\,e^2\log\left(fx+e\right)}{f^3}+\frac{fx^2-2\,ex}{f^2}\right)+\frac{1}{2}\,b^2hx^2\log\left(\left(\left(fx+e\right)^pd\right)^qc\right)^2+abh$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="maxima")
```

```
[Out] -2*a*b*f*g*p*q*(x/f - e*log(f*x + e)/f^2) - 1/2*a*b*f*h*p*q*(2*e^2*log(f*x
+ e)/f^3 + (f*x^2 - 2*e*x)/f^2) + 1/2*b^2*h*x^2*log(((f*x + e)^p*d)^q*c)^2
+ a*b*h*x^2*log(((f*x + e)^p*d)^q*c) + b^2*g*x*log(((f*x + e)^p*d)^q*c)^2 +
 1/2*a^2*h*x^2 + 2*a*b*g*x*log(((f*x + e)^p*d)^q*c) - (2*f*p*q*(x/f - e*log
(f*x + e)/f^2)*log(((f*x + e)^p*d)^q*c) + (e*log(f*x + e)^2 - 2*f*x + 2*e*l
og(f*x + e))*p^2*q^2/f)*b^2*g - 1/4*(2*f*p*q*(2*e^2*log(f*x + e)/f^3 + (f*x
^2 - 2*e*x)/f^2)*log(((f*x + e)^p*d)^q*c) - (f^2*x^2 + 2*e^2*log(f*x + e)^2
 - 6*e*f*x + 6*e^2*log(f*x + e))*p^2*q^2/f^2)*b^2*h + a^2*g*x
```

mupad [B] time = 0.46, size = 302, normalized size = 1.43

$$x\left(\frac{2\,a^2\,e\,h+2\,a^2\,f\,g-2\,b^2\,e\,h\,p^2\,q^2+4\,b^2\,f\,g\,p^2\,q^2-4\,a\,b\,f\,g\,p\,q}{2\,f}-\frac{e\,h\,\left(2\,a^2-2\,a\,b\,p\,q+b^2\,p^2\,q^2\right)}{2\,f}\right)+\ln\left(c\left(d\left(e+\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)*(a + b*log(c*(d*(e + f*x)^p)^q))^2,x)
```

```
[Out] x*((2*a^2*e*h + 2*a^2*f*g - 2*b^2*e*h*p^2*q^2 + 4*b^2*f*g*p^2*q^2 - 4*a*b*f
*g*p*q)/(2*f) - (e*h*(2*a^2 + b^2*p^2*q^2 - 2*a*b*p*q))/(2*f)) + log(c*(d*(
e + f*x)^p)^q)*(x*((2*b*(a*e*h + a*f*g - b*f*g*p*q))/f - (b*e*h*(2*a - b*p*
q))/f) + (b*h*x^2*(2*a - b*p*q))/2) + log(c*(d*(e + f*x)^p)^q)^2*((b^2*h*x^
2)/2 - (e*(b^2*e*h - 2*b^2*f*g))/(2*f^2) + b^2*g*x) + (log(e + f*x)*(3*b^2*
e^2*h*p^2*q^2 - 2*a*b*e^2*h*p*q - 4*b^2*e*f*g*p^2*q^2 + 4*a*b*e*f*g*p*q))/(
2*f^2) + (h*x^2*(2*a^2 + b^2*p^2*q^2 - 2*a*b*p*q))/4
```

sympy [A] time = 12.69, size = 879, normalized size = 4.17

$$\begin{cases} a^2gx+\frac{a^2hx^2}{2}-\frac{abe^2hpq\log\left(e+fx\right)}{f^2}+\frac{2abegpq\log\left(e+fx\right)}{f}+\frac{abehpqx}{f}+2abgpqx\log\left(e+fx\right)-2abgpqx+2abgqx\log\left(d\right)+ \\ \left(a+b\log\left(c\left(de^p\right)^q\right)\right)^2\left(gx+\frac{hx^2}{2}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*ln(c*(d*(f*x+e)**p)**q))**2,x)
```

```
[Out] Piecewise((a**2*g*x + a**2*h*x**2/2 - a*b*e**2*h*p*q*log(e + f*x)/f**2 + 2*
a*b*e*g*p*q*log(e + f*x)/f + a*b*e*h*p*q*x/f + 2*a*b*g*p*q*x*log(e + f*x) -
```

```
 2*a*b*g*p*q*x + 2*a*b*g*q*x*log(d) + 2*a*b*g*x*log(c) + a*b*h*p*q*x**2*log
(e + f*x) - a*b*h*p*q*x**2/2 + a*b*h*q*x**2*log(d) + a*b*h*x**2*log(c) - b*
*2*e**2*h*p**2*q**2*log(e + f*x)**2/(2*f**2) + 3*b**2*e**2*h*p**2*q**2*log(
e + f*x)/(2*f**2) - b**2*e**2*h*p*q**2*log(d)*log(e + f*x)/f**2 - b**2*e**2
*h*p*q*log(c)*log(e + f*x)/f**2 + b**2*e*g*p**2*q**2*log(e + f*x)**2/f - 2*
b**2*e*g*p**2*q**2*log(e + f*x)/f + 2*b**2*e*g*p*q**2*log(d)*log(e + f*x)/f
 + 2*b**2*e*g*p*q*log(c)*log(e + f*x)/f + b**2*e*h*p**2*q**2*x*log(e + f*x)
/f - 3*b**2*e*h*p**2*q**2*x/(2*f) + b**2*e*h*p*q**2*x*log(d)/f + b**2*e*h*p
*q*x*log(c)/f + b**2*g*p**2*q**2*x*log(e + f*x)**2 - 2*b**2*g*p**2*q**2*x*l
og(e + f*x) + 2*b**2*g*p**2*q**2*x + 2*b**2*g*p*q**2*x*log(d)*log(e + f*x)
- 2*b**2*g*p*q**2*x*log(d) + 2*b**2*g*p*q*x*log(c)*log(e + f*x) - 2*b**2*g*
p*q*x*log(c) + b**2*g*q**2*x*log(d)**2 + 2*b**2*g*q*x*log(c)*log(d) + b**2*
g*x*log(c)**2 + b**2*h*p**2*q**2*x**2*log(e + f*x)**2/2 - b**2*h*p**2*q**2*
x**2*log(e + f*x)/2 + b**2*h*p**2*q**2*x**2/4 + b**2*h*p*q**2*x**2*log(d)*l
og(e + f*x) - b**2*h*p*q**2*x**2*log(d)/2 + b**2*h*p*q*x**2*log(c)*log(e +
f*x) - b**2*h*p*q*x**2*log(c)/2 + b**2*h*q**2*x**2*log(d)**2/2 + b**2*h*q*x
**2*log(c)*log(d) + b**2*h*x**2*log(c)**2/2, Ne(f, 0)), ((a + b*log(c*(d*e*
*p)**q))**2*(g*x + h*x**2/2), True))
```

3.431 $\int \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2\,dx$

Optimal. Leaf size=78

$$\frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{f}-2abpqx-\frac{2b^2pq(e+fx)\log\left(c\left(d(e+fx)^p\right)^q\right)}{f}+2b^2p^2q^2x$$

```
[Out] -2*a*b*p*q*x+2*b^2*p^2*q^2*x-2*b^2*p*q*(f*x+e)*ln(c*(d*(f*x+e)^p)^q)/f+(f*x
+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))^2/f
```

Rubi [A] time = 0.10, antiderivative size = 78, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {2389, 2296, 2295, 2445}

$$\frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{f}-2abpqx-\frac{2b^2pq(e+fx)\log\left(c\left(d(e+fx)^p\right)^q\right)}{f}+2b^2p^2q^2x$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^2,x]
```

```
[Out] -2*a*b*p*q*x + 2*b^2*p^2*q^2*x - (2*b^2*p*q*(e + f*x)*Log[c*(d*(e + f*x)^p)
^q])/f + ((e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/f
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2 dx = \text{Subst}\left(\int \left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2 dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q$$
$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \left(a+b\log\left(cd^q x^{pq}\right)\right)^2 dx, x, e+fx\right)}{f}, cd^q(e+fx)^{pq}, c\left(d\right.\right.$$
$$= \frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{f} - \text{Subst}\left(\frac{(2bpq)\,\text{Subst}\left(\int \left(a+b\right.\right.}{}\right.$$
$$= -2abpqx + \frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{f} - \text{Subst}\left(\frac{\left(2b^2pq\right)\text{Su}}{}\right.$$
$$= -2abpqx + 2b^2p^2q^2x - \frac{2b^2pq(e+fx)\log\left(c\left(d(e+fx)^p\right)^q\right)}{f} + \frac{(e+fx)\left(\right.}{}$$

Mathematica [A] time = 0.02, size = 69, normalized size = 0.88

$$\frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{f} - 2bpq\left(ax + \frac{b(e+fx)\log\left(c\left(d(e+fx)^p\right)^q\right)}{f} - bpqx\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^2,x]
```

```
[Out] ((e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/f - 2*b*p*q*(a*x - b*p*q*x +
 (b*(e + f*x)*Log[c*(d*(e + f*x)^p)^q])/f)
```

fricas [B] time = 0.46, size = 231, normalized size = 2.96

$$\frac{b^2fq^2x\log(d)^2 + b^2fx\log(c)^2 + \left(b^2fp^2q^2x + b^2ep^2q^2\right)\log\left(fx+e\right)^2 - 2\left(b^2fpq - abf\right)x\log(c) + \left(2\,b^2fp^2q^2 - \right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="fricas")
```

```
[Out] (b^2*f*q^2*x*log(d)^2 + b^2*f*x*log(c)^2 + (b^2*f*p^2*q^2*x + b^2*e*p^2*q^2
)*log(f*x + e)^2 - 2*(b^2*f*p*q - a*b*f)*x*log(c) + (2*b^2*f*p^2*q^2 - 2*a*
b*f*p*q + a^2*f)*x - 2*(b^2*e*p^2*q^2 - a*b*e*p*q + (b^2*f*p^2*q^2 - a*b*f*
p*q)*x - (b^2*f*p*q*x + b^2*e*p*q)*log(c) - (b^2*f*p*q^2*x + b^2*e*p*q^2)*l
og(d))*log(f*x + e) + 2*(b^2*f*q*x*log(c) - (b^2*f*p*q^2 - a*b*f*q)*x)*log(
d))/f
```

giac [B] time = 0.18, size = 303, normalized size = 3.88

$$\frac{\left(fx+e\right)b^2p^2q^2\log\left(fx+e\right)^2}{f} - \frac{2\left(fx+e\right)b^2p^2q^2\log\left(fx+e\right)}{f} + \frac{2\left(fx+e\right)b^2pq^2\log\left(fx+e\right)\log(d)}{f} + \frac{2\left(fx+e\right)}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="giac")
```

```
[Out] (f*x + e)*b^2*p^2*q^2*log(f*x + e)^2/f - 2*(f*x + e)*b^2*p^2*q^2*log(f*x +
e)/f + 2*(f*x + e)*b^2*p*q^2*log(f*x + e)*log(d)/f + 2*(f*x + e)*b^2*p^2*q^
```

```
2/f + 2*(f*x + e)*b^2*p*q*log(f*x + e)*log(c)/f - 2*(f*x + e)*b^2*p*q^2*log
(d)/f + (f*x + e)*b^2*q^2*log(d)^2/f + 2*(f*x + e)*a*b*p*q*log(f*x + e)/f -
 2*(f*x + e)*b^2*p*q*log(c)/f + 2*(f*x + e)*b^2*q*log(c)*log(d)/f - 2*(f*x
+ e)*a*b*p*q/f + (f*x + e)*b^2*log(c)^2/f + 2*(f*x + e)*a*b*q*log(d)/f + 2*
(f*x + e)*a*b*log(c)/f + (f*x + e)*a^2/f
```

maple [F] time = 0.09, size = 0, normalized size = 0.00

$$\int \left(b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)+a\right)^{2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^2,x)
```

```
[Out] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^2,x)
```

maxima [A] time = 0.53, size = 148, normalized size = 1.90

$$-2\,abfpq\left(\frac{x}{f}-\frac{e\log\left(fx+e\right)}{f^{2}}\right)+b^{2}x\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)^{2}+2\,abx\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)-\left(2\,fpq\left(\frac{x}{f}-\frac{e\log\left(fx+e\right.}{f^{2}}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="maxima")
```

```
[Out] -2*a*b*f*p*q*(x/f - e*log(f*x + e)/f^2) + b^2*x*log(((f*x + e)^p*d)^q*c)^2
+ 2*a*b*x*log(((f*x + e)^p*d)^q*c) - (2*f*p*q*(x/f - e*log(f*x + e)/f^2)*lo
g(((f*x + e)^p*d)^q*c) + (e*log(f*x + e)^2 - 2*f*x + 2*e*log(f*x + e))*p^2*
q^2/f)*b^2 + a^2*x
```

mupad [B] time = 0.30, size = 111, normalized size = 1.42

$$\ln\left(c\left(d\left(e+f\,x\right)^{p}\right)^{q}\right)^{2}\,\left(b^{2}\,x+\frac{b^{2}\,e}{f}\right)+x\,\left(a^{2}-2\,a\,b\,p\,q+2\,b^{2}\,p^{2}\,q^{2}\right)-\frac{\ln\left(e+f\,x\right)\,\left(2\,b^{2}\,e\,p^{2}\,q^{2}-2\,a\,b\,e\,p\,q\right)}{f}+2\,b\,x\,\ln$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^2,x)
```

```
[Out] log(c*(d*(e + f*x)^p)^q)^2*(b^2*x + (b^2*e)/f) + x*(a^2 + 2*b^2*p^2*q^2 - 2
*a*b*p*q) - (log(e + f*x)*(2*b^2*e*p^2*q^2 - 2*a*b*e*p*q))/f + 2*b*x*log(c*
(d*(e + f*x)^p)^q)*(a - b*p*q)
```

sympy [A] time = 3.82, size = 343, normalized size = 4.40

$$\begin{cases} a^{2}x+\frac{2abepq\log\left(e+fx\right)}{f}+2abpqx\log\left(e+fx\right)-2abpqx+2abqx\log\left(d\right)+2abx\log\left(c\right)+\frac{b^{2}ep^{2}q^{2}\log\left(e+fx\right)^{2}}{f}-\frac{2b^{2}ep^{2}q^{2}}{} \\ x\left(a+b\log\left(c\left(de^{p}\right)^{q}\right)\right)^{2} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**2,x)
```

```
[Out] Piecewise((a**2*x + 2*a*b*e*p*q*log(e + f*x)/f + 2*a*b*p*q*x*log(e + f*x) -
 2*a*b*p*q*x + 2*a*b*q*x*log(d) + 2*a*b*x*log(c) + b**2*e*p**2*q**2*log(e +
 f*x)**2/f - 2*b**2*e*p**2*q**2*log(e + f*x)/f + 2*b**2*e*p*q**2*log(d)*log
(e + f*x)/f + 2*b**2*e*p*q*log(c)*log(e + f*x)/f + b**2*p**2*q**2*x*log(e +
 f*x)**2 - 2*b**2*p**2*q**2*x*log(e + f*x) + 2*b**2*p**2*q**2*x + 2*b**2*p*
```

```
q**2*x*log(d)*log(e + f*x) - 2*b**2*p*q**2*x*log(d) + 2*b**2*p*q*x*log(c)*l
og(e + f*x) - 2*b**2*p*q*x*log(c) + b**2*q**2*x*log(d)**2 + 2*b**2*q*x*log(
c)*log(d) + b**2*x*log(c)**2, Ne(f, 0)), (x*(a + b*log(c*(d*e**p)**q))**2,
True))
```

3.432 $\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{g+hx}\,dx$

Optimal. Leaf size=123

$$\frac{2bpq\text{Li}_2\left(-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h}+\frac{\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{h}-\frac{2b^2p^2q^2\text{Li}_3\left(-\frac{h(e+f}{fg-e}\right.}{h}$$

```
[Out] (a+b*ln(c*(d*(f*x+e)^p)^q))^2*ln(f*(h*x+g)/(-e*h+f*g))/h+2*b*p*q*(a+b*ln(c*
(d*(f*x+e)^p)^q))*polylog(2,-h*(f*x+e)/(-e*h+f*g))/h-2*b^2*p^2*q^2*polylog(
3,-h*(f*x+e)/(-e*h+f*g))/h
```

Rubi [A] time = 0.27, antiderivative size = 123, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {2396, 2433, 2374, 6589, 2445}

$$\frac{2bpq\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h}-\frac{2b^2p^2q^2\text{PolyLog}\left(3,-\frac{h(e+fx)}{fg-eh}\right)}{h}+\frac{\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\right.}{h}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/(g + h*x),x]
```

```
[Out] ((a + b*Log[c*(d*(e + f*x)^p)^q])^2*Log[(f*(g + h*x))/(f*g - e*h)])/h + (2*
b*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLog[2, -((h*(e + f*x))/(f*g - e*
h))])/h - (2*b^2*p^2*q^2*PolyLog[3, -((h*(e + f*x))/(f*g - e*h))])/h
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
```

```
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{g+hx}\,dx = \text{Subst}\left(\int \frac{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}{g+hx}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right.$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} - \text{Subst}\left((2bfpq)\int \frac{(a+b\log(\ldots}{\ldots}\right.$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} - \text{Subst}\left(\frac{(2bpq)\,\text{Subst}\left(\int \ldots\right.}{\ldots}\right.$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} + \frac{2bpq\left(a+b\log\left(c\left(d(e+\ldots\right.\right.\right.}{h}$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} + \frac{2bpq\left(a+b\log\left(c\left(d(e+\ldots\right.\right.\right.}{h}$$

Mathematica [B] time = 0.20, size = 324, normalized size = 2.63

$$\frac{a^2\log(g+hx)+2bpq\text{Li}_2\left(\frac{h(e+fx)}{eh-fg}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)+2ab\log(g+hx)\log\left(c\left(d(e+fx)^p\right)^q\right)-2abp\ldots}{\ldots}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/(g + h*x),x]
```

```
[Out] (a^2*Log[g + h*x] - 2*a*b*p*q*Log[e + f*x]*Log[g + h*x] + b^2*p^2*q^2*Log[e
 + f*x]^2*Log[g + h*x] + 2*a*b*Log[c*(d*(e + f*x)^p)^q]*Log[g + h*x] - 2*b^
2*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log[g + h*x] + b^2*Log[c*(d*(e
+ f*x)^p)^q]^2*Log[g + h*x] + 2*a*b*p*q*Log[e + f*x]*Log[(f*(g + h*x))/(f*g
 - e*h)] - b^2*p^2*q^2*Log[e + f*x]^2*Log[(f*(g + h*x))/(f*g - e*h)] + 2*b^
2*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log[(f*(g + h*x))/(f*g - e*h)]
+ 2*b*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLog[2, (h*(e + f*x))/(-(f*g)
 + e*h)] - 2*b^2*p^2*q^2*PolyLog[3, (h*(e + f*x))/(-(f*g) + e*h)])/h
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b^2\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^2+2\,ab\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a^2}{hx+g},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g),x, algorithm="fricas")
```

```
[Out] integral((b^2*log(((f*x + e)^p*d)^q*c)^2 + 2*a*b*log(((f*x + e)^p*d)^q*c) +
 a^2)/(h*x + g), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a\right)^2}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^2/(h*x + g), x)
```

maple [F] time = 0.37, size = 0, normalized size = 0.00

$$\int\frac{\left(b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)+a\right)^2}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^2/(h*x+g),x)
```

```
[Out] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^2/(h*x+g),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{a^2\log\left(hx+g\right)}{h}+\int\frac{b^2\log\left(\left(\left(fx+e\right)^p\right)^q\right)^2+2\left(q\log(d)+\log(c)\right)ab+\left(q^2\log(d)^2+2\,q\log(c)\log(d)+\log(c)^2\right)b}{hx+g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g),x, algorithm="maxima")
```

```
[Out] a^2*log(h*x + g)/h + integrate((b^2*log(((f*x + e)^p)^q)^2 + 2*(q*log(d) +
log(c))*a*b + (q^2*log(d)^2 + 2*q*log(c)*log(d) + log(c)^2)*b^2 + 2*((q*log
(d) + log(c))*b^2 + a*b)*log(((f*x + e)^p)^q))/(h*x + g), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int\frac{\left(a+b\,\ln\left(c\left(d\left(e+f\,x\right)^p\right)^q\right)\right)^2}{g+h\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^2/(g + h*x),x)
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))^2/(g + h*x), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a + b \log\left(c \left(d \left(e + fx\right)^{p}\right)^{q}\right)\right)^{2}}{g + hx}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**2/(h*x+g),x)
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**2/(g + h*x), x)
```

3.433 $\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{(g+hx)^2}\,dx$

Optimal. Leaf size=144

$$-\frac{2bfpq\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h(fg-eh)}+\frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{(g+hx)(fg-eh)}-\frac{2b^2fp^2q^2\mathrm{Li}_2\left(-\frac{h(e+fx)}{fg-eh}\right)}{h(fg-eh)}$$

```
[Out] (f*x+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))^2/(-e*h+f*g)/(h*x+g)-2*b*f*p*q*(a+b*ln(
c*(d*(f*x+e)^p)^q))*ln(f*(h*x+g)/(-e*h+f*g))/h/(-e*h+f*g)-2*b^2*f*p^2*q^2*p
olylog(2,-h*(f*x+e)/(-e*h+f*g))/h/(-e*h+f*g)
```

Rubi [A] time = 0.20, antiderivative size = 144, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {2397, 2394, 2393, 2391, 2445}

$$-\frac{2b^2fp^2q^2\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)}{h(fg-eh)}-\frac{2bfpq\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h(fg-eh)}+\frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{(g+hx)(fg-eh)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/(g + h*x)^2,x]
```

```
[Out] ((e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/((f*g - e*h)*(g + h*x)) - (2
*b*f*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])*Log[(f*(g + h*x))/(f*g - e*h)])/(
h*(f*g - e*h)) - (2*b^2*f*p^2*q^2*PolyLog[2, -((h*(e + f*x))/(f*g - e*h))])
/(h*(f*g - e*h))
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2397

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_))^2, x_Symbol] :> Simp[((d + e*x)*(a + b*Log[c*(d + e*x)^n])^p)/((e*f
 - d*g)*(f + g*x)), x] - Dist[(b*e*n*p)/(e*f - d*g), Int[(a + b*Log[c*(d +
e*x)^n])^(p - 1)/(f + g*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] &&
 NeQ[e*f - d*g, 0] && GtQ[p, 0]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{(g+hx)^2}\,dx = \text{Subst}\left(\int \frac{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}{(g+hx)^2}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q$$

$$= \frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{(fg-eh)(g+hx)} - \text{Subst}\left(\frac{(2bfpq)\int \frac{a+b\log\left(cd^q(e+\right.}{g+hx}}{fg-eh}\right.$$

$$= \frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{(fg-eh)(g+hx)} - \frac{2bfpq\left(a+b\log\left(c\left(d(e+fx\right.\right.\right.}{h(fg-eh)}$$

$$= \frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{(fg-eh)(g+hx)} - \frac{2bfpq\left(a+b\log\left(c\left(d(e+fx\right.\right.\right.}{h(fg-eh)}$$

$$= \frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{(fg-eh)(g+hx)} - \frac{2bfpq\left(a+b\log\left(c\left(d(e+fx\right.\right.\right.}{h(fg-eh)}$$

Mathematica [A] time = 0.23, size = 200, normalized size = 1.39

$$\frac{-2bfpq(g+hx)\log(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)+\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\left(a(fg-eh)+b(fg-\right.}{h(g}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/(g + h*x)^2,x]
```

```
[Out] (b^2*f*p^2*q^2*(g + h*x)*Log[e + f*x]^2 - 2*b*f*p*q*(g + h*x)*Log[e + f*x]*
(a + b*Log[c*(d*(e + f*x)^p)^q]) + (a + b*Log[c*(d*(e + f*x)^p)^q])*(a*(f*g
 - e*h) + b*(f*g - e*h)*Log[c*(d*(e + f*x)^p)^q] + 2*b*f*p*q*(g + h*x)*Log[
(f*(g + h*x))/(f*g - e*h)]) + 2*b^2*f*p^2*q^2*(g + h*x)*PolyLog[2, (h*(e +
f*x))/(-(f*g) + e*h)])/(h*(-(f*g) + e*h)*(g + h*x))
```

fricas [F] time = 0.89, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b^2\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^2 + 2\,ab\log\left(\left(\left(fx+e\right)^p d\right)^q c\right) + a^2}{h^2x^2 + 2\,ghx + g^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^2,x, algorithm="fricas")
```

```
[Out] integral((b^2*log(((f*x + e)^p*d)^q*c)^2 + 2*a*b*log(((f*x + e)^p*d)^q*c) +
 a^2)/(h^2*x^2 + 2*g*h*x + g^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b \log\left(\left(\left(fx+e\right)^{p} d\right)^{q} c\right) + a\right)^{2}}{\left(hx+g\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^2/(h*x + g)^2, x)
```

maple [F] time = 0.36, size = 0, normalized size = 0.00

$$\int \frac{\left(b \ln\left(c \left(d \left(fx+e\right)^{p}\right)^{q}\right) + a\right)^{2}}{\left(hx+g\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^2/(h*x+g)^2,x)
```

```
[Out] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^2/(h*x+g)^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$2\,abfpq\left(\frac{\log\left(fx+e\right)}{fgh-eh^2} - \frac{\log\left(hx+g\right)}{fgh-eh^2}\right) - b^2\left(\frac{\log\left(\left(\left(fx+e\right)^{p}\right)^{q}\right)^{2}}{h^2x+gh} - \int \frac{ehq^2\log(d)^2 + 2\,ehq\log(c)\log(d) + eh\log(c}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^2,x, algorithm="maxima")
```

```
[Out] 2*a*b*f*p*q*(log(f*x + e)/(f*g*h - e*h^2) - log(h*x + g)/(f*g*h - e*h^2)) -
 b^2*(log(((f*x + e)^p)^q)^2/(h^2*x + g*h) - integrate((e*h*q^2*log(d)^2 +
2*e*h*q*log(c)*log(d) + e*h*log(c)^2 + (f*h*q^2*log(d)^2 + 2*f*h*q*log(c)*l
og(d) + f*h*log(c)^2)*x + 2*(f*g*p*q + e*h*q*log(d) + e*h*log(c) + (f*h*p*q
 + f*h*q*log(d) + f*h*log(c))*x)*log(((f*x + e)^p)^q))/(f*h^3*x^3 + e*g^2*h
 + (2*f*g*h^2 + e*h^3)*x^2 + (f*g^2*h + 2*e*g*h^2)*x), x)) - 2*a*b*log(((f*
x + e)^p*d)^q*c)/(h^2*x + g*h) - a^2/(h^2*x + g*h)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(a + b\,\ln\left(c\left(d\left(e+f\,x\right)^{p}\right)^{q}\right)\right)^{2}}{\left(g+h\,x\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^2/(g + h*x)^2,x)
```

```
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))^2/(g + h*x)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)\right)^{2}}{\left(g+hx\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**2/(h*x+g)**2,x)
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**2/(g + h*x)**2, x)
```

3.434 $\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{(g+hx)^3}\,dx$

Optimal. Leaf size=222

$$-\frac{bf^2pq\log\left(\frac{fg-eh}{h(e+fx)}+1\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h(fg-eh)^2}-\frac{bfpq(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{(g+hx)(fg-eh)^2}-\frac{\left(a+b\log\left(c\left(\right.\right.\right.}{2h(g}$$

```
[Out] -b*f*p*q*(f*x+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))/(-e*h+f*g)^2/(h*x+g)-1/2*(a+b*
ln(c*(d*(f*x+e)^p)^q))^2/h/(h*x+g)^2+b^2*f^2*p^2*q^2*ln(h*x+g)/h/(-e*h+f*g)
^2-b*f^2*p*q*(a+b*ln(c*(d*(f*x+e)^p)^q))*ln(1+(-e*h+f*g)/h/(f*x+e))/h/(-e*h
+f*g)^2+b^2*f^2*p^2*q^2*polylog(2,(e*h-f*g)/h/(f*x+e))/h/(-e*h+f*g)^2
```

Rubi [A] time = 0.82, antiderivative size = 257, normalized size of antiderivative = 1.16, number of steps used = 10, number of rules used = 10, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.357, Rules used = {2398, 2411, 2347, 2344, 2301, 2317, 2391, 2314, 31, 2445}

$$-\frac{b^2f^2p^2q^2\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)}{h(fg-eh)^2}+\frac{f^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{2h(fg-eh)^2}-\frac{bf^2pq\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right.\right.\right.}{h(fg-eh)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/(g + h*x)^3,x]
```

```
[Out] -((b*f*p*q*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q]))/((f*g - e*h)^2*(g +
h*x))) + (f^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/(2*h*(f*g - e*h)^2) - (a
+ b*Log[c*(d*(e + f*x)^p)^q])^2/(2*h*(g + h*x)^2) + (b^2*f^2*p^2*q^2*Log[g
+ h*x])/(h*(f*g - e*h)^2) - (b*f^2*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])*Log
[(f*(g + h*x))/(f*g - e*h)])/(h*(f*g - e*h)^2) - (b^2*f^2*p^2*q^2*PolyLog[2
, -((h*(e + f*x))/(f*g - e*h))])/(h*(f*g - e*h)^2)
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2314

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_), x
_Symbol] :> Simp[(x*(d + e*x^r)^(q + 1)*(a + b*Log[c*x^n]))/d, x] - Dist[(b
*n)/d, Int[(d + e*x^r)^(q + 1), x], x] /; FreeQ[{a, b, c, d, e, n, q, r}, x
] && EqQ[r*(q + 1) + 1, 0]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2347

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/x
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{(g+hx)^3}\,dx = \text{Subst}\left(\int \frac{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}{(g+hx)^3}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= -\frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{2h(g+hx)^2} + \text{Subst}\left(\frac{(bfpq)\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{(e+fx)(g+hx)^2}\,dx}{h}, cd \ldots\right.$$

$$= -\frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{2h(g+hx)^2} + \text{Subst}\left(\frac{(bpq)\,\text{Subst}\left(\int \frac{a+b\log(cd^qx^{pq})}{x\left(\frac{fg-eh}{f}+\frac{hx}{f}\right)^2}\,dx, x \ldots\right.}{h}\right.$$

$$= -\frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{2h(g+hx)^2} - \text{Subst}\left(\frac{(bpq)\,\text{Subst}\left(\int \frac{a+b\log(cd^qx^{pq})}{\left(\frac{fg-eh}{f}+\frac{hx}{f}\right)^2}\,dx, x \ldots\right.}{fg-eh}\right.$$

$$= -\frac{bfpq(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{(fg-eh)^2(g+hx)} - \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right) \ldots}{2h(g+hx)^2}$$

$$= -\frac{bfpq(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{(fg-eh)^2(g+hx)} + \frac{f^2\left(a+b\log\left(c\left(d(e+fx)^p \ldots\right.\right.\right.}{2h(fg-eh)^2}$$

$$= -\frac{bfpq(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{(fg-eh)^2(g+hx)} + \frac{f^2\left(a+b\log\left(c\left(d(e+fx)^p \ldots\right.\right.\right.}{2h(fg-eh)^2}$$

Mathematica [A] time = 0.47, size = 316, normalized size = 1.42

$$-\frac{\frac{2bpq\left(h(e+fx)\log(e+fx)(eh-f(2g+hx))+f(g+hx)\left(f(g+hx)\log\left(\frac{f(g+hx)}{fg-eh}\right)+h(e+fx)\right)\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)-bpq\log(e+fx)\right)}{(fg-eh)^2} + \left(a+b\log\left(c\left(d \ldots\right.\right.\right.}{\ldots}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/(g + h*x)^3,x]
```

```
[Out] -1/2*((a - b*p*q*Log[e + f*x] + b*Log[c*(d*(e + f*x)^p)^q])^2 + (2*b*p*q*(a
 - b*p*q*Log[e + f*x] + b*Log[c*(d*(e + f*x)^p)^q])*(h*(e + f*x)*(e*h - f*(
2*g + h*x))*Log[e + f*x] + f*(g + h*x)*(h*(e + f*x) + f*(g + h*x)*Log[(f*(g
 + h*x))/(f*g - e*h)])))/(f*g - e*h)^2 + (b^2*p^2*q^2*(h*(e + f*x)*(e*h - f
*(2*g + h*x))*Log[e + f*x]^2 - 2*f^2*(g + h*x)^2*Log[(f*(g + h*x))/(f*g - e
*h)] + 2*f*(g + h*x)*Log[e + f*x]*(h*(e + f*x) + f*(g + h*x)*Log[(f*(g + h*
x))/(f*g - e*h)]) + 2*f^2*(g + h*x)^2*PolyLog[2, (h*(e + f*x))/(-(f*g) + e*
h)]))/(f*g - e*h)^2)/(h*(g + h*x)^2)
```

fricas [F] time = 0.68, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b^2\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^2+2\,ab\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a^2}{h^3x^3+3\,gh^2x^2+3\,g^2hx+g^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^3,x, algorithm="fricas")
```

```
[Out] integral((b^2*log(((f*x + e)^p*d)^q*c)^2 + 2*a*b*log(((f*x + e)^p*d)^q*c) +
 a^2)/(h^3*x^3 + 3*g*h^2*x^2 + 3*g^2*h*x + g^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a\right)^2}{\left(hx+g\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^3,x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^2/(h*x + g)^3, x)
```

maple [F] time = 0.35, size = 0, normalized size = 0.00

$$\int \frac{\left(b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)+a\right)^2}{\left(hx+g\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^2/(h*x+g)^3,x)
```

```
[Out] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^2/(h*x+g)^3,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$abfpq\left(\frac{f\log\left(fx+e\right)}{f^2g^2h-2\,efgh^2+e^2h^3}-\frac{f\log\left(hx+g\right)}{f^2g^2h-2\,efgh^2+e^2h^3}+\frac{1}{fg^2h-egh^2+\left(fgh^2-eh^3\right)x}\right)-\frac{1}{2}\,b^2\left(\frac{\log\left(\left(\left(fx+\right.\right.\right.}{h^3x^2+2\,gh^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^3,x, algorithm="maxima")
```

```
[Out] a*b*f*p*q*(f*log(f*x + e)/(f^2*g^2*h - 2*e*f*g*h^2 + e^2*h^3) - f*log(h*x +
 g)/(f^2*g^2*h - 2*e*f*g*h^2 + e^2*h^3) + 1/(f*g^2*h - e*g*h^2 + (f*g*h^2 -
 e*h^3)*x)) - 1/2*b^2*(log(((f*x + e)^p)^q)^2/(h^3*x^2 + 2*g*h^2*x + g^2*h)
 - 2*integrate((e*h*q^2*log(d)^2 + 2*e*h*q*log(c)*log(d) + e*h*log(c)^2 + (
f*h*q^2*log(d)^2 + 2*f*h*q*log(c)*log(d) + f*h*log(c)^2)*x + (f*g*p*q + 2*e
*h*q*log(d) + 2*e*h*log(c) + (f*h*p*q + 2*f*h*q*log(d) + 2*f*h*log(c))*x)*l
og(((f*x + e)^p)^q))/(f*h^4*x^4 + e*g^3*h + (3*f*g*h^3 + e*h^4)*x^3 + 3*(f*
g^2*h^2 + e*g*h^3)*x^2 + (f*g^3*h + 3*e*g^2*h^2)*x), x)) - a*b*log(((f*x +
e)^p*d)^q*c)/(h^3*x^2 + 2*g*h^2*x + g^2*h) - 1/2*a^2/(h^3*x^2 + 2*g*h^2*x +
 g^2*h)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a+b\,\ln\left(c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right)\right)^2}{\left(g+h\,x\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^2/(g + h*x)^3,x)
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))^2/(g + h*x)^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)\right)^{2}}{\left(g+hx\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**2/(h*x+g)**3,x)
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**2/(g + h*x)**3, x)
```

3.435 $\int (g+hx)^2 \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3 dx$

Optimal. Leaf size=492

$$\frac{3b^2hp^2q^2(e+fx)^2(fg-eh)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{2f^3}+\frac{2b^2h^2p^2q^2(e+fx)^3\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{9f^3}+\frac{6}{}$$

```
[Out] 6*a*b^2*(-e*h+f*g)^2*p^2*q^2*x/f^2-6*b^3*(-e*h+f*g)^2*p^3*q^3*x/f^2-3/4*b^3
*h*(-e*h+f*g)*p^3*q^3*(f*x+e)^2/f^3-2/27*b^3*h^2*p^3*q^3*(f*x+e)^3/f^3+6*b^
3*(-e*h+f*g)^2*p^2*q^2*(f*x+e)*ln(c*(d*(f*x+e)^p)^q)/f^3+3/2*b^2*h*(-e*h+f*
g)*p^2*q^2*(f*x+e)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))/f^3+2/9*b^2*h^2*p^2*q^2*(f
*x+e)^3*(a+b*ln(c*(d*(f*x+e)^p)^q))/f^3-3*b*(-e*h+f*g)^2*p*q*(f*x+e)*(a+b*l
n(c*(d*(f*x+e)^p)^q))^2/f^3-3/2*b*h*(-e*h+f*g)*p*q*(f*x+e)^2*(a+b*ln(c*(d*(
f*x+e)^p)^q))^2/f^3-1/3*b*h^2*p*q*(f*x+e)^3*(a+b*ln(c*(d*(f*x+e)^p)^q))^2/f
^3+(-e*h+f*g)^2*(f*x+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))^3/f^3+h*(-e*h+f*g)*(f*x
+e)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))^3/f^3+1/3*h^2*(f*x+e)^3*(a+b*ln(c*(d*(f*x
+e)^p)^q))^3/f^3
```

Rubi [A] time = 0.95, antiderivative size = 492, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 8, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {2401, 2389, 2296, 2295, 2390, 2305, 2304, 2445}

$$\frac{3b^2hp^2q^2(e+fx)^2(fg-eh)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{2f^3}+\frac{2b^2h^2p^2q^2(e+fx)^3\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{9f^3}+\frac{6}{}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^3,x]
```

```
[Out] (6*a*b^2*(f*g - e*h)^2*p^2*q^2*x)/f^2 - (6*b^3*(f*g - e*h)^2*p^3*q^3*x)/f^2
 - (3*b^3*h*(f*g - e*h)*p^3*q^3*(e + f*x)^2)/(4*f^3) - (2*b^3*h^2*p^3*q^3*(
e + f*x)^3)/(27*f^3) + (6*b^3*(f*g - e*h)^2*p^2*q^2*(e + f*x)*Log[c*(d*(e +
 f*x)^p)^q])/f^3 + (3*b^2*h*(f*g - e*h)*p^2*q^2*(e + f*x)^2*(a + b*Log[c*(d
*(e + f*x)^p)^q]))/(2*f^3) + (2*b^2*h^2*p^2*q^2*(e + f*x)^3*(a + b*Log[c*(d
*(e + f*x)^p)^q]))/(9*f^3) - (3*b*(f*g - e*h)^2*p*q*(e + f*x)*(a + b*Log[c*
(d*(e + f*x)^p)^q])^2)/f^3 - (3*b*h*(f*g - e*h)*p*q*(e + f*x)^2*(a + b*Log[
c*(d*(e + f*x)^p)^q])^2)/(2*f^3) - (b*h^2*p*q*(e + f*x)^3*(a + b*Log[c*(d*(
e + f*x)^p)^q])^2)/(3*f^3) + ((f*g - e*h)^2*(e + f*x)*(a + b*Log[c*(d*(e +
f*x)^p)^q])^3)/f^3 + (h*(f*g - e*h)*(e + f*x)^2*(a + b*Log[c*(d*(e + f*x)^p
)^q])^3)/f^3 + (h^2*(e + f*x)^3*(a + b*Log[c*(d*(e + f*x)^p)^q])^3)/(3*f^3)
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int (g+hx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3\,dx = \text{Subst}\left(\int (g+hx)^2\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3\,dx, cd^q(e+fx\right.$$

$$= \text{Subst}\left(\int\left(\frac{(fg-eh)^2\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3}{f^2}+\frac{2h(fg-\right.\right.$$

$$= \text{Subst}\left(\frac{h^2\int(e+fx)^2\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3\,dx}{f^2}, cd^q(e+\right.$$

$$= \text{Subst}\left(\frac{h^2\,\text{Subst}\left(\int x^2\left(a+b\log\left(cd^qx^{pq}\right)\right)^3\,dx, x, e+fx\right)}{f^3}, cd^q\right.$$

$$= \frac{(fg-eh)^2(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{f^3}+\frac{h(fg-eh)}{}$$

$$= -\frac{3b(fg-eh)^2pq(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{f^3}-\frac{3bh(}{}$$

$$= \frac{6ab^2(fg-eh)^2p^2q^2x}{f^2}-\frac{3b^3h(fg-eh)p^3q^3(e+fx)^2}{4f^3}-\frac{2b^3h^2p^3}{2}$$

$$= \frac{6ab^2(fg-eh)^2p^2q^2x}{f^2}-\frac{6b^3(fg-eh)^2p^3q^3x}{f^2}-\frac{3b^3h(fg-eh)p^3}{4f^3}$$

Mathematica [A] time = 0.29, size = 378, normalized size = 0.77

$$\frac{-4bh^2pq\left(2bpq\left(bfpqx\left(3e^2+3efx+f^2x^2\right)-3(e+fx)^3\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\right)+9(e+fx)^3\left(a+b\log\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^3,x]
```

```
[Out] (108*(f*g - e*h)^2*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3 + 108*h*(f*
g - e*h)*(e + f*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^3 + 36*h^2*(e + f*x)^
3*(a + b*Log[c*(d*(e + f*x)^p)^q])^3 - 324*b*(f*g - e*h)^2*p*q*((e + f*x)*(
a + b*Log[c*(d*(e + f*x)^p)^q])^2 - 2*b*p*q*(f*(a - b*p*q)*x + b*(e + f*x)*
Log[c*(d*(e + f*x)^p)^q])) - 81*b*h*(f*g - e*h)*p*q*(2*(e + f*x)^2*(a + b*L
og[c*(d*(e + f*x)^p)^q])^2 + b*p*q*(b*f*p*q*x*(2*e + f*x) - 2*(e + f*x)^2*(
a + b*Log[c*(d*(e + f*x)^p)^q]))) - 4*b*h^2*p*q*(9*(e + f*x)^3*(a + b*Log[c
*(d*(e + f*x)^p)^q])^2 + 2*b*p*q*(b*f*p*q*x*(3*e^2 + 3*e*f*x + f^2*x^2) - 3
*(e + f*x)^3*(a + b*Log[c*(d*(e + f*x)^p)^q]))))/(108*f^3)
```

fricas [B] time = 2.22, size = 3121, normalized size = 6.34

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="fricas")
```

```
[Out] -1/108*(4*(2*b^3*f^3*h^2*p^3*q^3 - 6*a*b^2*f^3*h^2*p^2*q^2 + 9*a^2*b*f^3*h^
2*p*q - 9*a^3*f^3*h^2)*x^3 - 36*(b^3*f^3*h^2*p^3*q^3*x^3 + 3*b^3*f^3*g*h*p^
```

3*q^3*x^2 + 3*b^3*f^3*g^2*p^3*q^3*x + (3*b^3*e*f^2*g^2 - 3*b^3*e^2*f*g*h +
b^3*e^3*h^2)*p^3*q^3)*log(f*x + e)^3 - 36*(b^3*f^3*h^2*x^3 + 3*b^3*f^3*g*h*
x^2 + 3*b^3*f^3*g^2*x)*log(c)^3 - 36*(b^3*f^3*h^2*q^3*x^3 + 3*b^3*f^3*g*h*q
^3*x^2 + 3*b^3*f^3*g^2*q^3*x)*log(d)^3 - 3*(36*a^3*f^3*g*h - (27*b^3*f^3*g*
h - 19*b^3*e*f^2*h^2)*p^3*q^3 + 6*(9*a*b^2*f^3*g*h - 5*a*b^2*e*f^2*h^2)*p^2
q^2 - 18(3*a^2*b*f^3*g*h - a^2*b*e*f^2*h^2)*p*q)*x^2 + 18*((18*b^3*e*f^2*
g^2 - 27*b^3*e^2*f*g*h + 11*b^3*e^3*h^2)*p^3*q^3 - 6*(3*a*b^2*e*f^2*g^2 - 3
*a*b^2*e^2*f*g*h + a*b^2*e^3*h^2)*p^2*q^2 + 2*(b^3*f^3*h^2*p^3*q^3 - 3*a*b^
2*f^3*h^2*p^2*q^2)*x^3 - 3*(6*a*b^2*f^3*g*h*p^2*q^2 - (3*b^3*f^3*g*h - b^3*
e*f^2*h^2)*p^3*q^3)*x^2 - 6*(3*a*b^2*f^3*g^2*p^2*q^2 - (3*b^3*f^3*g^2 - 3*b
^3*e*f^2*g*h + b^3*e^2*f*h^2)*p^3*q^3)*x - 6*(b^3*f^3*h^2*p^2*q^2*x^3 + 3*b
^3*f^3*g*h*p^2*q^2*x^2 + 3*b^3*f^3*g^2*p^2*q^2*x + (3*b^3*e*f^2*g^2 - 3*b^3
*e^2*f*g*h + b^3*e^3*h^2)*p^2*q^2)*log(c) - 6*(b^3*f^3*h^2*p^2*q^3*x^3 + 3*
b^3*f^3*g*h*p^2*q^3*x^2 + 3*b^3*f^3*g^2*p^2*q^3*x + (3*b^3*e*f^2*g^2 - 3*b^
3*e^2*f*g*h + b^3*e^3*h^2)*p^2*q^3)*log(d))*log(f*x + e)^2 + 18*(2*(b^3*f^3
*h^2*p*q - 3*a*b^2*f^3*h^2)*x^3 - 3*(6*a*b^2*f^3*g*h - (3*b^3*f^3*g*h - b^3
*e*f^2*h^2)*p*q)*x^2 - 6*(3*a*b^2*f^3*g^2 - (3*b^3*f^3*g^2 - 3*b^3*e*f^2*g*
h + b^3*e^2*f*h^2)*p*q)*x)*log(c)^2 + 18*(2*(b^3*f^3*h^2*p*q^3 - 3*a*b^2*f^
3*h^2*q^2)*x^3 - 3*(6*a*b^2*f^3*g*h*q^2 - (3*b^3*f^3*g*h - b^3*e*f^2*h^2)*p
*q^3)*x^2 - 6*(3*a*b^2*f^3*g^2*q^2 - (3*b^3*f^3*g^2 - 3*b^3*e*f^2*g*h + b^3
*e^2*f*h^2)*p*q^3)*x - 6*(b^3*f^3*h^2*q^2*x^3 + 3*b^3*f^3*g*h*q^2*x^2 + 3*b
^3*f^3*g^2*q^2*x)*log(c))*log(d)^2 - 6*(18*a^3*f^3*g^2 - (108*b^3*f^3*g^2 -
189*b^3*e*f^2*g*h + 85*b^3*e^2*f*h^2)*p^3*q^3 + 6*(18*a*b^2*f^3*g^2 - 27*a
*b^2*e*f^2*g*h + 11*a*b^2*e^2*f*h^2)*p^2*q^2 - 18*(3*a^2*b*f^3*g^2 - 3*a^2*
b*e*f^2*g*h + a^2*b*e^2*f*h^2)*p*q)*x - 6*((108*b^3*e*f^2*g^2 - 189*b^3*e^2
*f*g*h + 85*b^3*e^3*h^2)*p^3*q^3 - 6*(18*a*b^2*e*f^2*g^2 - 27*a*b^2*e^2*f*g
*h + 11*a*b^2*e^3*h^2)*p^2*q^2 + 2*(2*b^3*f^3*h^2*p^3*q^3 - 6*a*b^2*f^3*h^2
*p^2*q^2 + 9*a^2*b*f^3*h^2*p*q)*x^3 + 18*(3*a^2*b*e*f^2*g^2 - 3*a^2*b*e^2*f
*g*h + a^2*b*e^3*h^2)*p*q + 3*(18*a^2*b*f^3*g*h*p*q + (9*b^3*f^3*g*h - 5*b^
3*e*f^2*h^2)*p^3*q^3 - 6*(3*a*b^2*f^3*g*h - a*b^2*e*f^2*h^2)*p^2*q^2)*x^2 +
18*(b^3*f^3*h^2*p*q*x^3 + 3*b^3*f^3*g*h*p*q*x^2 + 3*b^3*f^3*g^2*p*q*x + (3
*b^3*e*f^2*g^2 - 3*b^3*e^2*f*g*h + b^3*e^3*h^2)*p*q)*log(c)^2 + 18*(b^3*f^3
*h^2*p*q^3*x^3 + 3*b^3*f^3*g*h*p*q^3*x^2 + 3*b^3*f^3*g^2*p*q^3*x + (3*b^3*e
*f^2*g^2 - 3*b^3*e^2*f*g*h + b^3*e^3*h^2)*p*q^3)*log(d)^2 + 6*(9*a^2*b*f^3*
g^2*p*q + (18*b^3*f^3*g^2 - 27*b^3*e*f^2*g*h + 11*b^3*e^2*f*h^2)*p^3*q^3 -
6*(3*a*b^2*f^3*g^2 - 3*a*b^2*e*f^2*g*h + a*b^2*e^2*f*h^2)*p^2*q^2)*x - 6*((
18*b^3*e*f^2*g^2 - 27*b^3*e^2*f*g*h + 11*b^3*e^3*h^2)*p^2*q^2 + 2*(b^3*f^3*
h^2*p^2*q^2 - 3*a*b^2*f^3*h^2*p*q)*x^3 - 6*(3*a*b^2*e*f^2*g^2 - 3*a*b^2*e^2
*f*g*h + a*b^2*e^3*h^2)*p*q - 3*(6*a*b^2*f^3*g*h*p*q - (3*b^3*f^3*g*h - b^3
*e*f^2*h^2)*p^2*q^2)*x^2 - 6*(3*a*b^2*f^3*g^2*p*q - (3*b^3*f^3*g^2 - 3*b^3*
e*f^2*g*h + b^3*e^2*f*h^2)*p^2*q^2)*x)*log(c) - 6*((18*b^3*e*f^2*g^2 - 27*b
^3*e^2*f*g*h + 11*b^3*e^3*h^2)*p^2*q^3 - 6*(3*a*b^2*e*f^2*g^2 - 3*a*b^2*e^2
*f*g*h + a*b^2*e^3*h^2)*p*q^2 + 2*(b^3*f^3*h^2*p^2*q^3 - 3*a*b^2*f^3*h^2*p*
q^2)*x^3 - 3*(6*a*b^2*f^3*g*h*p*q^2 - (3*b^3*f^3*g*h - b^3*e*f^2*h^2)*p^2*q
^3)*x^2 - 6*(3*a*b^2*f^3*g^2*p*q^2 - (3*b^3*f^3*g^2 - 3*b^3*e*f^2*g*h + b^3
*e^2*f*h^2)*p^2*q^3)*x - 6*(b^3*f^3*h^2*p*q^2*x^3 + 3*b^3*f^3*g*h*p*q^2*x^2
+ 3*b^3*f^3*g^2*p*q^2*x + (3*b^3*e*f^2*g^2 - 3*b^3*e^2*f*g*h + b^3*e^3*h^2
)*p*q^2)*log(c))*log(d))*log(f*x + e) - 6*(2*(2*b^3*f^3*h^2*p^2*q^2 - 6*a*b
^2*f^3*h^2*p*q + 9*a^2*b*f^3*h^2)*x^3 + 3*(18*a^2*b*f^3*g*h + (9*b^3*f^3*g*
h - 5*b^3*e*f^2*h^2)*p^2*q^2 - 6*(3*a*b^2*f^3*g*h - a*b^2*e*f^2*h^2)*p*q)*x
^2 + 6*(9*a^2*b*f^3*g^2 + (18*b^3*f^3*g^2 - 27*b^3*e*f^2*g*h + 11*b^3*e^2*f
*h^2)*p^2*q^2 - 6*(3*a*b^2*f^3*g^2 - 3*a*b^2*e*f^2*g*h + a*b^2*e^2*f*h^2)*p
*q)*x)*log(c) - 6*(2*(2*b^3*f^3*h^2*p^2*q^3 - 6*a*b^2*f^3*h^2*p*q^2 + 9*a^2
*b*f^3*h^2*q)*x^3 + 3*(18*a^2*b*f^3*g*h*q + (9*b^3*f^3*g*h - 5*b^3*e*f^2*h^
2)*p^2*q^3 - 6*(3*a*b^2*f^3*g*h - a*b^2*e*f^2*h^2)*p*q^2)*x^2 + 18*(b^3*f^3
*h^2*q*x^3 + 3*b^3*f^3*g*h*q*x^2 + 3*b^3*f^3*g^2*q*x)*log(c)^2 + 6*(9*a^2*b
*f^3*g^2*q + (18*b^3*f^3*g^2 - 27*b^3*e*f^2*g*h + 11*b^3*e^2*f*h^2)*p^2*q^3
- 6*(3*a*b^2*f^3*g^2 - 3*a*b^2*e*f^2*g*h + a*b^2*e^2*f*h^2)*p*q^2)*x - 6*(
2*(b^3*f^3*h^2*p*q^2 - 3*a*b^2*f^3*h^2*q)*x^3 - 3*(6*a*b^2*f^3*g*h*q - (3*b

```
^3*f^3*g*h - b^3*e*f^2*h^2)*p*q^2)*x^2 - 6*(3*a*b^2*f^3*g^2*q - (3*b^3*f^3*
g^2 - 3*b^3*e*f^2*g*h + b^3*e^2*f*h^2)*p*q^2)*x)*log(c))*log(d))/f^3
```

giac [B] time = 0.65, size = 5907, normalized size = 12.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="giac")
```

```
[Out] (f*x + e)*b^3*g^2*p^3*q^3*log(f*x + e)^3/f + (f*x + e)^2*b^3*g*h*p^3*q^3*lo
g(f*x + e)^3/f^2 + 1/3*(f*x + e)^3*b^3*h^2*p^3*q^3*log(f*x + e)^3/f^3 - 2*(
f*x + e)*b^3*g*h*p^3*q^3*e*log(f*x + e)^3/f^2 - (f*x + e)^2*b^3*h^2*p^3*q^3
*e*log(f*x + e)^3/f^3 - 3*(f*x + e)*b^3*g^2*p^3*q^3*log(f*x + e)^2/f - 3/2*
(f*x + e)^2*b^3*g*h*p^3*q^3*log(f*x + e)^2/f^2 - 1/3*(f*x + e)^3*b^3*h^2*p^
3*q^3*log(f*x + e)^2/f^3 + 6*(f*x + e)*b^3*g*h*p^3*q^3*e*log(f*x + e)^2/f^2
 + 3/2*(f*x + e)^2*b^3*h^2*p^3*q^3*e*log(f*x + e)^2/f^3 + (f*x + e)*b^3*h^2
*p^3*q^3*e^2*log(f*x + e)^3/f^3 + 3*(f*x + e)*b^3*g^2*p^2*q^3*log(f*x + e)^
2*log(d)/f + 3*(f*x + e)^2*b^3*g*h*p^2*q^3*log(f*x + e)^2*log(d)/f^2 + (f*x
 + e)^3*b^3*h^2*p^2*q^3*log(f*x + e)^2*log(d)/f^3 - 6*(f*x + e)*b^3*g*h*p^2
*q^3*e*log(f*x + e)^2*log(d)/f^2 - 3*(f*x + e)^2*b^3*h^2*p^2*q^3*e*log(f*x
+ e)^2*log(d)/f^3 + 6*(f*x + e)*b^3*g^2*p^3*q^3*log(f*x + e)/f + 3/2*(f*x +
 e)^2*b^3*g*h*p^3*q^3*log(f*x + e)/f^2 + 2/9*(f*x + e)^3*b^3*h^2*p^3*q^3*lo
g(f*x + e)/f^3 - 12*(f*x + e)*b^3*g*h*p^3*q^3*e*log(f*x + e)/f^2 - 3/2*(f*x
 + e)^2*b^3*h^2*p^3*q^3*e*log(f*x + e)/f^3 - 3*(f*x + e)*b^3*h^2*p^3*q^3*e^
2*log(f*x + e)^2/f^3 + 3*(f*x + e)*b^3*g^2*p^2*q^2*log(f*x + e)^2*log(c)/f
+ 3*(f*x + e)^2*b^3*g*h*p^2*q^2*log(f*x + e)^2*log(c)/f^2 + (f*x + e)^3*b^3
*h^2*p^2*q^2*log(f*x + e)^2*log(c)/f^3 - 6*(f*x + e)*b^3*g*h*p^2*q^2*e*log(
f*x + e)^2*log(c)/f^2 - 3*(f*x + e)^2*b^3*h^2*p^2*q^2*e*log(f*x + e)^2*log(
c)/f^3 - 6*(f*x + e)*b^3*g^2*p^2*q^3*log(f*x + e)*log(d)/f - 3*(f*x + e)^2*
b^3*g*h*p^2*q^3*log(f*x + e)*log(d)/f^2 - 2/3*(f*x + e)^3*b^3*h^2*p^2*q^3*l
og(f*x + e)*log(d)/f^3 + 12*(f*x + e)*b^3*g*h*p^2*q^3*e*log(f*x + e)*log(d)
/f^2 + 3*(f*x + e)^2*b^3*h^2*p^2*q^3*e*log(f*x + e)*log(d)/f^3 + 3*(f*x + e
)*b^3*h^2*p^2*q^3*e^2*log(f*x + e)^2*log(d)/f^3 + 3*(f*x + e)*b^3*g^2*p*q^3
*log(f*x + e)*log(d)^2/f + 3*(f*x + e)^2*b^3*g*h*p*q^3*log(f*x + e)*log(d)^
2/f^2 + (f*x + e)^3*b^3*h^2*p*q^3*log(f*x + e)*log(d)^2/f^3 - 6*(f*x + e)*b
^3*g*h*p*q^3*e*log(f*x + e)*log(d)^2/f^2 - 3*(f*x + e)^2*b^3*h^2*p*q^3*e*lo
g(f*x + e)*log(d)^2/f^3 - 6*(f*x + e)*b^3*g^2*p^3*q^3/f - 3/4*(f*x + e)^2*b
^3*g*h*p^3*q^3/f^2 - 2/27*(f*x + e)^3*b^3*h^2*p^3*q^3/f^3 + 12*(f*x + e)*b^
3*g*h*p^3*q^3*e/f^2 + 3/4*(f*x + e)^2*b^3*h^2*p^3*q^3*e/f^3 + 6*(f*x + e)*b
^3*h^2*p^3*q^3*e^2*log(f*x + e)/f^3 + 3*(f*x + e)*a*b^2*g^2*p^2*q^2*log(f*x
 + e)^2/f + 3*(f*x + e)^2*a*b^2*g*h*p^2*q^2*log(f*x + e)^2/f^2 + (f*x + e)^
3*a*b^2*h^2*p^2*q^2*log(f*x + e)^2/f^3 - 6*(f*x + e)*a*b^2*g*h*p^2*q^2*e*lo
g(f*x + e)^2/f^2 - 3*(f*x + e)^2*a*b^2*h^2*p^2*q^2*e*log(f*x + e)^2/f^3 - 6
*(f*x + e)*b^3*g^2*p^2*q^2*log(f*x + e)*log(c)/f - 3*(f*x + e)^2*b^3*g*h*p^
2*q^2*log(f*x + e)*log(c)/f^2 - 2/3*(f*x + e)^3*b^3*h^2*p^2*q^2*log(f*x + e
)*log(c)/f^3 + 12*(f*x + e)*b^3*g*h*p^2*q^2*e*log(f*x + e)*log(c)/f^2 + 3*(
f*x + e)^2*b^3*h^2*p^2*q^2*e*log(f*x + e)*log(c)/f^3 + 3*(f*x + e)*b^3*h^2*
p^2*q^2*e^2*log(f*x + e)^2*log(c)/f^3 + 6*(f*x + e)*b^3*g^2*p^2*q^3*log(d)/
f + 3/2*(f*x + e)^2*b^3*g*h*p^2*q^3*log(d)/f^2 + 2/9*(f*x + e)^3*b^3*h^2*p^
2*q^3*log(d)/f^3 - 12*(f*x + e)*b^3*g*h*p^2*q^3*e*log(d)/f^2 - 3/2*(f*x + e
)^2*b^3*h^2*p^2*q^3*e*log(d)/f^3 - 6*(f*x + e)*b^3*h^2*p^2*q^3*e^2*log(f*x
+ e)*log(d)/f^3 + 6*(f*x + e)*b^3*g^2*p*q^2*log(f*x + e)*log(c)*log(d)/f +
6*(f*x + e)^2*b^3*g*h*p*q^2*log(f*x + e)*log(c)*log(d)/f^2 + 2*(f*x + e)^3*
b^3*h^2*p*q^2*log(f*x + e)*log(c)*log(d)/f^3 - 12*(f*x + e)*b^3*g*h*p*q^2*e
*log(f*x + e)*log(c)*log(d)/f^2 - 6*(f*x + e)^2*b^3*h^2*p*q^2*e*log(f*x + e
)*log(c)*log(d)/f^3 - 3*(f*x + e)*b^3*g^2*p*q^3*log(d)^2/f - 3/2*(f*x + e)^
2*b^3*g*h*p*q^3*log(d)^2/f^2 - 1/3*(f*x + e)^3*b^3*h^2*p*q^3*log(d)^2/f^3 +
 6*(f*x + e)*b^3*g*h*p*q^3*e*log(d)^2/f^2 + 3/2*(f*x + e)^2*b^3*h^2*p*q^3*e
*log(d)^2/f^3 + 3*(f*x + e)*b^3*h^2*p*q^3*e^2*log(f*x + e)*log(d)^2/f^3 + (
```

```
f*x + e)*b^3*g^2*q^3*log(d)^3/f + (f*x + e)^2*b^3*g*h*q^3*log(d)^3/f^2 + 1/
3*(f*x + e)^3*b^3*h^2*q^3*log(d)^3/f^3 - 2*(f*x + e)*b^3*g*h*q^3*e*log(d)^3
/f^2 - (f*x + e)^2*b^3*h^2*q^3*e*log(d)^3/f^3 - 6*(f*x + e)*b^3*h^2*p^3*q^3
*e^2/f^3 - 6*(f*x + e)*a*b^2*g^2*p^2*q^2*log(f*x + e)/f - 3*(f*x + e)^2*a*b
^2*g*h*p^2*q^2*log(f*x + e)/f^2 - 2/3*(f*x + e)^3*a*b^2*h^2*p^2*q^2*log(f*x
 + e)/f^3 + 12*(f*x + e)*a*b^2*g*h*p^2*q^2*e*log(f*x + e)/f^2 + 3*(f*x + e)
^2*a*b^2*h^2*p^2*q^2*e*log(f*x + e)/f^3 + 3*(f*x + e)*a*b^2*h^2*p^2*q^2*e^2
*log(f*x + e)^2/f^3 + 6*(f*x + e)*b^3*g^2*p^2*q^2*log(c)/f + 3/2*(f*x + e)^
2*b^3*g*h*p^2*q^2*log(c)/f^2 + 2/9*(f*x + e)^3*b^3*h^2*p^2*q^2*log(c)/f^3 -
 12*(f*x + e)*b^3*g*h*p^2*q^2*e*log(c)/f^2 - 3/2*(f*x + e)^2*b^3*h^2*p^2*q^
2*e*log(c)/f^3 - 6*(f*x + e)*b^3*h^2*p^2*q^2*e^2*log(f*x + e)*log(c)/f^3 +
3*(f*x + e)*b^3*g^2*p*q*log(f*x + e)*log(c)^2/f + 3*(f*x + e)^2*b^3*g*h*p*q
*log(f*x + e)*log(c)^2/f^2 + (f*x + e)^3*b^3*h^2*p*q*log(f*x + e)*log(c)^2/
f^3 - 6*(f*x + e)*b^3*g*h*p*q*e*log(f*x + e)*log(c)^2/f^2 - 3*(f*x + e)^2*b
^3*h^2*p*q*e*log(f*x + e)*log(c)^2/f^3 + 6*(f*x + e)*b^3*h^2*p^2*q^3*e^2*lo
g(d)/f^3 + 6*(f*x + e)*a*b^2*g^2*p*q^2*log(f*x + e)*log(d)/f + 6*(f*x + e)^
2*a*b^2*g*h*p*q^2*log(f*x + e)*log(d)/f^2 + 2*(f*x + e)^3*a*b^2*h^2*p*q^2*l
og(f*x + e)*log(d)/f^3 - 12*(f*x + e)*a*b^2*g*h*p*q^2*e*log(f*x + e)*log(d)
/f^2 - 6*(f*x + e)^2*a*b^2*h^2*p*q^2*e*log(f*x + e)*log(d)/f^3 - 6*(f*x + e
)*b^3*g^2*p*q^2*log(c)*log(d)/f - 3*(f*x + e)^2*b^3*g*h*p*q^2*log(c)*log(d)
/f^2 - 2/3*(f*x + e)^3*b^3*h^2*p*q^2*log(c)*log(d)/f^3 + 12*(f*x + e)*b^3*g
*h*p*q^2*e*log(c)*log(d)/f^2 + 3*(f*x + e)^2*b^3*h^2*p*q^2*e*log(c)*log(d)/
f^3 + 6*(f*x + e)*b^3*h^2*p*q^2*e^2*log(f*x + e)*log(c)*log(d)/f^3 - 3*(f*x
 + e)*b^3*h^2*p*q^3*e^2*log(d)^2/f^3 + 3*(f*x + e)*b^3*g^2*q^2*log(c)*log(d
)^2/f + 3*(f*x + e)^2*b^3*g*h*q^2*log(c)*log(d)^2/f^2 + (f*x + e)^3*b^3*h^2
*q^2*log(c)*log(d)^2/f^3 - 6*(f*x + e)*b^3*g*h*q^2*e*log(c)*log(d)^2/f^2 -
3*(f*x + e)^2*b^3*h^2*q^2*e*log(c)*log(d)^2/f^3 + (f*x + e)*b^3*h^2*q^3*e^2
*log(d)^3/f^3 + 6*(f*x + e)*a*b^2*g^2*p^2*q^2/f + 3/2*(f*x + e)^2*a*b^2*g*h
*p^2*q^2/f^2 + 2/9*(f*x + e)^3*a*b^2*h^2*p^2*q^2/f^3 - 12*(f*x + e)*a*b^2*g
*h*p^2*q^2*e/f^2 - 3/2*(f*x + e)^2*a*b^2*h^2*p^2*q^2*e/f^3 - 6*(f*x + e)*a*
b^2*h^2*p^2*q^2*e^2*log(f*x + e)/f^3 + 6*(f*x + e)*b^3*h^2*p^2*q^2*e^2*log(
c)/f^3 + 6*(f*x + e)*a*b^2*g^2*p*q*log(f*x + e)*log(c)/f + 6*(f*x + e)^2*a*
b^2*g*h*p*q*log(f*x + e)*log(c)/f^2 + 2*(f*x + e)^3*a*b^2*h^2*p*q*log(f*x +
 e)*log(c)/f^3 - 12*(f*x + e)*a*b^2*g*h*p*q*e*log(f*x + e)*log(c)/f^2 - 6*(
f*x + e)^2*a*b^2*h^2*p*q*e*log(f*x + e)*log(c)/f^3 - 3*(f*x + e)*b^3*g^2*p*
q*log(c)^2/f - 3/2*(f*x + e)^2*b^3*g*h*p*q*log(c)^2/f^2 - 1/3*(f*x + e)^3*b
^3*h^2*p*q*log(c)^2/f^3 + 6*(f*x + e)*b^3*g*h*p*q*e*log(c)^2/f^2 + 3/2*(f*x
 + e)^2*b^3*h^2*p*q*e*log(c)^2/f^3 + 3*(f*x + e)*b^3*h^2*p*q*e^2*log(f*x +
e)*log(c)^2/f^3 - 6*(f*x + e)*a*b^2*g^2*p*q^2*log(d)/f - 3*(f*x + e)^2*a*b^
2*g*h*p*q^2*log(d)/f^2 - 2/3*(f*x + e)^3*a*b^2*h^2*p*q^2*log(d)/f^3 + 12*(f
*x + e)*a*b^2*g*h*p*q^2*e*log(d)/f^2 + 3*(f*x + e)^2*a*b^2*h^2*p*q^2*e*log(
d)/f^3 + 6*(f*x + e)*a*b^2*h^2*p*q^2*e^2*log(f*x + e)*log(d)/f^3 - 6*(f*x +
 e)*b^3*h^2*p*q^2*e^2*log(c)*log(d)/f^3 + 3*(f*x + e)*b^3*g^2*q*log(c)^2*lo
g(d)/f + 3*(f*x + e)^2*b^3*g*h*q*log(c)^2*log(d)/f^2 + (f*x + e)^3*b^3*h^2*
q*log(c)^2*log(d)/f^3 - 6*(f*x + e)*b^3*g*h*q*e*log(c)^2*log(d)/f^2 - 3*(f*
x + e)^2*b^3*h^2*q*e*log(c)^2*log(d)/f^3 + 3*(f*x + e)*a*b^2*g^2*q^2*log(d)
^2/f + 3*(f*x + e)^2*a*b^2*g*h*q^2*log(d)^2/f^2 + (f*x + e)^3*a*b^2*h^2*q^2
*log(d)^2/f^3 - 6*(f*x + e)*a*b^2*g*h*q^2*e*log(d)^2/f^2 - 3*(f*x + e)^2*a*
b^2*h^2*q^2*e*log(d)^2/f^3 + 3*(f*x + e)*b^3*h^2*q^2*e^2*log(c)*log(d)^2/f^
3 + 6*(f*x + e)*a*b^2*h^2*p^2*q^2*e^2/f^3 + 3*(f*x + e)*a^2*b*g^2*p*q*log(f
*x + e)/f + 3*(f*x + e)^2*a^2*b*g*h*p*q*log(f*x + e)/f^2 + (f*x + e)^3*a^2*
b*h^2*p*q*log(f*x + e)/f^3 - 6*(f*x + e)*a^2*b*g*h*p*q*e*log(f*x + e)/f^2 -
 3*(f*x + e)^2*a^2*b*h^2*p*q*e*log(f*x + e)/f^3 - 6*(f*x + e)*a*b^2*g^2*p*q
*log(c)/f - 3*(f*x + e)^2*a*b^2*g*h*p*q*log(c)/f^2 - 2/3*(f*x + e)^3*a*b^2*
h^2*p*q*log(c)/f^3 + 12*(f*x + e)*a*b^2*g*h*p*q*e*log(c)/f^2 + 3*(f*x + e)^
2*a*b^2*h^2*p*q*e*log(c)/f^3 + 6*(f*x + e)*a*b^2*h^2*p*q*e^2*log(f*x + e)*l
og(c)/f^3 - 3*(f*x + e)*b^3*h^2*p*q*e^2*log(c)^2/f^3 + (f*x + e)*b^3*g^2*lo
g(c)^3/f + (f*x + e)^2*b^3*g*h*log(c)^3/f^2 + 1/3*(f*x + e)^3*b^3*h^2*log(c
)^3/f^3 - 2*(f*x + e)*b^3*g*h*e*log(c)^3/f^2 - (f*x + e)^2*b^3*h^2*e*log(c)
```

```
^3/f^3 - 6*(f*x + e)*a*b^2*h^2*p*q^2*e^2*log(d)/f^3 + 6*(f*x + e)*a*b^2*g^2
*q*log(c)*log(d)/f + 6*(f*x + e)^2*a*b^2*g*h*q*log(c)*log(d)/f^2 + 2*(f*x +
 e)^3*a*b^2*h^2*q*log(c)*log(d)/f^3 - 12*(f*x + e)*a*b^2*g*h*q*e*log(c)*log
(d)/f^2 - 6*(f*x + e)^2*a*b^2*h^2*q*e*log(c)*log(d)/f^3 + 3*(f*x + e)*b^3*h
^2*q*e^2*log(c)^2*log(d)/f^3 + 3*(f*x + e)*a*b^2*h^2*q^2*e^2*log(d)^2/f^3 -
 3*(f*x + e)*a^2*b*g^2*p*q/f - 3/2*(f*x + e)^2*a^2*b*g*h*p*q/f^2 - 1/3*(f*x
 + e)^3*a^2*b*h^2*p*q/f^3 + 6*(f*x + e)*a^2*b*g*h*p*q*e/f^2 + 3/2*(f*x + e)
^2*a^2*b*h^2*p*q*e/f^3 + 3*(f*x + e)*a^2*b*h^2*p*q*e^2*log(f*x + e)/f^3 - 6
*(f*x + e)*a*b^2*h^2*p*q*e^2*log(c)/f^3 + 3*(f*x + e)*a*b^2*g^2*log(c)^2/f
+ 3*(f*x + e)^2*a*b^2*g*h*log(c)^2/f^2 + (f*x + e)^3*a*b^2*h^2*log(c)^2/f^3
 - 6*(f*x + e)*a*b^2*g*h*e*log(c)^2/f^2 - 3*(f*x + e)^2*a*b^2*h^2*e*log(c)^
2/f^3 + (f*x + e)*b^3*h^2*e^2*log(c)^3/f^3 + 3*(f*x + e)*a^2*b*g^2*q*log(d)
/f + 3*(f*x + e)^2*a^2*b*g*h*q*log(d)/f^2 + (f*x + e)^3*a^2*b*h^2*q*log(d)/
f^3 - 6*(f*x + e)*a^2*b*g*h*q*e*log(d)/f^2 - 3*(f*x + e)^2*a^2*b*h^2*q*e*lo
g(d)/f^3 + 6*(f*x + e)*a*b^2*h^2*q*e^2*log(c)*log(d)/f^3 - 3*(f*x + e)*a^2*
b*h^2*p*q*e^2/f^3 + 3*(f*x + e)*a^2*b*g^2*log(c)/f + 3*(f*x + e)^2*a^2*b*g*
h*log(c)/f^2 + (f*x + e)^3*a^2*b*h^2*log(c)/f^3 - 6*(f*x + e)*a^2*b*g*h*e*l
og(c)/f^2 - 3*(f*x + e)^2*a^2*b*h^2*e*log(c)/f^3 + 3*(f*x + e)*a*b^2*h^2*e^
2*log(c)^2/f^3 + 3*(f*x + e)*a^2*b*h^2*q*e^2*log(d)/f^3 + (f*x + e)*a^3*g^2
/f + (f*x + e)^2*a^3*g*h/f^2 + 1/3*(f*x + e)^3*a^3*h^2/f^3 - 2*(f*x + e)*a^
3*g*h*e/f^2 - (f*x + e)^2*a^3*h^2*e/f^3 + 3*(f*x + e)*a^2*b*h^2*e^2*log(c)/
f^3 + (f*x + e)*a^3*h^2*e^2/f^3
```

maple [F] time = 0.34, size = 0, normalized size = 0.00

$$\int \left(hx+g\right)^{2} \left(b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)+a\right)^{3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^2*(b*ln(c*(d*(f*x+e)^p)^q)+a)^3,x)
```

```
[Out] int((h*x+g)^2*(b*ln(c*(d*(f*x+e)^p)^q)+a)^3,x)
```

maxima [B] time = 0.79, size = 1245, normalized size = 2.53

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="maxima")
```

```
[Out] 1/3*b^3*h^2*x^3*log(((f*x + e)^p*d)^q*c)^3 + a*b^2*h^2*x^3*log(((f*x + e)^p
*d)^q*c)^2 + b^3*g*h*x^2*log(((f*x + e)^p*d)^q*c)^3 - 3*a^2*b*f*g^2*p*q*(x/
f - e*log(f*x + e)/f^2) + 1/6*a^2*b*f*h^2*p*q*(6*e^3*log(f*x + e)/f^4 - (2*
f^2*x^3 - 3*e*f*x^2 + 6*e^2*x)/f^3) - 3/2*a^2*b*f*g*h*p*q*(2*e^2*log(f*x +
e)/f^3 + (f*x^2 - 2*e*x)/f^2) + a^2*b*h^2*x^3*log(((f*x + e)^p*d)^q*c) + 3*
a*b^2*g*h*x^2*log(((f*x + e)^p*d)^q*c)^2 + b^3*g^2*x*log(((f*x + e)^p*d)^q*
c)^3 + 1/3*a^3*h^2*x^3 + 3*a^2*b*g*h*x^2*log(((f*x + e)^p*d)^q*c) + 3*a*b^2
*g^2*x*log(((f*x + e)^p*d)^q*c)^2 + a^3*g*h*x^2 + 3*a^2*b*g^2*x*log(((f*x +
 e)^p*d)^q*c) - 3*(2*f*p*q*(x/f - e*log(f*x + e)/f^2)*log(((f*x + e)^p*d)^q
*c) + (e*log(f*x + e)^2 - 2*f*x + 2*e*log(f*x + e))*p^2*q^2/f)*a*b^2*g^2 -
(3*f*p*q*(x/f - e*log(f*x + e)/f^2)*log(((f*x + e)^p*d)^q*c)^2 - ((e*log(f*
x + e)^3 + 3*e*log(f*x + e)^2 - 6*f*x + 6*e*log(f*x + e))*p^2*q^2/f^2 - 3*(
e*log(f*x + e)^2 - 2*f*x + 2*e*log(f*x + e))*p*q*log(((f*x + e)^p*d)^q*c)/f
^2)*f*p*q)*b^3*g^2 - 3/2*(2*f*p*q*(2*e^2*log(f*x + e)/f^3 + (f*x^2 - 2*e*x)
/f^2)*log(((f*x + e)^p*d)^q*c) - (f^2*x^2 + 2*e^2*log(f*x + e)^2 - 6*e*f*x
+ 6*e^2*log(f*x + e))*p^2*q^2/f^2)*a*b^2*g*h - 1/4*(6*f*p*q*(2*e^2*log(f*x
+ e)/f^3 + (f*x^2 - 2*e*x)/f^2)*log(((f*x + e)^p*d)^q*c)^2 + ((4*e^2*log(f*
x + e)^3 + 3*f^2*x^2 + 18*e^2*log(f*x + e)^2 - 42*e*f*x + 42*e^2*log(f*x +
e))*p^2*q^2/f^3 - 6*(f^2*x^2 + 2*e^2*log(f*x + e)^2 - 6*e*f*x + 6*e^2*log(f
```

```
*x + e))*p*q*log(((f*x + e)^p*d)^q*c)/f^3)*f*p*q)*b^3*g*h + 1/18*(6*f*p*q*(
6*e^3*log(f*x + e)/f^4 - (2*f^2*x^3 - 3*e*f*x^2 + 6*e^2*x)/f^3)*log(((f*x +
 e)^p*d)^q*c) + (4*f^3*x^3 - 15*e*f^2*x^2 - 18*e^3*log(f*x + e)^2 + 66*e^2*
f*x - 66*e^3*log(f*x + e))*p^2*q^2/f^3)*a*b^2*h^2 + 1/108*(18*f*p*q*(6*e^3*
log(f*x + e)/f^4 - (2*f^2*x^3 - 3*e*f*x^2 + 6*e^2*x)/f^3)*log(((f*x + e)^p*
d)^q*c)^2 - f*p*q*((8*f^3*x^3 - 36*e^3*log(f*x + e)^3 - 57*e*f^2*x^2 - 198*
e^3*log(f*x + e)^2 + 510*e^2*f*x - 510*e^3*log(f*x + e))*p^2*q^2/f^4 - 6*(4
*f^3*x^3 - 15*e*f^2*x^2 - 18*e^3*log(f*x + e)^2 + 66*e^2*f*x - 66*e^3*log(f
*x + e))*p*q*log(((f*x + e)^p*d)^q*c)/f^4))*b^3*h^2 + a^3*g^2*x
```

mupad [B] time = 1.26, size = 1400, normalized size = 2.85

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)^2*(a + b*log(c*(d*(e + f*x)^p)^q))^3,x)
```

```
[Out] x*((18*a^3*f^2*g^2 - 66*b^3*e^2*h^2*p^3*q^3 - 108*b^3*f^2*g^2*p^3*q^3 + 36*
a^3*e*f*g*h + 36*a*b^2*e^2*h^2*p^2*q^2 + 108*a*b^2*f^2*g^2*p^2*q^2 - 54*a^2
*b*f^2*g^2*p*q + 162*b^3*e*f*g*h*p^3*q^3 - 108*a*b^2*e*f*g*h*p^2*q^2)/(18*f
^2) - (e*((h*(6*a^3*e*h + 12*a^3*f*g + 5*b^3*e*h*p^3*q^3 - 9*b^3*f*g*p^3*q^
3 - 18*a^2*b*f*g*p*q - 6*a*b^2*e*h*p^2*q^2 + 18*a*b^2*f*g*p^2*q^2))/(6*f) -
 (e*h^2*(9*a^3 - 2*b^3*p^3*q^3 + 6*a*b^2*p^2*q^2 - 9*a^2*b*p*q))/(9*f)))/f)
 + log(c*(d*(e + f*x)^p)^q)^2*(x^2*((3*b^2*h*(a*e*h + 2*a*f*g - b*f*g*p*q))
/(2*f) - (b^2*e*h^2*(3*a - b*p*q))/(2*f)) - x*((e*((3*b^2*h*(a*e*h + 2*a*f*
g - b*f*g*p*q))/f - (b^2*e*h^2*(3*a - b*p*q))/f))/f - (3*b^2*g*(2*a*e*h + a
*f*g - b*f*g*p*q))/f) + (e*(6*a*b^2*e^2*h^2 + 18*a*b^2*f^2*g^2 - 11*b^3*e^2
*h^2*p*q - 18*b^3*f^2*g^2*p*q - 18*a*b^2*e*f*g*h + 27*b^3*e*f*g*h*p*q))/(6*
f^3) + (b^2*h^2*x^3*(3*a - b*p*q))/3) + log(c*(d*(e + f*x)^p)^q)^3*(b^3*g^2
*x + (b^3*h^2*x^3)/3 + (e*(b^3*e^2*h^2 + 3*b^3*f^2*g^2 - 3*b^3*e*f*g*h))/(3
*f^3) + b^3*g*h*x^2) + x^2*((h*(6*a^3*e*h + 12*a^3*f*g + 5*b^3*e*h*p^3*q^3
- 9*b^3*f*g*p^3*q^3 - 18*a^2*b*f*g*p*q - 6*a*b^2*e*h*p^2*q^2 + 18*a*b^2*f*g
*p^2*q^2))/(12*f) - (e*h^2*(9*a^3 - 2*b^3*p^3*q^3 + 6*a*b^2*p^2*q^2 - 9*a^2
*b*p*q))/(18*f)) + (log(e + f*x)*(85*b^3*e^3*h^2*p^3*q^3 - 66*a*b^2*e^3*h^2
*p^2*q^2 + 108*b^3*e*f^2*g^2*p^3*q^3 + 18*a^2*b*e^3*h^2*p*q - 108*a*b^2*e*f
^2*g^2*p^2*q^2 + 54*a^2*b*e*f^2*g^2*p*q - 189*b^3*e^2*f*g*h*p^3*q^3 + 162*a
*b^2*e^2*f*g*h*p^2*q^2 - 54*a^2*b*e^2*f*g*h*p*q))/(18*f^3) + (h^2*x^3*(9*a^
3 - 2*b^3*p^3*q^3 + 6*a*b^2*p^2*q^2 - 9*a^2*b*p*q))/27 + (log(c*(d*(e + f*x
)^p)^q)*(x^3*(f*(9*a^2*b*f*g*h - (5*b^3*e*h^2*p^2*q^2)/2 + 3*a*b^2*e*h^2*p*
q + (9*b^3*f*g*h*p^2*q^2)/2 - 9*a*b^2*f*g*h*p*q) + (b*e*f*h^2*(9*a^2 + 2*b^
2*p^2*q^2 - 6*a*b*p*q))/3) + x^2*(e*(9*a^2*b*f*g*h - (5*b^3*e*h^2*p^2*q^2)/
2 + 3*a*b^2*e*h^2*p*q + (9*b^3*f*g*h*p^2*q^2)/2 - 9*a*b^2*f*g*h*p*q) + 9*a^
2*b*f^2*g^2 + 11*b^3*e^2*h^2*p^2*q^2 + 18*b^3*f^2*g^2*p^2*q^2 - 6*a*b^2*e^2
*h^2*p*q - 18*a*b^2*f^2*g^2*p*q - 27*b^3*e*f*g*h*p^2*q^2 + 18*a*b^2*e*f*g*h
*p*q) + (e*x*(9*a^2*b*f^2*g^2 + 11*b^3*e^2*h^2*p^2*q^2 + 18*b^3*f^2*g^2*p^2
*q^2 - 6*a*b^2*e^2*h^2*p*q - 18*a*b^2*f^2*g^2*p*q - 27*b^3*e*f*g*h*p^2*q^2
+ 18*a*b^2*e*f*g*h*p*q))/f + (b*f^2*h^2*x^4*(9*a^2 + 2*b^2*p^2*q^2 - 6*a*b*
p*q))/3))/(3*f*(e + f*x))
```

sympy [A] time = 80.86, size = 5008, normalized size = 10.18

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**2*(a+b*ln(c*(d*(f*x+e)**p)**q))**3,x)
```

```
[Out] Piecewise((a**3*g**2*x + a**3*g*h*x**2 + a**3*h**2*x**3/3 + a**2*b*e**3*h**
2*p*q*log(e + f*x)/f**3 - 3*a**2*b*e**2*g*h*p*q*log(e + f*x)/f**2 - a**2*b*
e**2*h**2*p*q*x/f**2 + 3*a**2*b*e*g**2*p*q*log(e + f*x)/f + 3*a**2*b*e*g*h*
```

```
p*q*x/f + a**2*b*e*h**2*p*q*x**2/(2*f) + 3*a**2*b*g**2*p*q*x*log(e + f*x) -
 3*a**2*b*g**2*p*q*x + 3*a**2*b*g**2*q*x*log(d) + 3*a**2*b*g**2*x*log(c) +
3*a**2*b*g*h*p*q*x**2*log(e + f*x) - 3*a**2*b*g*h*p*q*x**2/2 + 3*a**2*b*g*h
*q*x**2*log(d) + 3*a**2*b*g*h*x**2*log(c) + a**2*b*h**2*p*q*x**3*log(e + f*
x) - a**2*b*h**2*p*q*x**3/3 + a**2*b*h**2*q*x**3*log(d) + a**2*b*h**2*x**3*
log(c) + a*b**2*e**3*h**2*p**2*q**2*log(e + f*x)**2/f**3 - 11*a*b**2*e**3*h
**2*p**2*q**2*log(e + f*x)/(3*f**3) + 2*a*b**2*e**3*h**2*p*q**2*log(d)*log(
e + f*x)/f**3 + 2*a*b**2*e**3*h**2*p*q*log(c)*log(e + f*x)/f**3 - 3*a*b**2*
e**2*g*h*p**2*q**2*log(e + f*x)**2/f**2 + 9*a*b**2*e**2*g*h*p**2*q**2*log(e
 + f*x)/f**2 - 6*a*b**2*e**2*g*h*p*q**2*log(d)*log(e + f*x)/f**2 - 6*a*b**2
*e**2*g*h*p*q*log(c)*log(e + f*x)/f**2 - 2*a*b**2*e**2*h**2*p**2*q**2*x*log
(e + f*x)/f**2 + 11*a*b**2*e**2*h**2*p**2*q**2*x/(3*f**2) - 2*a*b**2*e**2*h
**2*p*q**2*x*log(d)/f**2 - 2*a*b**2*e**2*h**2*p*q*x*log(c)/f**2 + 3*a*b**2*
e*g**2*p**2*q**2*log(e + f*x)**2/f - 6*a*b**2*e*g**2*p**2*q**2*log(e + f*x)
/f + 6*a*b**2*e*g**2*p*q**2*log(d)*log(e + f*x)/f + 6*a*b**2*e*g**2*p*q*log
(c)*log(e + f*x)/f + 6*a*b**2*e*g*h*p**2*q**2*x*log(e + f*x)/f - 9*a*b**2*e
*g*h*p**2*q**2*x/f + 6*a*b**2*e*g*h*p*q**2*x*log(d)/f + 6*a*b**2*e*g*h*p*q*
x*log(c)/f + a*b**2*e*h**2*p**2*q**2*x**2*log(e + f*x)/f - 5*a*b**2*e*h**2*
p**2*q**2*x**2/(6*f) + a*b**2*e*h**2*p*q**2*x**2*log(d)/f + a*b**2*e*h**2*p
*q*x**2*log(c)/f + 3*a*b**2*g**2*p**2*q**2*x*log(e + f*x)**2 - 6*a*b**2*g**
2*p**2*q**2*x*log(e + f*x) + 6*a*b**2*g**2*p**2*q**2*x + 6*a*b**2*g**2*p*q*
*2*x*log(d)*log(e + f*x) - 6*a*b**2*g**2*p*q**2*x*log(d) + 6*a*b**2*g**2*p*
q*x*log(c)*log(e + f*x) - 6*a*b**2*g**2*p*q*x*log(c) + 3*a*b**2*g**2*q**2*x
*log(d)**2 + 6*a*b**2*g**2*q*x*log(c)*log(d) + 3*a*b**2*g**2*x*log(c)**2 +
3*a*b**2*g*h*p**2*q**2*x**2*log(e + f*x)**2 - 3*a*b**2*g*h*p**2*q**2*x**2*l
og(e + f*x) + 3*a*b**2*g*h*p**2*q**2*x**2/2 + 6*a*b**2*g*h*p*q**2*x**2*log(
d)*log(e + f*x) - 3*a*b**2*g*h*p*q**2*x**2*log(d) + 6*a*b**2*g*h*p*q*x**2*l
og(c)*log(e + f*x) - 3*a*b**2*g*h*p*q*x**2*log(c) + 3*a*b**2*g*h*q**2*x**2*
log(d)**2 + 6*a*b**2*g*h*q*x**2*log(c)*log(d) + 3*a*b**2*g*h*x**2*log(c)**2
 + a*b**2*h**2*p**2*q**2*x**3*log(e + f*x)**2 - 2*a*b**2*h**2*p**2*q**2*x**
3*log(e + f*x)/3 + 2*a*b**2*h**2*p**2*q**2*x**3/9 + 2*a*b**2*h**2*p*q**2*x*
*3*log(d)*log(e + f*x) - 2*a*b**2*h**2*p*q**2*x**3*log(d)/3 + 2*a*b**2*h**2
*p*q*x**3*log(c)*log(e + f*x) - 2*a*b**2*h**2*p*q*x**3*log(c)/3 + a*b**2*h*
*2*q**2*x**3*log(d)**2 + 2*a*b**2*h**2*q*x**3*log(c)*log(d) + a*b**2*h**2*x
**3*log(c)**2 + b**3*e**3*h**2*p**3*q**3*log(e + f*x)**3/(3*f**3) - 11*b**3
*e**3*h**2*p**3*q**3*log(e + f*x)**2/(6*f**3) + 85*b**3*e**3*h**2*p**3*q**3
*log(e + f*x)/(18*f**3) + b**3*e**3*h**2*p**2*q**3*log(d)*log(e + f*x)**2/f
**3 - 11*b**3*e**3*h**2*p**2*q**3*log(d)*log(e + f*x)/(3*f**3) + b**3*e**3*
h**2*p**2*q**2*log(c)*log(e + f*x)**2/f**3 - 11*b**3*e**3*h**2*p**2*q**2*lo
g(c)*log(e + f*x)/(3*f**3) + b**3*e**3*h**2*p*q**3*log(d)**2*log(e + f*x)/f
**3 + 2*b**3*e**3*h**2*p*q**2*log(c)*log(d)*log(e + f*x)/f**3 + b**3*e**3*h
**2*p*q*log(c)**2*log(e + f*x)/f**3 - b**3*e**2*g*h*p**3*q**3*log(e + f*x)*
*3/f**2 + 9*b**3*e**2*g*h*p**3*q**3*log(e + f*x)**2/(2*f**2) - 21*b**3*e**2
*g*h*p**3*q**3*log(e + f*x)/(2*f**2) - 3*b**3*e**2*g*h*p**2*q**3*log(d)*log
(e + f*x)**2/f**2 + 9*b**3*e**2*g*h*p**2*q**3*log(d)*log(e + f*x)/f**2 - 3*
b**3*e**2*g*h*p**2*q**2*log(c)*log(e + f*x)**2/f**2 + 9*b**3*e**2*g*h*p**2*
q**2*log(c)*log(e + f*x)/f**2 - 3*b**3*e**2*g*h*p*q**3*log(d)**2*log(e + f*
x)/f**2 - 6*b**3*e**2*g*h*p*q**2*log(c)*log(d)*log(e + f*x)/f**2 - 3*b**3*e
**2*g*h*p*q*log(c)**2*log(e + f*x)/f**2 - b**3*e**2*h**2*p**3*q**3*x*log(e
+ f*x)**2/f**2 + 11*b**3*e**2*h**2*p**3*q**3*x*log(e + f*x)/(3*f**2) - 85*b
**3*e**2*h**2*p**3*q**3*x/(18*f**2) - 2*b**3*e**2*h**2*p**2*q**3*x*log(d)*l
og(e + f*x)/f**2 + 11*b**3*e**2*h**2*p**2*q**3*x*log(d)/(3*f**2) - 2*b**3*e
**2*h**2*p**2*q**2*x*log(c)*log(e + f*x)/f**2 + 11*b**3*e**2*h**2*p**2*q**2
*x*log(c)/(3*f**2) - b**3*e**2*h**2*p*q**3*x*log(d)**2/f**2 - 2*b**3*e**2*h
**2*p*q**2*x*log(c)*log(d)/f**2 - b**3*e**2*h**2*p*q*x*log(c)**2/f**2 + b**
3*e*g**2*p**3*q**3*log(e + f*x)**3/f - 3*b**3*e*g**2*p**3*q**3*log(e + f*x)
**2/f + 6*b**3*e*g**2*p**3*q**3*log(e + f*x)/f + 3*b**3*e*g**2*p**2*q**3*lo
g(d)*log(e + f*x)**2/f - 6*b**3*e*g**2*p**2*q**3*log(d)*log(e + f*x)/f + 3*
b**3*e*g**2*p**2*q**2*log(c)*log(e + f*x)**2/f - 6*b**3*e*g**2*p**2*q**2*lo
```

```
g(c)*log(e + f*x)/f + 3*b**3*e*g**2*p*q**3*log(d)**2*log(e + f*x)/f + 6*b**
3*e*g**2*p*q**2*log(c)*log(d)*log(e + f*x)/f + 3*b**3*e*g**2*p*q*log(c)**2*
log(e + f*x)/f + 3*b**3*e*g*h*p**3*q**3*x*log(e + f*x)**2/f - 9*b**3*e*g*h*
p**3*q**3*x*log(e + f*x)/f + 21*b**3*e*g*h*p**3*q**3*x/(2*f) + 6*b**3*e*g*h
*p**2*q**3*x*log(d)*log(e + f*x)/f - 9*b**3*e*g*h*p**2*q**3*x*log(d)/f + 6*
b**3*e*g*h*p**2*q**2*x*log(c)*log(e + f*x)/f - 9*b**3*e*g*h*p**2*q**2*x*log
(c)/f + 3*b**3*e*g*h*p*q**3*x*log(d)**2/f + 6*b**3*e*g*h*p*q**2*x*log(c)*lo
g(d)/f + 3*b**3*e*g*h*p*q*x*log(c)**2/f + b**3*e*h**2*p**3*q**3*x**2*log(e
+ f*x)**2/(2*f) - 5*b**3*e*h**2*p**3*q**3*x**2*log(e + f*x)/(6*f) + 19*b**3
*e*h**2*p**3*q**3*x**2/(36*f) + b**3*e*h**2*p**2*q**3*x**2*log(d)*log(e + f
*x)/f - 5*b**3*e*h**2*p**2*q**3*x**2*log(d)/(6*f) + b**3*e*h**2*p**2*q**2*x
**2*log(c)*log(e + f*x)/f - 5*b**3*e*h**2*p**2*q**2*x**2*log(c)/(6*f) + b**
3*e*h**2*p*q**3*x**2*log(d)**2/(2*f) + b**3*e*h**2*p*q**2*x**2*log(c)*log(d
)/f + b**3*e*h**2*p*q*x**2*log(c)**2/(2*f) + b**3*g**2*p**3*q**3*x*log(e +
f*x)**3 - 3*b**3*g**2*p**3*q**3*x*log(e + f*x)**2 + 6*b**3*g**2*p**3*q**3*x
*log(e + f*x) - 6*b**3*g**2*p**3*q**3*x + 3*b**3*g**2*p**2*q**3*x*log(d)*lo
g(e + f*x)**2 - 6*b**3*g**2*p**2*q**3*x*log(d)*log(e + f*x) + 6*b**3*g**2*p
**2*q**3*x*log(d) + 3*b**3*g**2*p**2*q**2*x*log(c)*log(e + f*x)**2 - 6*b**3
*g**2*p**2*q**2*x*log(c)*log(e + f*x) + 6*b**3*g**2*p**2*q**2*x*log(c) + 3*
b**3*g**2*p*q**3*x*log(d)**2*log(e + f*x) - 3*b**3*g**2*p*q**3*x*log(d)**2
+ 6*b**3*g**2*p*q**2*x*log(c)*log(d)*log(e + f*x) - 6*b**3*g**2*p*q**2*x*lo
g(c)*log(d) + 3*b**3*g**2*p*q*x*log(c)**2*log(e + f*x) - 3*b**3*g**2*p*q*x*
log(c)**2 + b**3*g**2*q**3*x*log(d)**3 + 3*b**3*g**2*q**2*x*log(c)*log(d)**
2 + 3*b**3*g**2*q*x*log(c)**2*log(d) + b**3*g**2*x*log(c)**3 + b**3*g*h*p**
3*q**3*x**2*log(e + f*x)**3 - 3*b**3*g*h*p**3*q**3*x**2*log(e + f*x)**2/2 +
 3*b**3*g*h*p**3*q**3*x**2*log(e + f*x)/2 - 3*b**3*g*h*p**3*q**3*x**2/4 + 3
*b**3*g*h*p**2*q**3*x**2*log(d)*log(e + f*x)**2 - 3*b**3*g*h*p**2*q**3*x**2
*log(d)*log(e + f*x) + 3*b**3*g*h*p**2*q**3*x**2*log(d)/2 + 3*b**3*g*h*p**2
*q**2*x**2*log(c)*log(e + f*x)**2 - 3*b**3*g*h*p**2*q**2*x**2*log(c)*log(e
+ f*x) + 3*b**3*g*h*p**2*q**2*x**2*log(c)/2 + 3*b**3*g*h*p*q**3*x**2*log(d)
**2*log(e + f*x) - 3*b**3*g*h*p*q**3*x**2*log(d)**2/2 + 6*b**3*g*h*p*q**2*x
**2*log(c)*log(d)*log(e + f*x) - 3*b**3*g*h*p*q**2*x**2*log(c)*log(d) + 3*b
**3*g*h*p*q*x**2*log(c)**2*log(e + f*x) - 3*b**3*g*h*p*q*x**2*log(c)**2/2 +
 b**3*g*h*q**3*x**2*log(d)**3 + 3*b**3*g*h*q**2*x**2*log(c)*log(d)**2 + 3*b
**3*g*h*q*x**2*log(c)**2*log(d) + b**3*g*h*x**2*log(c)**3 + b**3*h**2*p**3*
q**3*x**3*log(e + f*x)**3/3 - b**3*h**2*p**3*q**3*x**3*log(e + f*x)**2/3 +
2*b**3*h**2*p**3*q**3*x**3*log(e + f*x)/9 - 2*b**3*h**2*p**3*q**3*x**3/27 +
 b**3*h**2*p**2*q**3*x**3*log(d)*log(e + f*x)**2 - 2*b**3*h**2*p**2*q**3*x*
*3*log(d)*log(e + f*x)/3 + 2*b**3*h**2*p**2*q**3*x**3*log(d)/9 + b**3*h**2*
p**2*q**2*x**3*log(c)*log(e + f*x)**2 - 2*b**3*h**2*p**2*q**2*x**3*log(c)*l
og(e + f*x)/3 + 2*b**3*h**2*p**2*q**2*x**3*log(c)/9 + b**3*h**2*p*q**3*x**3
*log(d)**2*log(e + f*x) - b**3*h**2*p*q**3*x**3*log(d)**2/3 + 2*b**3*h**2*p
*q**2*x**3*log(c)*log(d)*log(e + f*x) - 2*b**3*h**2*p*q**2*x**3*log(c)*log(
d)/3 + b**3*h**2*p*q*x**3*log(c)**2*log(e + f*x) - b**3*h**2*p*q*x**3*log(c
)**2/3 + b**3*h**2*q**3*x**3*log(d)**3/3 + b**3*h**2*q**2*x**3*log(c)*log(d
)**2 + b**3*h**2*q*x**3*log(c)**2*log(d) + b**3*h**2*x**3*log(c)**3/3, Ne(f
, 0)), ((a + b*log(c*(d*e**p)**q))**3*(g**2*x + g*h*x**2 + h**2*x**3/3), Tr
ue))
```

3.436 $\int (g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3\,dx$

Optimal. Leaf size=306

$$\frac{3b^2hp^2q^2(e+fx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{4f^2}+\frac{6ab^2p^2q^2x(fg-eh)}{f}-\frac{3bpq(e+fx)(fg-eh)\left(a+b\log\left(c\left(d(\right.\right.\right.}{f^2}$$

```
[Out] 6*a*b^2*(-e*h+f*g)*p^2*q^2*x/f-6*b^3*(-e*h+f*g)*p^3*q^3*x/f-3/8*b^3*h*p^3*q
^3*(f*x+e)^2/f^2+6*b^3*(-e*h+f*g)*p^2*q^2*(f*x+e)*ln(c*(d*(f*x+e)^p)^q)/f^2
+3/4*b^2*h*p^2*q^2*(f*x+e)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))/f^2-3*b*(-e*h+f*g)
*p*q*(f*x+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))^2/f^2-3/4*b*h*p*q*(f*x+e)^2*(a+b*l
n(c*(d*(f*x+e)^p)^q))^2/f^2+(-e*h+f*g)*(f*x+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))^
3/f^2+1/2*h*(f*x+e)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))^3/f^2
```

Rubi [A] time = 0.53, antiderivative size = 306, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 8, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308, Rules used = {2401, 2389, 2296, 2295, 2390, 2305, 2304, 2445}

$$\frac{3b^2hp^2q^2(e+fx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{4f^2}+\frac{6ab^2p^2q^2x(fg-eh)}{f}-\frac{3bpq(e+fx)(fg-eh)\left(a+b\log\left(c\left(d(\right.\right.\right.}{f^2}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3,x]
```

```
[Out] (6*a*b^2*(f*g - e*h)*p^2*q^2*x)/f - (6*b^3*(f*g - e*h)*p^3*q^3*x)/f - (3*b^
3*h*p^3*q^3*(e + f*x)^2)/(8*f^2) + (6*b^3*(f*g - e*h)*p^2*q^2*(e + f*x)*Log
[c*(d*(e + f*x)^p)^q])/f^2 + (3*b^2*h*p^2*q^2*(e + f*x)^2*(a + b*Log[c*(d*(
e + f*x)^p)^q]))/(4*f^2) - (3*b*(f*g - e*h)*p*q*(e + f*x)*(a + b*Log[c*(d*(
e + f*x)^p)^q])^2)/f^2 - (3*b*h*p*q*(e + f*x)^2*(a + b*Log[c*(d*(e + f*x)^p
)^q])^2)/(4*f^2) + ((f*g - e*h)*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^
3)/f^2 + (h*(e + f*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^3)/(2*f^2)
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int (g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3\,dx = \text{Subst}\left(\int (g+hx)\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3\,dx, cd^q(e+fx)^{pq}, c$$

$$= \text{Subst}\left(\int\left(\frac{(fg-eh)\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3}{f}+\frac{h(e+fx)\left(a+\right.}{}\right.\right.$$

$$= \text{Subst}\left(\frac{h\int(e+fx)\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3\,dx}{f}, cd^q(e+fx)^{pq},\right.$$

$$= \text{Subst}\left(\frac{h\,\text{Subst}\left(\int x\left(a+b\log\left(cd^qx^{pq}\right)\right)^3\,dx, x, e+fx\right)}{f^2}, cd^q(e+f\right.$$

$$= \frac{(fg-eh)(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{f^2}+\frac{h(e+fx)^2\left(a+\right.}{}$$

$$= -\frac{3b(fg-eh)pq(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{f^2}-\frac{3bhpq(e-}{}$$

$$= \frac{6ab^2(fg-eh)p^2q^2x}{f}-\frac{3b^3hp^3q^3(e+fx)^2}{8f^2}+\frac{3b^2hp^2q^2(e+fx)^2\left(a\right.}{}$$

$$= \frac{6ab^2(fg-eh)p^2q^2x}{f}-\frac{6b^3(fg-eh)p^3q^3x}{f}-\frac{3b^3hp^3q^3(e+fx)^2}{8f^2}+$$

Mathematica [A] time = 0.13, size = 231, normalized size = 0.75

$$\frac{8(e+fx)(fg-eh)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3-24bpq(fg-eh)\left((e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2-2\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3,x]
```

```
[Out] (8*(f*g - e*h)*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3 + 4*h*(e + f*x)
^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^3 - 24*b*(f*g - e*h)*p*q*((e + f*x)*(a
+ b*Log[c*(d*(e + f*x)^p)^q])^2 - 2*b*p*q*(f*(a - b*p*q)*x + b*(e + f*x)*Lo
g[c*(d*(e + f*x)^p)^q])) - 3*b*h*p*q*(2*(e + f*x)^2*(a + b*Log[c*(d*(e + f*
x)^p)^q])^2 + b*p*q*(b*f*p*q*x*(2*e + f*x) - 2*(e + f*x)^2*(a + b*Log[c*(d*
(e + f*x)^p)^q]))))/(8*f^2)
```

fricas [B] time = 0.55, size = 1692, normalized size = 5.53

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="fricas")
```

```
[Out] 1/8*(4*(b^3*f^2*h*p^3*q^3*x^2 + 2*b^3*f^2*g*p^3*q^3*x + (2*b^3*e*f*g - b^3*
e^2*h)*p^3*q^3)*log(f*x + e)^3 + 4*(b^3*f^2*h*x^2 + 2*b^3*f^2*g*x)*log(c)^3
 + 4*(b^3*f^2*h*q^3*x^2 + 2*b^3*f^2*g*q^3*x)*log(d)^3 - (3*b^3*f^2*h*p^3*q^
3 - 6*a*b^2*f^2*h*p^2*q^2 + 6*a^2*b*f^2*h*p*q - 4*a^3*f^2*h)*x^2 - 6*((4*b^
3*e*f*g - 3*b^3*e^2*h)*p^3*q^3 - 2*(2*a*b^2*e*f*g - a*b^2*e^2*h)*p^2*q^2 +
(b^3*f^2*h*p^3*q^3 - 2*a*b^2*f^2*h*p^2*q^2)*x^2 - 2*(2*a*b^2*f^2*g*p^2*q^2
- (2*b^3*f^2*g - b^3*e*f*h)*p^3*q^3)*x - 2*(b^3*f^2*h*p^2*q^2*x^2 + 2*b^3*f
^2*g*p^2*q^2*x + (2*b^3*e*f*g - b^3*e^2*h)*p^2*q^2)*log(c) - 2*(b^3*f^2*h*p
^2*q^3*x^2 + 2*b^3*f^2*g*p^2*q^3*x + (2*b^3*e*f*g - b^3*e^2*h)*p^2*q^3)*log
(d))*log(f*x + e)^2 - 6*((b^3*f^2*h*p*q - 2*a*b^2*f^2*h)*x^2 - 2*(2*a*b^2*f
^2*g - (2*b^3*f^2*g - b^3*e*f*h)*p*q)*x)*log(c)^2 - 6*((b^3*f^2*h*p*q^3 - 2
*a*b^2*f^2*h*q^2)*x^2 - 2*(2*a*b^2*f^2*g*q^2 - (2*b^3*f^2*g - b^3*e*f*h)*p*
q^3)*x - 2*(b^3*f^2*h*q^2*x^2 + 2*b^3*f^2*g*q^2*x)*log(c))*log(d)^2 - 2*(3*
(8*b^3*f^2*g - 7*b^3*e*f*h)*p^3*q^3 - 4*a^3*f^2*g - 6*(4*a*b^2*f^2*g - 3*a*
b^2*e*f*h)*p^2*q^2 + 6*(2*a^2*b*f^2*g - a^2*b*e*f*h)*p*q)*x + 6*((8*b^3*e*f
*g - 7*b^3*e^2*h)*p^3*q^3 - 2*(4*a*b^2*e*f*g - 3*a*b^2*e^2*h)*p^2*q^2 + 2*(
2*a^2*b*e*f*g - a^2*b*e^2*h)*p*q + (b^3*f^2*h*p^3*q^3 - 2*a*b^2*f^2*h*p^2*q
^2 + 2*a^2*b*f^2*h*p*q)*x^2 + 2*(b^3*f^2*h*p*q*x^2 + 2*b^3*f^2*g*p*q*x + (2
*b^3*e*f*g - b^3*e^2*h)*p*q)*log(c)^2 + 2*(b^3*f^2*h*p*q^3*x^2 + 2*b^3*f^2*
g*p*q^3*x + (2*b^3*e*f*g - b^3*e^2*h)*p*q^3)*log(d)^2 + 2*(2*a^2*b*f^2*g*p*
q + (4*b^3*f^2*g - 3*b^3*e*f*h)*p^3*q^3 - 2*(2*a*b^2*f^2*g - a*b^2*e*f*h)*p
^2*q^2)*x - 2*((4*b^3*e*f*g - 3*b^3*e^2*h)*p^2*q^2 - 2*(2*a*b^2*e*f*g - a*b
^2*e^2*h)*p*q + (b^3*f^2*h*p^2*q^2 - 2*a*b^2*f^2*h*p*q)*x^2 - 2*(2*a*b^2*f^
2*g*p*q - (2*b^3*f^2*g - b^3*e*f*h)*p^2*q^2)*x)*log(c) - 2*((4*b^3*e*f*g -
3*b^3*e^2*h)*p^2*q^3 - 2*(2*a*b^2*e*f*g - a*b^2*e^2*h)*p*q^2 + (b^3*f^2*h*p
^2*q^3 - 2*a*b^2*f^2*h*p*q^2)*x^2 - 2*(2*a*b^2*f^2*g*p*q^2 - (2*b^3*f^2*g -
 b^3*e*f*h)*p^2*q^3)*x - 2*(b^3*f^2*h*p*q^2*x^2 + 2*b^3*f^2*g*p*q^2*x + (2*
b^3*e*f*g - b^3*e^2*h)*p*q^2)*log(c))*log(d))*log(f*x + e) + 6*((b^3*f^2*h*
p^2*q^2 - 2*a*b^2*f^2*h*p*q + 2*a^2*b*f^2*h)*x^2 + 2*(2*a^2*b*f^2*g + (4*b^
3*f^2*g - 3*b^3*e*f*h)*p^2*q^2 - 2*(2*a*b^2*f^2*g - a*b^2*e*f*h)*p*q)*x)*lo
g(c) + 6*((b^3*f^2*h*p^2*q^3 - 2*a*b^2*f^2*h*p*q^2 + 2*a^2*b*f^2*h*q)*x^2 +
 2*(b^3*f^2*h*q*x^2 + 2*b^3*f^2*g*q*x)*log(c)^2 + 2*(2*a^2*b*f^2*g*q + (4*b
^3*f^2*g - 3*b^3*e*f*h)*p^2*q^3 - 2*(2*a*b^2*f^2*g - a*b^2*e*f*h)*p*q^2)*x
- 2*((b^3*f^2*h*p*q^2 - 2*a*b^2*f^2*h*q)*x^2 - 2*(2*a*b^2*f^2*g*q - (2*b^3*
f^2*g - b^3*e*f*h)*p*q^2)*x)*log(c))*log(d))/f^2
```

<u>**giac**</u> **[B]** time = 0.38, size = 2717, normalized size = 8.88

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="giac")
```

```
[Out] (f*x + e)*b^3*g*p^3*q^3*log(f*x + e)^3/f + 1/2*(f*x + e)^2*b^3*h*p^3*q^3*lo
g(f*x + e)^3/f^2 - (f*x + e)*b^3*h*p^3*q^3*e*log(f*x + e)^3/f^2 - 3*(f*x +
e)*b^3*g*p^3*q^3*log(f*x + e)^2/f - 3/4*(f*x + e)^2*b^3*h*p^3*q^3*log(f*x +
 e)^2/f^2 + 3*(f*x + e)*b^3*h*p^3*q^3*e*log(f*x + e)^2/f^2 + 3*(f*x + e)*b^
3*g*p^2*q^3*log(f*x + e)^2*log(d)/f + 3/2*(f*x + e)^2*b^3*h*p^2*q^3*log(f*x
 + e)^2*log(d)/f^2 - 3*(f*x + e)*b^3*h*p^2*q^3*e*log(f*x + e)^2*log(d)/f^2
+ 6*(f*x + e)*b^3*g*p^3*q^3*log(f*x + e)/f + 3/4*(f*x + e)^2*b^3*h*p^3*q^3*
log(f*x + e)/f^2 - 6*(f*x + e)*b^3*h*p^3*q^3*e*log(f*x + e)/f^2 + 3*(f*x +
e)*b^3*g*p^2*q^2*log(f*x + e)^2*log(c)/f + 3/2*(f*x + e)^2*b^3*h*p^2*q^2*lo
g(f*x + e)^2*log(c)/f^2 - 3*(f*x + e)*b^3*h*p^2*q^2*e*log(f*x + e)^2*log(c)
/f^2 - 6*(f*x + e)*b^3*g*p^2*q^3*log(f*x + e)*log(d)/f - 3/2*(f*x + e)^2*b^
3*h*p^2*q^3*log(f*x + e)*log(d)/f^2 + 6*(f*x + e)*b^3*h*p^2*q^3*e*log(f*x +
 e)*log(d)/f^2 + 3*(f*x + e)*b^3*g*p*q^3*log(f*x + e)*log(d)^2/f + 3/2*(f*x
 + e)^2*b^3*h*p*q^3*log(f*x + e)*log(d)^2/f^2 - 3*(f*x + e)*b^3*h*p*q^3*e*l
og(f*x + e)*log(d)^2/f^2 - 6*(f*x + e)*b^3*g*p^3*q^3/f - 3/8*(f*x + e)^2*b^
3*h*p^3*q^3/f^2 + 6*(f*x + e)*b^3*h*p^3*q^3*e/f^2 + 3*(f*x + e)*a*b^2*g*p^2
*q^2*log(f*x + e)^2/f + 3/2*(f*x + e)^2*a*b^2*h*p^2*q^2*log(f*x + e)^2/f^2
- 3*(f*x + e)*a*b^2*h*p^2*q^2*e*log(f*x + e)^2/f^2 - 6*(f*x + e)*b^3*g*p^2*
q^2*log(f*x + e)*log(c)/f - 3/2*(f*x + e)^2*b^3*h*p^2*q^2*log(f*x + e)*log(
c)/f^2 + 6*(f*x + e)*b^3*h*p^2*q^2*e*log(f*x + e)*log(c)/f^2 + 6*(f*x + e)*
b^3*g*p^2*q^3*log(d)/f + 3/4*(f*x + e)^2*b^3*h*p^2*q^3*log(d)/f^2 - 6*(f*x
+ e)*b^3*h*p^2*q^3*e*log(d)/f^2 + 6*(f*x + e)*b^3*g*p*q^2*log(f*x + e)*log(
c)*log(d)/f + 3*(f*x + e)^2*b^3*h*p*q^2*log(f*x + e)*log(c)*log(d)/f^2 - 6*
(f*x + e)*b^3*h*p*q^2*e*log(f*x + e)*log(c)*log(d)/f^2 - 3*(f*x + e)*b^3*g*
p*q^3*log(d)^2/f - 3/4*(f*x + e)^2*b^3*h*p*q^3*log(d)^2/f^2 + 3*(f*x + e)*b
^3*h*p*q^3*e*log(d)^2/f^2 + (f*x + e)*b^3*g*q^3*log(d)^3/f + 1/2*(f*x + e)^
2*b^3*h*q^3*log(d)^3/f^2 - (f*x + e)*b^3*h*q^3*e*log(d)^3/f^2 - 6*(f*x + e)
*a*b^2*g*p^2*q^2*log(f*x + e)/f - 3/2*(f*x + e)^2*a*b^2*h*p^2*q^2*log(f*x +
 e)/f^2 + 6*(f*x + e)*a*b^2*h*p^2*q^2*e*log(f*x + e)/f^2 + 6*(f*x + e)*b^3*
g*p^2*q^2*log(c)/f + 3/4*(f*x + e)^2*b^3*h*p^2*q^2*log(c)/f^2 - 6*(f*x + e)
*b^3*h*p^2*q^2*e*log(c)/f^2 + 3*(f*x + e)*b^3*g*p*q*log(f*x + e)*log(c)^2/f
 + 3/2*(f*x + e)^2*b^3*h*p*q*log(f*x + e)*log(c)^2/f^2 - 3*(f*x + e)*b^3*h*
p*q*e*log(f*x + e)*log(c)^2/f^2 + 6*(f*x + e)*a*b^2*g*p*q^2*log(f*x + e)*lo
g(d)/f + 3*(f*x + e)^2*a*b^2*h*p*q^2*log(f*x + e)*log(d)/f^2 - 6*(f*x + e)*
a*b^2*h*p*q^2*e*log(f*x + e)*log(d)/f^2 - 6*(f*x + e)*b^3*g*p*q^2*log(c)*lo
g(d)/f - 3/2*(f*x + e)^2*b^3*h*p*q^2*log(c)*log(d)/f^2 + 6*(f*x + e)*b^3*h*
p*q^2*e*log(c)*log(d)/f^2 + 3*(f*x + e)*b^3*g*q^2*log(c)*log(d)^2/f + 3/2*(
f*x + e)^2*b^3*h*q^2*log(c)*log(d)^2/f^2 - 3*(f*x + e)*b^3*h*q^2*e*log(c)*l
og(d)^2/f^2 + 6*(f*x + e)*a*b^2*g*p^2*q^2/f + 3/4*(f*x + e)^2*a*b^2*h*p^2*q
^2/f^2 - 6*(f*x + e)*a*b^2*h*p^2*q^2*e/f^2 + 6*(f*x + e)*a*b^2*g*p*q*log(f*
x + e)*log(c)/f + 3*(f*x + e)^2*a*b^2*h*p*q*log(f*x + e)*log(c)/f^2 - 6*(f*
x + e)*a*b^2*h*p*q*e*log(f*x + e)*log(c)/f^2 - 3*(f*x + e)*b^3*g*p*q*log(c)
^2/f - 3/4*(f*x + e)^2*b^3*h*p*q*log(c)^2/f^2 + 3*(f*x + e)*b^3*h*p*q*e*log
(c)^2/f^2 - 6*(f*x + e)*a*b^2*g*p*q^2*log(d)/f - 3/2*(f*x + e)^2*a*b^2*h*p*
q^2*log(d)/f^2 + 6*(f*x + e)*a*b^2*h*p*q^2*e*log(d)/f^2 + 3*(f*x + e)*b^3*g
*q*log(c)^2*log(d)/f + 3/2*(f*x + e)^2*b^3*h*q*log(c)^2*log(d)/f^2 - 3*(f*x
 + e)*b^3*h*q*e*log(c)^2*log(d)/f^2 + 3*(f*x + e)*a*b^2*g*q^2*log(d)^2/f +
3/2*(f*x + e)^2*a*b^2*h*q^2*log(d)^2/f^2 - 3*(f*x + e)*a*b^2*h*q^2*e*log(d)
^2/f^2 + 3*(f*x + e)*a^2*b*g*p*q*log(f*x + e)/f + 3/2*(f*x + e)^2*a^2*b*h*p
*q*log(f*x + e)/f^2 - 3*(f*x + e)*a^2*b*h*p*q*e*log(f*x + e)/f^2 - 6*(f*x +
 e)*a*b^2*g*p*q*log(c)/f - 3/2*(f*x + e)^2*a*b^2*h*p*q*log(c)/f^2 + 6*(f*x
+ e)*a*b^2*h*p*q*e*log(c)/f^2 + (f*x + e)*b^3*g*log(c)^3/f + 1/2*(f*x + e)^
```

```
2*b^3*h*log(c)^3/f^2 - (f*x + e)*b^3*h*e*log(c)^3/f^2 + 6*(f*x + e)*a*b^2*g
*q*log(c)*log(d)/f + 3*(f*x + e)^2*a*b^2*h*q*log(c)*log(d)/f^2 - 6*(f*x + e
)*a*b^2*h*q*e*log(c)*log(d)/f^2 - 3*(f*x + e)*a^2*b*g*p*q/f - 3/4*(f*x + e)
^2*a^2*b*h*p*q/f^2 + 3*(f*x + e)*a^2*b*h*p*q*e/f^2 + 3*(f*x + e)*a*b^2*g*lo
g(c)^2/f + 3/2*(f*x + e)^2*a*b^2*h*log(c)^2/f^2 - 3*(f*x + e)*a*b^2*h*e*log
(c)^2/f^2 + 3*(f*x + e)*a^2*b*g*q*log(d)/f + 3/2*(f*x + e)^2*a^2*b*h*q*log(
d)/f^2 - 3*(f*x + e)*a^2*b*h*q*e*log(d)/f^2 + 3*(f*x + e)*a^2*b*g*log(c)/f
+ 3/2*(f*x + e)^2*a^2*b*h*log(c)/f^2 - 3*(f*x + e)*a^2*b*h*e*log(c)/f^2 + (
f*x + e)*a^3*g/f + 1/2*(f*x + e)^2*a^3*h/f^2 - (f*x + e)*a^3*h*e/f^2
```

maple [F] time = 0.10, size = 0, normalized size = 0.00

$$\int (hx+g)\left(b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)+a\right)^{3} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)*(b*ln(c*(d*(f*x+e)^p)^q)+a)^3,x)
```

```
[Out] int((h*x+g)*(b*ln(c*(d*(f*x+e)^p)^q)+a)^3,x)
```

maxima [B] time = 0.69, size = 732, normalized size = 2.39

$$\frac{1}{2}\,b^3hx^2\log\left(\left(\left(fx+e\right)^pd\right)^qc\right)^3-3\,a^2bfgpq\left(\frac{x}{f}-\frac{e\log\left(fx+e\right)}{f^2}\right)-\frac{3}{4}\,a^2bfhpq\left(\frac{2\,e^2\log\left(fx+e\right)}{f^3}+\frac{fx^2-2\,ex}{f^2}\right)+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="maxima")
```

```
[Out] 1/2*b^3*h*x^2*log(((f*x + e)^p*d)^q*c)^3 - 3*a^2*b*f*g*p*q*(x/f - e*log(f*x
 + e)/f^2) - 3/4*a^2*b*f*h*p*q*(2*e^2*log(f*x + e)/f^3 + (f*x^2 - 2*e*x)/f^
2) + 3/2*a*b^2*h*x^2*log(((f*x + e)^p*d)^q*c)^2 + b^3*g*x*log(((f*x + e)^p*
d)^q*c)^3 + 3/2*a^2*b*h*x^2*log(((f*x + e)^p*d)^q*c) + 3*a*b^2*g*x*log(((f*
x + e)^p*d)^q*c)^2 + 1/2*a^3*h*x^2 + 3*a^2*b*g*x*log(((f*x + e)^p*d)^q*c) -
 3*(2*f*p*q*(x/f - e*log(f*x + e)/f^2)*log(((f*x + e)^p*d)^q*c) + (e*log(f*
x + e)^2 - 2*f*x + 2*e*log(f*x + e))*p^2*q^2/f)*a*b^2*g - (3*f*p*q*(x/f - e
*log(f*x + e)/f^2)*log(((f*x + e)^p*d)^q*c)^2 - ((e*log(f*x + e)^3 + 3*e*lo
g(f*x + e)^2 - 6*f*x + 6*e*log(f*x + e))*p^2*q^2/f^2 - 3*(e*log(f*x + e)^2
- 2*f*x + 2*e*log(f*x + e))*p*q*log(((f*x + e)^p*d)^q*c)/f^2)*f*p*q)*b^3*g
- 3/4*(2*f*p*q*(2*e^2*log(f*x + e)/f^3 + (f*x^2 - 2*e*x)/f^2)*log(((f*x + e
)^p*d)^q*c) - (f^2*x^2 + 2*e^2*log(f*x + e)^2 - 6*e*f*x + 6*e^2*log(f*x + e
))*p^2*q^2/f^2)*a*b^2*h - 1/8*(6*f*p*q*(2*e^2*log(f*x + e)/f^3 + (f*x^2 - 2
*e*x)/f^2)*log(((f*x + e)^p*d)^q*c)^2 + ((4*e^2*log(f*x + e)^3 + 3*f^2*x^2
+ 18*e^2*log(f*x + e)^2 - 42*e*f*x + 42*e^2*log(f*x + e))*p^2*q^2/f^3 - 6*(
f^2*x^2 + 2*e^2*log(f*x + e)^2 - 6*e*f*x + 6*e^2*log(f*x + e))*p*q*log(((f*
x + e)^p*d)^q*c)/f^3)*f*p*q)*b^3*h + a^3*g*x
```

mupad [B] time = 0.83, size = 651, normalized size = 2.13

$$x\left(\frac{4\,a^3\,e\,h+4\,a^3\,f\,g+18\,b^3\,e\,h\,p^3\,q^3-24\,b^3\,f\,g\,p^3\,q^3-12\,a^2\,b\,f\,g\,p\,q-12\,a\,b^2\,e\,h\,p^2\,q^2+24\,a\,b^2\,f\,g\,p^2\,q^2}{4\,f}-\frac{e\,h}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)*(a + b*log(c*(d*(e + f*x)^p)^q))^3,x)
```

```
[Out] x*((4*a^3*e*h + 4*a^3*f*g + 18*b^3*e*h*p^3*q^3 - 24*b^3*f*g*p^3*q^3 - 12*a^
2*b*f*g*p*q - 12*a*b^2*e*h*p^2*q^2 + 24*a*b^2*f*g*p^2*q^2)/(4*f) - (e*h*(4*
a^3 - 3*b^3*p^3*q^3 + 6*a*b^2*p^2*q^2 - 6*a^2*b*p*q))/(4*f)) + log(c*(d*(e
+ f*x)^p)^q)^2*((x*((6*b^2*(a*e*h + a*f*g - b*f*g*p*q))/f - (3*b^2*e*h*(2*a
 - b*p*q))/f))/2 - (3*e*(2*a*b^2*e*h - 4*a*b^2*f*g - 3*b^3*e*h*p*q + 4*b^3*
f*g*p*q))/(4*f^2) + (3*b^2*h*x^2*(2*a - b*p*q))/4) + log(c*(d*(e + f*x)^p)^
q)^3*((b^3*h*x^2)/2 - (e*(b^3*e*h - 2*b^3*f*g))/(2*f^2) + b^3*g*x) + (log(c
*(d*(e + f*x)^p)^q)*(x^2*(6*a^2*b*f*g + (3*b*e*h*(2*a^2 + b^2*p^2*q^2 - 2*a
*b*p*q))/2 - 9*b^3*e*h*p^2*q^2 + 12*b^3*f*g*p^2*q^2 + 6*a*b^2*e*h*p*q - 12*
a*b^2*f*g*p*q) + (3*e*x*(2*a^2*b*f*g - 3*b^3*e*h*p^2*q^2 + 4*b^3*f*g*p^2*q^
2 + 2*a*b^2*e*h*p*q - 4*a*b^2*f*g*p*q))/f + (3*b*f*h*x^3*(2*a^2 + b^2*p^2*q
^2 - 2*a*b*p*q))/2))/(2*e + 2*f*x) + (h*x^2*(4*a^3 - 3*b^3*p^3*q^3 + 6*a*b^
2*p^2*q^2 - 6*a^2*b*p*q))/8 - (log(e + f*x)*(21*b^3*e^2*h*p^3*q^3 - 18*a*b^
2*e^2*h*p^2*q^2 + 6*a^2*b*e^2*h*p*q - 24*b^3*e*f*g*p^3*q^3 + 24*a*b^2*e*f*g
*p^2*q^2 - 12*a^2*b*e*f*g*p*q))/(4*f^2)
```

sympy [A] time = 28.22, size = 2756, normalized size = 9.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*ln(c*(d*(f*x+e)**p)**q))**3,x)
```

```
[Out] Piecewise((a**3*g*x + a**3*h*x**2/2 - 3*a**2*b*e**2*h*p*q*log(e + f*x)/(2*f
**2) + 3*a**2*b*e*g*p*q*log(e + f*x)/f + 3*a**2*b*e*h*p*q*x/(2*f) + 3*a**2*
b*g*p*q*x*log(e + f*x) - 3*a**2*b*g*p*q*x + 3*a**2*b*g*q*x*log(d) + 3*a**2*
b*g*x*log(c) + 3*a**2*b*h*p*q*x**2*log(e + f*x)/2 - 3*a**2*b*h*p*q*x**2/4 +
 3*a**2*b*h*q*x**2*log(d)/2 + 3*a**2*b*h*x**2*log(c)/2 - 3*a*b**2*e**2*h*p*
*2*q**2*log(e + f*x)**2/(2*f**2) + 9*a*b**2*e**2*h*p**2*q**2*log(e + f*x)/(
2*f**2) - 3*a*b**2*e**2*h*p*q**2*log(d)*log(e + f*x)/f**2 - 3*a*b**2*e**2*h
*p*q*log(c)*log(e + f*x)/f**2 + 3*a*b**2*e*g*p**2*q**2*log(e + f*x)**2/f -
6*a*b**2*e*g*p**2*q**2*log(e + f*x)/f + 6*a*b**2*e*g*p*q**2*log(d)*log(e +
f*x)/f + 6*a*b**2*e*g*p*q*log(c)*log(e + f*x)/f + 3*a*b**2*e*h*p**2*q**2*x*
log(e + f*x)/f - 9*a*b**2*e*h*p**2*q**2*x/(2*f) + 3*a*b**2*e*h*p*q**2*x*log
(d)/f + 3*a*b**2*e*h*p*q*x*log(c)/f + 3*a*b**2*g*p**2*q**2*x*log(e + f*x)**
2 - 6*a*b**2*g*p**2*q**2*x*log(e + f*x) + 6*a*b**2*g*p**2*q**2*x + 6*a*b**2
*g*p*q**2*x*log(d)*log(e + f*x) - 6*a*b**2*g*p*q**2*x*log(d) + 6*a*b**2*g*p
*q*x*log(c)*log(e + f*x) - 6*a*b**2*g*p*q*x*log(c) + 3*a*b**2*g*q**2*x*log(
d)**2 + 6*a*b**2*g*q*x*log(c)*log(d) + 3*a*b**2*g*x*log(c)**2 + 3*a*b**2*h*
p**2*q**2*x**2*log(e + f*x)**2/2 - 3*a*b**2*h*p**2*q**2*x**2*log(e + f*x)/2
 + 3*a*b**2*h*p**2*q**2*x**2/4 + 3*a*b**2*h*p*q**2*x**2*log(d)*log(e + f*x)
 - 3*a*b**2*h*p*q**2*x**2*log(d)/2 + 3*a*b**2*h*p*q*x**2*log(c)*log(e + f*x
) - 3*a*b**2*h*p*q*x**2*log(c)/2 + 3*a*b**2*h*q**2*x**2*log(d)**2/2 + 3*a*b
**2*h*q*x**2*log(c)*log(d) + 3*a*b**2*h*x**2*log(c)**2/2 - b**3*e**2*h*p**3
*q**3*log(e + f*x)**3/(2*f**2) + 9*b**3*e**2*h*p**3*q**3*log(e + f*x)**2/(4
*f**2) - 21*b**3*e**2*h*p**3*q**3*log(e + f*x)/(4*f**2) - 3*b**3*e**2*h*p**
2*q**3*log(d)*log(e + f*x)**2/(2*f**2) + 9*b**3*e**2*h*p**2*q**3*log(d)*log
(e + f*x)/(2*f**2) - 3*b**3*e**2*h*p**2*q**2*log(c)*log(e + f*x)**2/(2*f**2
) + 9*b**3*e**2*h*p**2*q**2*log(c)*log(e + f*x)/(2*f**2) - 3*b**3*e**2*h*p*
q**3*log(d)**2*log(e + f*x)/(2*f**2) - 3*b**3*e**2*h*p*q**2*log(c)*log(d)*l
og(e + f*x)/f**2 - 3*b**3*e**2*h*p*q*log(c)**2*log(e + f*x)/(2*f**2) + b**3
*e*g*p**3*q**3*log(e + f*x)**3/f - 3*b**3*e*g*p**3*q**3*log(e + f*x)**2/f +
 6*b**3*e*g*p**3*q**3*log(e + f*x)/f + 3*b**3*e*g*p**2*q**3*log(d)*log(e +
f*x)**2/f - 6*b**3*e*g*p**2*q**3*log(d)*log(e + f*x)/f + 3*b**3*e*g*p**2*q*
*2*log(c)*log(e + f*x)**2/f - 6*b**3*e*g*p**2*q**2*log(c)*log(e + f*x)/f +
3*b**3*e*g*p*q**3*log(d)**2*log(e + f*x)/f + 6*b**3*e*g*p*q**2*log(c)*log(d
)*log(e + f*x)/f + 3*b**3*e*g*p*q*log(c)**2*log(e + f*x)/f + 3*b**3*e*h*p**
3*q**3*x*log(e + f*x)**2/(2*f) - 9*b**3*e*h*p**3*q**3*x*log(e + f*x)/(2*f)
+ 21*b**3*e*h*p**3*q**3*x/(4*f) + 3*b**3*e*h*p**2*q**3*x*log(d)*log(e + f*x
)/f - 9*b**3*e*h*p**2*q**3*x*log(d)/(2*f) + 3*b**3*e*h*p**2*q**2*x*log(c)*l
```

```
og(e + f*x)/f - 9*b**3*e*h*p**2*q**2*x*log(c)/(2*f) + 3*b**3*e*h*p*q**3*x*l
og(d)**2/(2*f) + 3*b**3*e*h*p*q**2*x*log(c)*log(d)/f + 3*b**3*e*h*p*q*x*log
(c)**2/(2*f) + b**3*g*p**3*q**3*x*log(e + f*x)**3 - 3*b**3*g*p**3*q**3*x*lo
g(e + f*x)**2 + 6*b**3*g*p**3*q**3*x*log(e + f*x) - 6*b**3*g*p**3*q**3*x +
3*b**3*g*p**2*q**3*x*log(d)*log(e + f*x)**2 - 6*b**3*g*p**2*q**3*x*log(d)*l
og(e + f*x) + 6*b**3*g*p**2*q**3*x*log(d) + 3*b**3*g*p**2*q**2*x*log(c)*log
(e + f*x)**2 - 6*b**3*g*p**2*q**2*x*log(c)*log(e + f*x) + 6*b**3*g*p**2*q**
2*x*log(c) + 3*b**3*g*p*q**3*x*log(d)**2*log(e + f*x) - 3*b**3*g*p*q**3*x*l
og(d)**2 + 6*b**3*g*p*q**2*x*log(c)*log(d)*log(e + f*x) - 6*b**3*g*p*q**2*x
*log(c)*log(d) + 3*b**3*g*p*q*x*log(c)**2*log(e + f*x) - 3*b**3*g*p*q*x*log
(c)**2 + b**3*g*q**3*x*log(d)**3 + 3*b**3*g*q**2*x*log(c)*log(d)**2 + 3*b**
3*g*q*x*log(c)**2*log(d) + b**3*g*x*log(c)**3 + b**3*h*p**3*q**3*x**2*log(e
 + f*x)**3/2 - 3*b**3*h*p**3*q**3*x**2*log(e + f*x)**2/4 + 3*b**3*h*p**3*q*
*3*x**2*log(e + f*x)/4 - 3*b**3*h*p**3*q**3*x**2/8 + 3*b**3*h*p**2*q**3*x**
2*log(d)*log(e + f*x)**2/2 - 3*b**3*h*p**2*q**3*x**2*log(d)*log(e + f*x)/2
+ 3*b**3*h*p**2*q**3*x**2*log(d)/4 + 3*b**3*h*p**2*q**2*x**2*log(c)*log(e +
 f*x)**2/2 - 3*b**3*h*p**2*q**2*x**2*log(c)*log(e + f*x)/2 + 3*b**3*h*p**2*
q**2*x**2*log(c)/4 + 3*b**3*h*p*q**3*x**2*log(d)**2*log(e + f*x)/2 - 3*b**3
*h*p*q**3*x**2*log(d)**2/4 + 3*b**3*h*p*q**2*x**2*log(c)*log(d)*log(e + f*x
) - 3*b**3*h*p*q**2*x**2*log(c)*log(d)/2 + 3*b**3*h*p*q*x**2*log(c)**2*log(
e + f*x)/2 - 3*b**3*h*p*q*x**2*log(c)**2/4 + b**3*h*q**3*x**2*log(d)**3/2 +
 3*b**3*h*q**2*x**2*log(c)*log(d)**2/2 + 3*b**3*h*q*x**2*log(c)**2*log(d)/2
 + b**3*h*x**2*log(c)**3/2, Ne(f, 0)), ((a + b*log(c*(d*e**p)**q))**3*(g*x
+ h*x**2/2), True))
```

3.437 $\int \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3\,dx$

Optimal. Leaf size=121

$$6ab^2p^2q^2x-\frac{3bpq(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{f}+\frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{f}+\frac{6b^3p^2q^2(e+fx)}{}$$

```
[Out] 6*a*b^2*p^2*q^2*x-6*b^3*p^3*q^3*x+6*b^3*p^2*q^2*(f*x+e)*ln(c*(d*(f*x+e)^p)^
q)/f-3*b*p*q*(f*x+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))^2/f+(f*x+e)*(a+b*ln(c*(d*(
f*x+e)^p)^q))^3/f
```

Rubi [A] time = 0.14, antiderivative size = 121, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {2389, 2296, 2295, 2445}

$$6ab^2p^2q^2x-\frac{3bpq(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{f}+\frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{f}+\frac{6b^3p^2q^2(e+fx)}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^3,x]
```

```
[Out] 6*a*b^2*p^2*q^2*x - 6*b^3*p^3*q^3*x + (6*b^3*p^2*q^2*(e + f*x)*Log[c*(d*(e
+ f*x)^p)^q])/f - (3*b*p*q*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/f
+ ((e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3)/f
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3 dx = \text{Subst}\left(\int \left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3 dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right.$$
$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \left(a+b\log\left(cd^qx^{pq}\right)\right)^3 dx, x, e+fx\right)}{f}, cd^q(e+fx)^{pq}, c\left(d\right.\right.$$
$$= \frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{f} - \text{Subst}\left(\frac{(3bpq)\,\text{Subst}\left(\int \left(a+b\right.\right.}{}\right.$$
$$= -\frac{3bpq(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{f} + \frac{(e+fx)\left(a+b\log\left(c\left(d\right.\right.\right.}{f}$$
$$= 6ab^2p^2q^2x - \frac{3bpq(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{f} + \frac{(e+fx)\left(a\right.}{}$$
$$= 6ab^2p^2q^2x - 6b^3p^3q^3x + \frac{6b^3p^2q^2(e+fx)\log\left(c\left(d(e+fx)^p\right)^q\right)}{f} - \frac{3bpq(\ldots}{}$$

Mathematica [A] time = 0.03, size = 100, normalized size = 0.83

$$\frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3 - 3bpq\left((e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2 - 2bpq\left(fx(a-bpq)+b\ldots\right.\right.}{f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^3,x]
```

```
[Out] ((e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3 - 3*b*p*q*((e + f*x)*(a + b*L
og[c*(d*(e + f*x)^p)^q])^2 - 2*b*p*q*(f*(a - b*p*q)*x + b*(e + f*x)*Log[c*(
d*(e + f*x)^p)^q])))/f
```

fricas [B] time = 0.47, size = 639, normalized size = 5.28

$$\frac{b^3fq^3x\log(d)^3 + b^3fx\log(c)^3 + \left(b^3fp^3q^3x + b^3ep^3q^3\right)\log\left(fx+e\right)^3 - 3\left(b^3fpq - ab^2f\right)x\log(c)^2 - 3\left(b^3ep^3q^3\ldots\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="fricas")
```

```
[Out] (b^3*f*q^3*x*log(d)^3 + b^3*f*x*log(c)^3 + (b^3*f*p^3*q^3*x + b^3*e*p^3*q^3
)*log(f*x + e)^3 - 3*(b^3*f*p*q - a*b^2*f)*x*log(c)^2 - 3*(b^3*e*p^3*q^3 -
a*b^2*e*p^2*q^2 + (b^3*f*p^3*q^3 - a*b^2*f*p^2*q^2)*x - (b^3*f*p^2*q^2*x +
b^3*e*p^2*q^2)*log(c) - (b^3*f*p^2*q^3*x + b^3*e*p^2*q^3)*log(d))*log(f*x +
 e)^2 + 3*(2*b^3*f*p^2*q^2 - 2*a*b^2*f*p*q + a^2*b*f)*x*log(c) + 3*(b^3*f*q
^2*x*log(c) - (b^3*f*p*q^3 - a*b^2*f*q^2)*x)*log(d)^2 - (6*b^3*f*p^3*q^3 -
6*a*b^2*f*p^2*q^2 + 3*a^2*b*f*p*q - a^3*f)*x + 3*(2*b^3*e*p^3*q^3 - 2*a*b^2
*e*p^2*q^2 + a^2*b*e*p*q + (b^3*f*p*q*x + b^3*e*p*q)*log(c)^2 + (b^3*f*p*q^
3*x + b^3*e*p*q^3)*log(d)^2 + (2*b^3*f*p^3*q^3 - 2*a*b^2*f*p^2*q^2 + a^2*b*
f*p*q)*x - 2*(b^3*e*p^2*q^2 - a*b^2*e*p*q + (b^3*f*p^2*q^2 - a*b^2*f*p*q)*x
)*log(c) - 2*(b^3*e*p^2*q^3 - a*b^2*e*p*q^2 + (b^3*f*p^2*q^3 - a*b^2*f*p*q^
2)*x - (b^3*f*p*q^2*x + b^3*e*p*q^2)*log(c))*log(d))*log(f*x + e) + 3*(b^3*
```

f*q*x*log(c)^2 - 2*(b^3*f*p*q^2 - a*b^2*f*q)*x*log(c) + (2*b^3*f*p^2*q^3 - 2*a*b^2*f*p*q^2 + a^2*b*f*q)*x)*log(d))/f

giac [B] time = 0.22, size = 822, normalized size = 6.79

$$\frac{(fx+e)b^3p^3q^3\log(fx+e)^3}{f} - \frac{3(fx+e)b^3p^3q^3\log(fx+e)^2}{f} + \frac{3(fx+e)b^3p^2q^3\log(fx+e)^2\log(d)}{f} + \frac{6(fx+e)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="giac")
```

```
[Out] (f*x + e)*b^3*p^3*q^3*log(f*x + e)^3/f - 3*(f*x + e)*b^3*p^3*q^3*log(f*x +
e)^2/f + 3*(f*x + e)*b^3*p^2*q^3*log(f*x + e)^2*log(d)/f + 6*(f*x + e)*b^3*
p^3*q^3*log(f*x + e)/f + 3*(f*x + e)*b^3*p^2*q^2*log(f*x + e)^2*log(c)/f -
6*(f*x + e)*b^3*p^2*q^3*log(f*x + e)*log(d)/f + 3*(f*x + e)*b^3*p*q^3*log(f
*x + e)*log(d)^2/f - 6*(f*x + e)*b^3*p^3*q^3/f + 3*(f*x + e)*a*b^2*p^2*q^2*
log(f*x + e)^2/f - 6*(f*x + e)*b^3*p^2*q^2*log(f*x + e)*log(c)/f + 6*(f*x +
 e)*b^3*p^2*q^3*log(d)/f + 6*(f*x + e)*b^3*p*q^2*log(f*x + e)*log(c)*log(d)
/f - 3*(f*x + e)*b^3*p*q^3*log(d)^2/f + (f*x + e)*b^3*q^3*log(d)^3/f - 6*(f
*x + e)*a*b^2*p^2*q^2*log(f*x + e)/f + 6*(f*x + e)*b^3*p^2*q^2*log(c)/f + 3
*(f*x + e)*b^3*p*q*log(f*x + e)*log(c)^2/f + 6*(f*x + e)*a*b^2*p*q^2*log(f*
x + e)*log(d)/f - 6*(f*x + e)*b^3*p*q^2*log(c)*log(d)/f + 3*(f*x + e)*b^3*q
^2*log(c)*log(d)^2/f + 6*(f*x + e)*a*b^2*p^2*q^2/f + 6*(f*x + e)*a*b^2*p*q*
log(f*x + e)*log(c)/f - 3*(f*x + e)*b^3*p*q*log(c)^2/f - 6*(f*x + e)*a*b^2*
p*q^2*log(d)/f + 3*(f*x + e)*b^3*q*log(c)^2*log(d)/f + 3*(f*x + e)*a*b^2*q^
2*log(d)^2/f + 3*(f*x + e)*a^2*b*p*q*log(f*x + e)/f - 6*(f*x + e)*a*b^2*p*q
*log(c)/f + (f*x + e)*b^3*log(c)^3/f + 6*(f*x + e)*a*b^2*q*log(c)*log(d)/f
- 3*(f*x + e)*a^2*b*p*q/f + 3*(f*x + e)*a*b^2*log(c)^2/f + 3*(f*x + e)*a^2*
b*q*log(d)/f + 3*(f*x + e)*a^2*b*log(c)/f + (f*x + e)*a^3/f
```

maple [F] time = 0.09, size = 0, normalized size = 0.00

$$\int \left(b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)+a\right)^{3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^3,x)
```

```
[Out] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^3,x)
```

maxima [B] time = 0.81, size = 317, normalized size = 2.62

$$-3a^2bfpq\left(\frac{x}{f}-\frac{e\log(fx+e)}{f^2}\right)+b^3x\log\left(\left((fx+e)^pd\right)^qc\right)^3+3ab^2x\log\left(\left((fx+e)^pd\right)^qc\right)^2+3a^2bx\log\left(\left((fx+e)^{p}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="maxima")
```

```
[Out] -3*a^2*b*f*p*q*(x/f - e*log(f*x + e)/f^2) + b^3*x*log(((f*x + e)^p*d)^q*c)^
3 + 3*a*b^2*x*log(((f*x + e)^p*d)^q*c)^2 + 3*a^2*b*x*log(((f*x + e)^p*d)^q*
c) - 3*(2*f*p*q*(x/f - e*log(f*x + e)/f^2)*log(((f*x + e)^p*d)^q*c) + (e*lo
g(f*x + e)^2 - 2*f*x + 2*e*log(f*x + e))*p^2*q^2/f)*a*b^2 - (3*f*p*q*(x/f -
 e*log(f*x + e)/f^2)*log(((f*x + e)^p*d)^q*c)^2 - ((e*log(f*x + e)^3 + 3*e*
log(f*x + e)^2 - 6*f*x + 6*e*log(f*x + e))*p^2*q^2/f^2 - 3*(e*log(f*x + e)^
2 - 2*f*x + 2*e*log(f*x + e))*p*q*log(((f*x + e)^p*d)^q*c)/f^2)*f*p*q)*b^3
+ a^3*x
```

mupad [B] time = 0.43, size = 242, normalized size = 2.00

$$x\left(a^3-3a^2bpq+6ab^2p^2q^2-6b^3p^3q^3\right)+\ln\left(c\left(d\left(e+fx\right)^p\right)^q\right)^2\left(\frac{3\left(ab^2e-b^3epq\right)}{f}+3b^2x\left(a-bpq\right)\right)+1$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^3,x)
```

```
[Out] x*(a^3 - 6*b^3*p^3*q^3 + 6*a*b^2*p^2*q^2 - 3*a^2*b*p*q) + log(c*(d*(e + f*x
)^p)^q)^2*((3*(a*b^2*e - b^3*e*p*q))/f + 3*b^2*x*(a - b*p*q)) + log(c*(d*(e
 + f*x)^p)^q)^3*(b^3*x + (b^3*e)/f) + (log(c*(d*(e + f*x)^p)^q)*(3*b*e*x*(a
^2 + 2*b^2*p^2*q^2 - 2*a*b*p*q) + 3*b*f*x^2*(a^2 + 2*b^2*p^2*q^2 - 2*a*b*p*
q)))/(e + f*x) + (log(e + f*x)*(6*b^3*e*p^3*q^3 - 6*a*b^2*e*p^2*q^2 + 3*a^2
*b*e*p*q))/f
```

sympy [A] time = 8.95, size = 1023, normalized size = 8.45

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**3,x)
```

```
[Out] Piecewise((a**3*x + 3*a**2*b*e*p*q*log(e + f*x)/f + 3*a**2*b*p*q*x*log(e +
f*x) - 3*a**2*b*p*q*x + 3*a**2*b*q*x*log(d) + 3*a**2*b*x*log(c) + 3*a*b**2*
e*p**2*q**2*log(e + f*x)**2/f - 6*a*b**2*e*p**2*q**2*log(e + f*x)/f + 6*a*b
**2*e*p*q**2*log(d)*log(e + f*x)/f + 6*a*b**2*e*p*q*log(c)*log(e + f*x)/f +
 3*a*b**2*p**2*q**2*x*log(e + f*x)**2 - 6*a*b**2*p**2*q**2*x*log(e + f*x) +
 6*a*b**2*p**2*q**2*x + 6*a*b**2*p*q**2*x*log(d)*log(e + f*x) - 6*a*b**2*p*
q**2*x*log(d) + 6*a*b**2*p*q*x*log(c)*log(e + f*x) - 6*a*b**2*p*q*x*log(c)
+ 3*a*b**2*q**2*x*log(d)**2 + 6*a*b**2*q*x*log(c)*log(d) + 3*a*b**2*x*log(c
)**2 + b**3*e*p**3*q**3*log(e + f*x)**3/f - 3*b**3*e*p**3*q**3*log(e + f*x)
**2/f + 6*b**3*e*p**3*q**3*log(e + f*x)/f + 3*b**3*e*p**2*q**3*log(d)*log(e
 + f*x)**2/f - 6*b**3*e*p**2*q**3*log(d)*log(e + f*x)/f + 3*b**3*e*p**2*q**
2*log(c)*log(e + f*x)**2/f - 6*b**3*e*p**2*q**2*log(c)*log(e + f*x)/f + 3*b
**3*e*p*q**3*log(d)**2*log(e + f*x)/f + 6*b**3*e*p*q**2*log(c)*log(d)*log(e
 + f*x)/f + 3*b**3*e*p*q*log(c)**2*log(e + f*x)/f + b**3*p**3*q**3*x*log(e
+ f*x)**3 - 3*b**3*p**3*q**3*x*log(e + f*x)**2 + 6*b**3*p**3*q**3*x*log(e +
 f*x) - 6*b**3*p**3*q**3*x + 3*b**3*p**2*q**3*x*log(d)*log(e + f*x)**2 - 6*
b**3*p**2*q**3*x*log(d)*log(e + f*x) + 6*b**3*p**2*q**3*x*log(d) + 3*b**3*p
**2*q**2*x*log(c)*log(e + f*x)**2 - 6*b**3*p**2*q**2*x*log(c)*log(e + f*x)
+ 6*b**3*p**2*q**2*x*log(c) + 3*b**3*p*q**3*x*log(d)**2*log(e + f*x) - 3*b*
*3*p*q**3*x*log(d)**2 + 6*b**3*p*q**2*x*log(c)*log(d)*log(e + f*x) - 6*b**3
*p*q**2*x*log(c)*log(d) + 3*b**3*p*q*x*log(c)**2*log(e + f*x) - 3*b**3*p*q*
x*log(c)**2 + b**3*q**3*x*log(d)**3 + 3*b**3*q**2*x*log(c)*log(d)**2 + 3*b*
*3*q*x*log(c)**2*log(d) + b**3*x*log(c)**3, Ne(f, 0)), (x*(a + b*log(c*(d*e
**p)**q))**3, True))
```

3.438 $\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{g+hx}\,dx$

Optimal. Leaf size=177

$$-\frac{6b^2p^2q^2\text{Li}_3\left(-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h}+\frac{3bpq\text{Li}_2\left(-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{h}+\frac{\log\left(\frac{f(g}{fg}\right.}{}$$

```
[Out] (a+b*ln(c*(d*(f*x+e)^p)^q))^3*ln(f*(h*x+g)/(-e*h+f*g))/h+3*b*p*q*(a+b*ln(c*
(d*(f*x+e)^p)^q))^2*polylog(2,-h*(f*x+e)/(-e*h+f*g))/h-6*b^2*p^2*q^2*(a+b*l
n(c*(d*(f*x+e)^p)^q))*polylog(3,-h*(f*x+e)/(-e*h+f*g))/h+6*b^3*p^3*q^3*poly
log(4,-h*(f*x+e)/(-e*h+f*g))/h
```

Rubi [A] time = 0.41, antiderivative size = 177, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {2396, 2433, 2374, 2383, 6589, 2445}

$$-\frac{6b^2p^2q^2\text{PolyLog}\left(3,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h}+\frac{3bpq\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx\right)\right.\right.\right.}{h}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^3/(g + h*x),x]
```

```
[Out] ((a + b*Log[c*(d*(e + f*x)^p)^q])^3*Log[(f*(g + h*x))/(f*g - e*h)])/h + (3*
b*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*PolyLog[2, -((h*(e + f*x))/(f*g -
e*h))])/h - (6*b^2*p^2*q^2*(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLog[3, -((h
*(e + f*x))/(f*g - e*h))])/h + (6*b^3*p^3*q^3*PolyLog[4, -((h*(e + f*x))/(f
*g - e*h))])/h
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2383

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^p)/q
, x] - Dist[(b*n*p)/q, Int[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^(p - 1
))/x, x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
```

```
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{g+hx}\,dx = \text{Subst}\left(\int \frac{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3}{g+hx}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right.$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} - \text{Subst}\left(\frac{(3bfpq)\int \frac{(a+b\log(}{}}{}\right.$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} - \text{Subst}\left(\frac{(3bpq)\,\text{Subst}\left(\int -\right.}{}\right.$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} + \frac{3bpq\left(a+b\log\left(c\left(d(e+\right.\right.\right.}{h}$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} + \frac{3bpq\left(a+b\log\left(c\left(d(e+\right.\right.\right.}{h}$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} + \frac{3bpq\left(a+b\log\left(c\left(d(e+\right.\right.\right.}{h}$$

Mathematica [B] time = 0.29, size = 646, normalized size = 3.65

$$\frac{a^3\log(g+hx)+3a^2b\log(g+hx)\log\left(c\left(d(e+fx)^p\right)^q\right)-3a^2bpq\log(e+fx)\log(g+hx)+3a^2bpq\log(e+fx)\log\cdots}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^3/(g + h*x),x]
```

```
[Out] (a^3*Log[g + h*x] - 3*a^2*b*p*q*Log[e + f*x]*Log[g + h*x] + 3*a*b^2*p^2*q^2
*Log[e + f*x]^2*Log[g + h*x] - b^3*p^3*q^3*Log[e + f*x]^3*Log[g + h*x] + 3*
a^2*b*Log[c*(d*(e + f*x)^p)^q]*Log[g + h*x] - 6*a*b^2*p*q*Log[e + f*x]*Log[
c*(d*(e + f*x)^p)^q]*Log[g + h*x] + 3*b^3*p^2*q^2*Log[e + f*x]^2*Log[c*(d*(
e + f*x)^p)^q]*Log[g + h*x] + 3*a*b^2*Log[c*(d*(e + f*x)^p)^q]^2*Log[g + h*
x] - 3*b^3*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]^2*Log[g + h*x] + b^3*L
og[c*(d*(e + f*x)^p)^q]^3*Log[g + h*x] + 3*a^2*b*p*q*Log[e + f*x]*Log[(f*(g
 + h*x))/(f*g - e*h)] - 3*a*b^2*p^2*q^2*Log[e + f*x]^2*Log[(f*(g + h*x))/(f
*g - e*h)] + b^3*p^3*q^3*Log[e + f*x]^3*Log[(f*(g + h*x))/(f*g - e*h)] + 6*
a*b^2*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log[(f*(g + h*x))/(f*g - e*
h)] - 3*b^3*p^2*q^2*Log[e + f*x]^2*Log[c*(d*(e + f*x)^p)^q]*Log[(f*(g + h*x
))/(f*g - e*h)] + 3*b^3*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]^2*Log[(f*
(g + h*x))/(f*g - e*h)] + 3*b*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*PolyLo
g[2, (h*(e + f*x))/(-(f*g) + e*h)] - 6*b^2*p^2*q^2*(a + b*Log[c*(d*(e + f*x
)^p)^q])*PolyLog[3, (h*(e + f*x))/(-(f*g) + e*h)] + 6*b^3*p^3*q^3*PolyLog[4
, (h*(e + f*x))/(-(f*g) + e*h)])/h
```

fricas [F] time = 0.47, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b^3\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^3+3\,ab^2\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^2+3\,a^2b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a^3}{hx+g},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g),x, algorithm="fricas")
```

```
[Out] integral((b^3*log(((f*x + e)^p*d)^q*c)^3 + 3*a*b^2*log(((f*x + e)^p*d)^q*c)
^2 + 3*a^2*b*log(((f*x + e)^p*d)^q*c) + a^3)/(h*x + g), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a\right)^3}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^3/(h*x + g), x)
```

maple [F] time = 0.37, size = 0, normalized size = 0.00

$$\int\frac{\left(b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)+a\right)^3}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^3/(h*x+g),x)
```

```
[Out] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^3/(h*x+g),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{a^3\log\left(hx+g\right)}{h}+\int\frac{b^3\log\left(\left(\left(fx+e\right)^p\right)^q\right)^3+3\left(q\log(d)+\log(c)\right)a^2b+3\left(q^2\log(d)^2+2\,q\log(c)\log(d)+\log\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g),x, algorithm="maxima")
```

```
[Out] a^3*log(h*x + g)/h + integrate((b^3*log(((f*x + e)^p)^q)^3 + 3*(q*log(d) +
log(c))*a^2*b + 3*(q^2*log(d)^2 + 2*q*log(c)*log(d) + log(c)^2)*a*b^2 + (q^
3*log(d)^3 + 3*q^2*log(c)*log(d)^2 + 3*q*log(c)^2*log(d) + log(c)^3)*b^3 +
3*((q*log(d) + log(c))*b^3 + a*b^2)*log(((f*x + e)^p)^q)^2 + 3*(2*(q*log(d)
 + log(c))*a*b^2 + (q^2*log(d)^2 + 2*q*log(c)*log(d) + log(c)^2)*b^3 + a^2*
b)*log(((f*x + e)^p)^q))/(h*x + g), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int\frac{{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}^3}{g+h\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^3/(g + h*x),x)
```

```
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))^3/(g + h*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(a+b\log\left(c\left(d\left(e+fx\right)^p\right)^q\right)\right)^3}{g+hx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**3/(h*x+g),x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**3/(g + h*x), x)
```

3.439 $\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{(g+hx)^2}\,dx$

Optimal. Leaf size=209

$$-\frac{6b^2fp^2q^2\text{Li}_2\left(-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h(fg-eh)}-\frac{3bfpq\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{h(fg-eh)}+\frac{(e+f}{}$$

```
[Out] (f*x+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))^3/(-e*h+f*g)/(h*x+g)-3*b*f*p*q*(a+b*ln(
c*(d*(f*x+e)^p)^q))^2*ln(f*(h*x+g)/(-e*h+f*g))/h/(-e*h+f*g)-6*b^2*f*p^2*q^2
*(a+b*ln(c*(d*(f*x+e)^p)^q))*polylog(2,-h*(f*x+e)/(-e*h+f*g))/h/(-e*h+f*g)+
6*b^3*f*p^3*q^3*polylog(3,-h*(f*x+e)/(-e*h+f*g))/h/(-e*h+f*g)
```

Rubi [A] time = 0.37, antiderivative size = 209, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.214$, Rules used = {2397, 2396, 2433, 2374, 6589, 2445}

$$-\frac{6b^2fp^2q^2\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h(fg-eh)}+\frac{6b^3fp^3q^3\text{PolyLog}\left(3,-\frac{h(e+fx)}{fg-eh}\right)}{h(fg-eh)}-\frac{3bfpq\log\left(\frac{f(g+}{fg-}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^3/(g + h*x)^2,x]
```

```
[Out] ((e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3)/((f*g - e*h)*(g + h*x)) - (3
*b*f*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*Log[(f*(g + h*x))/(f*g - e*h)])
/(h*(f*g - e*h)) - (6*b^2*f*p^2*q^2*(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLo
g[2, -((h*(e + f*x))/(f*g - e*h))])/(h*(f*g - e*h)) + (6*b^3*f*p^3*q^3*Poly
Log[3, -((h*(e + f*x))/(f*g - e*h))])/(h*(f*g - e*h))
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2397

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_))^2, x_Symbol] :> Simp[((d + e*x)*(a + b*Log[c*(d + e*x)^n])^p)/((e*f
 - d*g)*(f + g*x)), x] - Dist[(b*e*n*p)/(e*f - d*g), Int[(a + b*Log[c*(d +
e*x)^n])^(p - 1)/(f + g*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] &&
 NeQ[e*f - d*g, 0] && GtQ[p, 0]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
```

```
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{(g+hx)^2}\,dx = \text{Subst}\left(\int \frac{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3}{(g+hx)^2}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q$$

$$= \frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{(fg-eh)(g+hx)} - \text{Subst}\left(\frac{(3bfpq)\int \frac{\left(a+b\log\left(cd^q(e-\right.\right.}{g+hx}}{fg-eh}\right.$$

$$= \frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{(fg-eh)(g+hx)} - \frac{3bfpq\left(a+b\log\left(c\left(d(e+fx)\right.\right.\right.}{h(fg-eh)}$$

$$= \frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{(fg-eh)(g+hx)} - \frac{3bfpq\left(a+b\log\left(c\left(d(e+fx)\right.\right.\right.}{h(fg-eh)}$$

$$= \frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{(fg-eh)(g+hx)} - \frac{3bfpq\left(a+b\log\left(c\left(d(e+fx)\right.\right.\right.}{h(fg-eh)}$$

$$= \frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{(fg-eh)(g+hx)} - \frac{3bfpq\left(a+b\log\left(c\left(d(e+fx)\right.\right.\right.}{h(fg-eh)}$$

Mathematica [B] time = 0.55, size = 444, normalized size = 2.12

$$\frac{3b^2p^2q^2\left(\log(e+fx)\left(h(e+fx)\log(e+fx)-2f(g+hx)\log\left(\frac{f(g+hx)}{fg-eh}\right)\right)-2f(g+hx)\text{Li}_2\left(\frac{h(e+fx)}{eh-fg}\right)\right)\left(a+b\log\left(c\left(\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^3/(g + h*x)^2,x]
```

```
[Out] (-3*b*(f*g - e*h)*p*q*Log[e + f*x]*(a - b*p*q*Log[e + f*x] + b*Log[c*(d*(e
+ f*x)^p)^q])^2 + 3*b*f*p*q*(g + h*x)*Log[e + f*x]*(a - b*p*q*Log[e + f*x]
+ b*Log[c*(d*(e + f*x)^p)^q])^2 - (f*g - e*h)*(a - b*p*q*Log[e + f*x] + b*L
og[c*(d*(e + f*x)^p)^q])^3 - 3*b*f*p*q*(g + h*x)*(a - b*p*q*Log[e + f*x] +
b*Log[c*(d*(e + f*x)^p)^q])^2*Log[g + h*x] + 3*b^2*p^2*q^2*(a - b*p*q*Log[e
 + f*x] + b*Log[c*(d*(e + f*x)^p)^q])*(Log[e + f*x]*(h*(e + f*x)*Log[e + f*
x] - 2*f*(g + h*x)*Log[(f*(g + h*x))/(f*g - e*h)]) - 2*f*(g + h*x)*PolyLog[
2, (h*(e + f*x))/(-(f*g) + e*h)]) + b^3*p^3*q^3*(Log[e + f*x]^2*(h*(e + f*x
)*Log[e + f*x] - 3*f*(g + h*x)*Log[(f*(g + h*x))/(f*g - e*h)]) - 6*f*(g + h
*x)*Log[e + f*x]*PolyLog[2, (h*(e + f*x))/(-(f*g) + e*h)] + 6*f*(g + h*x)*P
olyLog[3, (h*(e + f*x))/(-(f*g) + e*h)]))/(h*(f*g - e*h)*(g + h*x))
```

fricas [F] time = 0.49, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b^3\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^3+3\,ab^2\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^2+3\,a^2b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a^3}{h^2x^2+2\,ghx+g^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g)^2,x, algorithm="fricas")
```

```
[Out] integral((b^3*log(((f*x + e)^p*d)^q*c)^3 + 3*a*b^2*log(((f*x + e)^p*d)^q*c)
^2 + 3*a^2*b*log(((f*x + e)^p*d)^q*c) + a^3)/(h^2*x^2 + 2*g*h*x + g^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a\right)^3}{\left(hx+g\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^3/(h*x + g)^2, x)
```

maple [F] time = 0.35, size = 0, normalized size = 0.00

$$\int \frac{\left(b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)+a\right)^3}{\left(hx+g\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^3/(h*x+g)^2,x)
```

```
[Out] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^3/(h*x+g)^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$3\,a^2bfpq\left(\frac{\log\left(fx+e\right)}{fgh-eh^2}-\frac{\log\left(hx+g\right)}{fgh-eh^2}\right)-\frac{b^3\log\left(\left(\left(fx+e\right)^p\right)^q\right)^3}{h^2x+gh}-\frac{3\,a^2b\log\left(\left(\left(fx+e\right)^pd\right)^qc\right)}{h^2x+gh}-\frac{a^3}{h^2x+gh}+\int -\frac{3\,(}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g)^2,x, algorithm="maxima")
```

```
[Out] 3*a^2*b*f*p*q*(log(f*x + e)/(f*g*h - e*h^2) - log(h*x + g)/(f*g*h - e*h^2))
 - b^3*log(((f*x + e)^p)^q)^3/(h^2*x + g*h) - 3*a^2*b*log(((f*x + e)^p*d)^q
*c)/(h^2*x + g*h) - a^3/(h^2*x + g*h) + integrate((3*(e*h*q^2*log(d)^2 + 2*
e*h*q*log(c)*log(d) + e*h*log(c)^2)*a*b^2 + (e*h*q^3*log(d)^3 + 3*e*h*q^2*l
og(c)*log(d)^2 + 3*e*h*q*log(c)^2*log(d) + e*h*log(c)^3)*b^3 + 3*(a*b^2*e*h
 + (f*g*p*q + e*h*q*log(d) + e*h*log(c))*b^3 + (a*b^2*f*h + (f*h*p*q + f*h*
q*log(d) + f*h*log(c))*b^3)*x)*log(((f*x + e)^p)^q)^2 + (3*(f*h*q^2*log(d)^
2 + 2*f*h*q*log(c)*log(d) + f*h*log(c)^2)*a*b^2 + (f*h*q^3*log(d)^3 + 3*f*h
*q^2*log(c)*log(d)^2 + 3*f*h*q*log(c)^2*log(d) + f*h*log(c)^3)*b^3)*x + 3*(
2*(e*h*q*log(d) + e*h*log(c))*a*b^2 + (e*h*q^2*log(d)^2 + 2*e*h*q*log(c)*lo
g(d) + e*h*log(c)^2)*b^3 + (2*(f*h*q*log(d) + f*h*log(c))*a*b^2 + (f*h*q^2*
log(d)^2 + 2*f*h*q*log(c)*log(d) + f*h*log(c)^2)*b^3)*x)*log(((f*x + e)^p)^
q))/(f*h^3*x^3 + e*g^2*h + (2*f*g*h^2 + e*h^3)*x^2 + (f*g^2*h + 2*e*g*h^2)*
x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}^3}{{\left(g+h\,x\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^3/(g + h*x)^2,x)
```

```
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))^3/(g + h*x)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a + b \log{\left(c \left(d \left(e + f x\right)^{p}\right)^{q} \right)}\right)^{3}}{\left(g + h x\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**3/(h*x+g)**2,x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**3/(g + h*x)**2, x)
```

3.440 $\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{(g+hx)^3}\,dx$

Optimal. Leaf size=376

$$\frac{3b^2f^2p^2q^2\text{Li}_2\left(-\frac{fg-eh}{h(e+fx)}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h(fg-eh)^2}+\frac{3b^2f^2p^2q^2\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h(fg-eh)^2}-\frac{3bf}{}$$

```
[Out] -3/2*b*f*p*q*(f*x+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))^2/(-e*h+f*g)^2/(h*x+g)-1/2
*(a+b*ln(c*(d*(f*x+e)^p)^q))^3/h/(h*x+g)^2+3*b^2*f^2*p^2*q^2*(a+b*ln(c*(d*(
f*x+e)^p)^q))*ln(f*(h*x+g)/(-e*h+f*g))/h/(-e*h+f*g)^2-3/2*b*f^2*p*q*(a+b*ln
(c*(d*(f*x+e)^p)^q))^2*ln(1+(-e*h+f*g)/h/(f*x+e))/h/(-e*h+f*g)^2+3*b^2*f^2*
p^2*q^2*(a+b*ln(c*(d*(f*x+e)^p)^q))*polylog(2,(e*h-f*g)/h/(f*x+e))/h/(-e*h+
f*g)^2+3*b^3*f^2*p^3*q^3*polylog(2,-h*(f*x+e)/(-e*h+f*g))/h/(-e*h+f*g)^2+3*
b^3*f^2*p^3*q^3*polylog(3,(e*h-f*g)/h/(f*x+e))/h/(-e*h+f*g)^2
```

Rubi [A] time = 1.39, antiderivative size = 408, normalized size of antiderivative = 1.09, number of steps used = 13, number of rules used = 12, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.429, Rules used = {2398, 2411, 2347, 2344, 2302, 30, 2317, 2374, 6589, 2318, 2391, 2445}

$$-\frac{3b^2f^2p^2q^2\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h(fg-eh)^2}+\frac{3b^3f^2p^3q^3\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)}{h(fg-eh)^2}+\frac{3b^3f^2p^3q^3\text{Pol}}{h(f}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^3/(g + h*x)^3,x]
```

```
[Out] (-3*b*f*p*q*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/(2*(f*g - e*h)^2*
(g + h*x)) + (f^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^3)/(2*h*(f*g - e*h)^2) -
 (a + b*Log[c*(d*(e + f*x)^p)^q])^3/(2*h*(g + h*x)^2) + (3*b^2*f^2*p^2*q^2*
(a + b*Log[c*(d*(e + f*x)^p)^q])*Log[(f*(g + h*x))/(f*g - e*h)])/(h*(f*g -
e*h)^2) - (3*b*f^2*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*Log[(f*(g + h*x))
/(f*g - e*h)])/(2*h*(f*g - e*h)^2) + (3*b^3*f^2*p^3*q^3*PolyLog[2, -((h*(e
+ f*x))/(f*g - e*h))])/(h*(f*g - e*h)^2) - (3*b^2*f^2*p^2*q^2*(a + b*Log[c*
(d*(e + f*x)^p)^q])*PolyLog[2, -((h*(e + f*x))/(f*g - e*h))])/(h*(f*g - e*h
)^2) + (3*b^3*f^2*p^3*q^3*PolyLog[3, -((h*(e + f*x))/(f*g - e*h))])/(h*(f*g
 - e*h)^2)
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2318

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_))^2, x_Sy
mbol] :> Simp[(x*(a + b*Log[c*x^n])^p)/(d*(d + e*x)), x] - Dist[(b*n*p)/d,
Int[(a + b*Log[c*x^n])^(p - 1)/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n
, p}, x] && GtQ[p, 0]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2347

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/x
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{(g+hx)^3}\,dx = \text{Subst}\left(\int \frac{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3}{(g+hx)^3}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= -\frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{2h(g+hx)^2} + \text{Subst}\left(\frac{(3bfpq)\int \frac{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}{(e+fx)(g+hx)^2}\,dx}{2h}\right.$$

$$= -\frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{2h(g+hx)^2} + \text{Subst}\left(\frac{(3bpq)\,\text{Subst}\left(\int \frac{\left(a+b\log(cd^qx^{pq})\right)^2}{x\left(\frac{fg-eh}{f}+\frac{hx}{f}\right)^2}\right.}{2h}\right.$$

$$= -\frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{2h(g+hx)^2} - \text{Subst}\left(\frac{(3bpq)\,\text{Subst}\left(\int \frac{\left(a+b\log(cd^qx^{pq})\right)^2}{\left(\frac{fg-eh}{f}+\frac{hx}{f}\right)^2}\right.}{2(fg-eh)}\right.$$

$$= -\frac{3bfpq(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{2(fg-eh)^2(g+hx)} - \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)\right.\right.}{2h(g+hx)^2}$$

$$= -\frac{3bfpq(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{2(fg-eh)^2(g+hx)} - \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)\right.\right.}{2h(g+hx)^2}$$

$$= -\frac{3bfpq(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{2(fg-eh)^2(g+hx)} + \frac{f^2\left(a+b\log\left(c\left(d(e+fx\right.\right.\right.}{2h(fg-eh)^2}$$

$$= -\frac{3bfpq(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{2(fg-eh)^2(g+hx)} + \frac{f^2\left(a+b\log\left(c\left(d(e+fx\right.\right.\right.}{2h(fg-eh)^2}$$

Mathematica [A] time = 0.90, size = 660, normalized size = 1.76

$$-\frac{3b^2p^2q^2\left(2f^2(g+hx)^2\text{Li}_2\left(\frac{h(e+fx)}{eh-fg}\right)-2f^2(g+hx)^2\log\left(\frac{f(g+hx)}{fg-eh}\right)+h(e+fx)\log^2(e+fx)(eh-f(2g+hx))+2f\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^3/(g + h*x)^3,x]
```

```
[Out] -1/2*(-3*b*f*(f*g - e*h)*p*q*(g + h*x)*(a - b*p*q*Log[e + f*x] + b*Log[c*(d
*(e + f*x)^p)^q])^2 + 3*b*(f*g - e*h)^2*p*q*Log[e + f*x]*(a - b*p*q*Log[e +
 f*x] + b*Log[c*(d*(e + f*x)^p)^q])^2 - 3*b*f^2*p*q*(g + h*x)^2*Log[e + f*x
]*(a - b*p*q*Log[e + f*x] + b*Log[c*(d*(e + f*x)^p)^q])^2 + (f*g - e*h)^2*(
a - b*p*q*Log[e + f*x] + b*Log[c*(d*(e + f*x)^p)^q])^3 + 3*b*f^2*p*q*(g + h
*x)^2*(a - b*p*q*Log[e + f*x] + b*Log[c*(d*(e + f*x)^p)^q])^2*Log[g + h*x]
+ 3*b^2*p^2*q^2*(a - b*p*q*Log[e + f*x] + b*Log[c*(d*(e + f*x)^p)^q])*(h*(e
 + f*x)*(e*h - f*(2*g + h*x))*Log[e + f*x]^2 - 2*f^2*(g + h*x)^2*Log[(f*(g
+ h*x))/(f*g - e*h)] + 2*f*(g + h*x)*Log[e + f*x]*(h*(e + f*x) + f*(g + h*x
)*Log[(f*(g + h*x))/(f*g - e*h)]) + 2*f^2*(g + h*x)^2*PolyLog[2, (h*(e + f*
x))/(-(f*g) + e*h)]) + b^3*p^3*q^3*(h*(e + f*x)*(e*h - f*(2*g + h*x))*Log[e
 + f*x]^3 + 3*f*(g + h*x)*Log[e + f*x]^2*(h*(e + f*x) + f*(g + h*x)*Log[(f*
(g + h*x))/(f*g - e*h)]) - 6*f^2*(g + h*x)^2*Log[e + f*x]*(Log[(f*(g + h*x)
)/(f*g - e*h)] - PolyLog[2, (h*(e + f*x))/(-(f*g) + e*h)]) - 6*f^2*(g + h*x
)^2*PolyLog[2, (h*(e + f*x))/(-(f*g) + e*h)] - 6*f^2*(g + h*x)^2*PolyLog[3,
 (h*(e + f*x))/(-(f*g) + e*h)]))/(h*(f*g - e*h)^2*(g + h*x)^2)
```

fricas [F] time = 0.47, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(\frac{b^{3} \log\left(\left(\left(fx+e\right)^{p} d\right)^{q} c\right)^{3} + 3\, a b^{2} \log\left(\left(\left(fx+e\right)^{p} d\right)^{q} c\right)^{2} + 3\, a^{2} b \log\left(\left(\left(fx+e\right)^{p} d\right)^{q} c\right) + a^{3}}{h^{3} x^{3} + 3\, g h^{2} x^{2} + 3\, g^{2} h x + g^{3}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g)^3,x, algorithm="fricas")
```

```
[Out] integral((b^3*log(((f*x + e)^p*d)^q*c)^3 + 3*a*b^2*log(((f*x + e)^p*d)^q*c)
^2 + 3*a^2*b*log(((f*x + e)^p*d)^q*c) + a^3)/(h^3*x^3 + 3*g*h^2*x^2 + 3*g^2
*h*x + g^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b \log\left(\left(\left(fx+e\right)^{p} d\right)^{q} c\right) + a\right)^{3}}{\left(hx+g\right)^{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g)^3,x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^3/(h*x + g)^3, x)
```

maple [F] time = 0.35, size = 0, normalized size = 0.00

$$\int \frac{\left(b \ln\left(c \left(d \left(fx+e\right)^{p}\right)^{q}\right) + a\right)^{3}}{\left(hx+g\right)^{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^3/(h*x+g)^3,x)
```

```
[Out] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^3/(h*x+g)^3,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{3}{2}\,a^2bfpq\left(\frac{f\log\left(fx+e\right)}{f^2g^2h-2\,efgh^2+e^2h^3}-\frac{f\log\left(hx+g\right)}{f^2g^2h-2\,efgh^2+e^2h^3}+\frac{1}{fg^2h-egh^2+\left(fgh^2-eh^3\right)x}\right)-\frac{b^3\log\left(\left(\left(fx+e\right.\right.\right.}{2\left(h^3x^2+2\,gh^2x\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g)^3,x, algorithm="maxima")
```

```
[Out] 3/2*a^2*b*f*p*q*(f*log(f*x + e)/(f^2*g^2*h - 2*e*f*g*h^2 + e^2*h^3) - f*log
(h*x + g)/(f^2*g^2*h - 2*e*f*g*h^2 + e^2*h^3) + 1/(f*g^2*h - e*g*h^2 + (f*g
*h^2 - e*h^3)*x)) - 1/2*b^3*log(((f*x + e)^p)^q)^3/(h^3*x^2 + 2*g*h^2*x + g
^2*h) - 3/2*a^2*b*log(((f*x + e)^p*d)^q*c)/(h^3*x^2 + 2*g*h^2*x + g^2*h) -
1/2*a^3/(h^3*x^2 + 2*g*h^2*x + g^2*h) + integrate(1/2*(6*(e*h*q^2*log(d)^2
+ 2*e*h*q*log(c)*log(d) + e*h*log(c)^2)*a*b^2 + 2*(e*h*q^3*log(d)^3 + 3*e*h
*q^2*log(c)*log(d)^2 + 3*e*h*q*log(c)^2*log(d) + e*h*log(c)^3)*b^3 + 3*(2*a
*b^2*e*h + (f*g*p*q + 2*e*h*q*log(d) + 2*e*h*log(c))*b^3 + (2*a*b^2*f*h + (
f*h*p*q + 2*f*h*q*log(d) + 2*f*h*log(c))*b^3)*x)*log(((f*x + e)^p)^q)^2 + 2
*(3*(f*h*q^2*log(d)^2 + 2*f*h*q*log(c)*log(d) + f*h*log(c)^2)*a*b^2 + (f*h*
q^3*log(d)^3 + 3*f*h*q^2*log(c)*log(d)^2 + 3*f*h*q*log(c)^2*log(d) + f*h*lo
g(c)^3)*b^3)*x + 6*(2*(e*h*q*log(d) + e*h*log(c))*a*b^2 + (e*h*q^2*log(d)^2
 + 2*e*h*q*log(c)*log(d) + e*h*log(c)^2)*b^3 + (2*(f*h*q*log(d) + f*h*log(c
))*a*b^2 + (f*h*q^2*log(d)^2 + 2*f*h*q*log(c)*log(d) + f*h*log(c)^2)*b^3)*x
)*log(((f*x + e)^p)^q))/(f*h^4*x^4 + e*g^3*h + (3*f*g*h^3 + e*h^4)*x^3 + 3*
(f*g^2*h^2 + e*g*h^3)*x^2 + (f*g^3*h + 3*e*g^2*h^2)*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}^3}{{\left(g+h\,x\right)}^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^3/(g + h*x)^3,x)
```

```
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))^3/(g + h*x)^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a + b \log{\left(c \left(d \left(e + f x\right)^{p}\right)^{q} \right)}\right)^{3}}{\left(g + h x\right)^{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**3/(h*x+g)**3,x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**3/(g + h*x)**3, x)
```

3.441 $\int \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^4\,dx$

Optimal. Leaf size=160

$$-24ab^3p^3q^3x+\frac{12b^2p^2q^2(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{f}-\frac{4bpq(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{f}+\cdots$$

```
[Out] -24*a*b^3*p^3*q^3*x+24*b^4*p^4*q^4*x-24*b^4*p^3*q^3*(f*x+e)*ln(c*(d*(f*x+e)
^p)^q)/f+12*b^2*p^2*q^2*(f*x+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))^2/f-4*b*p*q*(f*
x+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))^3/f+(f*x+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))^4/
f
```

Rubi [A] time = 0.20, antiderivative size = 160, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {2389, 2296, 2295, 2445}

$$\frac{12b^2p^2q^2(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{f}-24ab^3p^3q^3x-\frac{4bpq(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{f}+\cdots$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^4,x]
```

```
[Out] -24*a*b^3*p^3*q^3*x + 24*b^4*p^4*q^4*x - (24*b^4*p^3*q^3*(e + f*x)*Log[c*(d
*(e + f*x)^p)^q])/f + (12*b^2*p^2*q^2*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p
)^q])^2)/f - (4*b*p*q*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3)/f + ((e
 + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^4)/f
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^4 dx = \text{Subst}\left(\int \left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^4 dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$
$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \left(a+b\log\left(cd^qx^{pq}\right)\right)^4 dx, x, e+fx\right)}{f}, cd^q(e+fx)^{pq}, c\left(d(e\right.\right.$$
$$= \frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^4}{f} - \text{Subst}\left(\frac{(4bpq)\,\text{Subst}\left(\int \left(a+b\log\right.\right.}{}\right.$$
$$= -\frac{4bpq(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{f} + \frac{(e+fx)\left(a+b\log\left(c\left(d(e\right.\right.\right.}{f}$$
$$= \frac{12b^2p^2q^2(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{f} - \frac{4bpq(e+fx)\left(a+b\log\right.}{f}$$
$$= -24ab^3p^3q^3x + \frac{12b^2p^2q^2(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{f} - \frac{4bpq(e+}{}$$
$$= -24ab^3p^3q^3x + 24b^4p^4q^4x - \frac{24b^4p^3q^3(e+fx)\log\left(c\left(d(e+fx)^p\right)^q\right)}{f} + \frac{12b}{}$$

Mathematica [A] time = 0.06, size = 132, normalized size = 0.82

$$\frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^4 - 4bpq\left((e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3 - 3bpq\left((e+fx)\left(a+b\log\right.\right.\right.}{f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^4,x]
```

```
[Out] ((e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^4 - 4*b*p*q*((e + f*x)*(a + b*L
og[c*(d*(e + f*x)^p)^q])^3 - 3*b*p*q*((e + f*x)*(a + b*Log[c*(d*(e + f*x)^p
)^q])^2 - 2*b*p*q*(f*(a - b*p*q)*x + b*(e + f*x)*Log[c*(d*(e + f*x)^p)^q]))
))/f
```

fricas [B] time = 0.48, size = 1409, normalized size = 8.81

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^4,x, algorithm="fricas")
```

```
[Out] (b^4*f*q^4*x*log(d)^4 + b^4*f*x*log(c)^4 + (b^4*f*p^4*q^4*x + b^4*e*p^4*q^4
)*log(f*x + e)^4 - 4*(b^4*f*p*q - a*b^3*f)*x*log(c)^3 - 4*(b^4*e*p^4*q^4 -
a*b^3*e*p^3*q^3 + (b^4*f*p^4*q^4 - a*b^3*f*p^3*q^3)*x - (b^4*f*p^3*q^3*x +
b^4*e*p^3*q^3)*log(c) - (b^4*f*p^3*q^4*x + b^4*e*p^3*q^4)*log(d))*log(f*x +
 e)^3 + 6*(2*b^4*f*p^2*q^2 - 2*a*b^3*f*p*q + a^2*b^2*f)*x*log(c)^2 + 4*(b^4
*f*q^3*x*log(c) - (b^4*f*p*q^4 - a*b^3*f*q^3)*x)*log(d)^3 + 6*(2*b^4*e*p^4*
q^4 - 2*a*b^3*e*p^3*q^3 + a^2*b^2*e*p^2*q^2 + (b^4*f*p^2*q^2*x + b^4*e*p^2*
q^2)*log(c)^2 + (b^4*f*p^2*q^4*x + b^4*e*p^2*q^4)*log(d)^2 + (2*b^4*f*p^4*q
^4 - 2*a*b^3*f*p^3*q^3 + a^2*b^2*f*p^2*q^2)*x - 2*(b^4*e*p^3*q^3 - a*b^3*e*
```

```
p^2*q^2 + (b^4*f*p^3*q^3 - a*b^3*f*p^2*q^2)*x)*log(c) - 2*(b^4*e*p^3*q^4 -
a*b^3*e*p^2*q^3 + (b^4*f*p^3*q^4 - a*b^3*f*p^2*q^3)*x - (b^4*f*p^2*q^3*x +
b^4*e*p^2*q^3)*log(c))*log(d))*log(f*x + e)^2 - 4*(6*b^4*f*p^3*q^3 - 6*a*b^
3*f*p^2*q^2 + 3*a^2*b^2*f*p*q - a^3*b*f)*x*log(c) + 6*(b^4*f*q^2*x*log(c)^2
 - 2*(b^4*f*p*q^3 - a*b^3*f*q^2)*x*log(c) + (2*b^4*f*p^2*q^4 - 2*a*b^3*f*p*
q^3 + a^2*b^2*f*q^2)*x)*log(d)^2 + (24*b^4*f*p^4*q^4 - 24*a*b^3*f*p^3*q^3 +
 12*a^2*b^2*f*p^2*q^2 - 4*a^3*b*f*p*q + a^4*f)*x - 4*(6*b^4*e*p^4*q^4 - 6*a
*b^3*e*p^3*q^3 + 3*a^2*b^2*e*p^2*q^2 - a^3*b*e*p*q - (b^4*f*p*q*x + b^4*e*p
*q)*log(c)^3 - (b^4*f*p*q^4*x + b^4*e*p*q^4)*log(d)^3 + 3*(b^4*e*p^2*q^2 -
a*b^3*e*p*q + (b^4*f*p^2*q^2 - a*b^3*f*p*q)*x)*log(c)^2 + 3*(b^4*e*p^2*q^4
- a*b^3*e*p*q^3 + (b^4*f*p^2*q^4 - a*b^3*f*p*q^3)*x - (b^4*f*p*q^3*x + b^4*
e*p*q^3)*log(c))*log(d)^2 + (6*b^4*f*p^4*q^4 - 6*a*b^3*f*p^3*q^3 + 3*a^2*b^
2*f*p^2*q^2 - a^3*b*f*p*q)*x - 3*(2*b^4*e*p^3*q^3 - 2*a*b^3*e*p^2*q^2 + a^2
*b^2*e*p*q + (2*b^4*f*p^3*q^3 - 2*a*b^3*f*p^2*q^2 + a^2*b^2*f*p*q)*x)*log(c
) - 3*(2*b^4*e*p^3*q^4 - 2*a*b^3*e*p^2*q^3 + a^2*b^2*e*p*q^2 + (b^4*f*p*q^2
*x + b^4*e*p*q^2)*log(c)^2 + (2*b^4*f*p^3*q^4 - 2*a*b^3*f*p^2*q^3 + a^2*b^2
*f*p*q^2)*x - 2*(b^4*e*p^2*q^3 - a*b^3*e*p*q^2 + (b^4*f*p^2*q^3 - a*b^3*f*p
*q^2)*x)*log(c))*log(d))*log(f*x + e) + 4*(b^4*f*q*x*log(c)^3 - 3*(b^4*f*p*
q^2 - a*b^3*f*q)*x*log(c)^2 + 3*(2*b^4*f*p^2*q^3 - 2*a*b^3*f*p*q^2 + a^2*b^
2*f*q)*x*log(c) - (6*b^4*f*p^3*q^4 - 6*a*b^3*f*p^2*q^3 + 3*a^2*b^2*f*p*q^2
- a^3*b*f*q)*x)*log(d))/f
```

giac [B] time = 0.30, size = 1802, normalized size = 11.26

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^4,x, algorithm="giac")
```

```
[Out] (f*x + e)*b^4*p^4*q^4*log(f*x + e)^4/f - 4*(f*x + e)*b^4*p^4*q^4*log(f*x +
e)^3/f + 4*(f*x + e)*b^4*p^3*q^4*log(f*x + e)^3*log(d)/f + 12*(f*x + e)*b^4
*p^4*q^4*log(f*x + e)^2/f + 4*(f*x + e)*b^4*p^3*q^3*log(f*x + e)^3*log(c)/f
 - 12*(f*x + e)*b^4*p^3*q^4*log(f*x + e)^2*log(d)/f + 6*(f*x + e)*b^4*p^2*q
^4*log(f*x + e)^2*log(d)^2/f - 24*(f*x + e)*b^4*p^4*q^4*log(f*x + e)/f + 4*
(f*x + e)*a*b^3*p^3*q^3*log(f*x + e)^3/f - 12*(f*x + e)*b^4*p^3*q^3*log(f*x
 + e)^2*log(c)/f + 24*(f*x + e)*b^4*p^3*q^4*log(f*x + e)*log(d)/f + 12*(f*x
 + e)*b^4*p^2*q^3*log(f*x + e)^2*log(c)*log(d)/f - 12*(f*x + e)*b^4*p^2*q^4
*log(f*x + e)*log(d)^2/f + 4*(f*x + e)*b^4*p*q^4*log(f*x + e)*log(d)^3/f +
24*(f*x + e)*b^4*p^4*q^4/f - 12*(f*x + e)*a*b^3*p^3*q^3*log(f*x + e)^2/f +
24*(f*x + e)*b^4*p^3*q^3*log(f*x + e)*log(c)/f + 6*(f*x + e)*b^4*p^2*q^2*lo
g(f*x + e)^2*log(c)^2/f - 24*(f*x + e)*b^4*p^3*q^4*log(d)/f + 12*(f*x + e)*
a*b^3*p^2*q^3*log(f*x + e)^2*log(d)/f - 24*(f*x + e)*b^4*p^2*q^3*log(f*x +
e)*log(c)*log(d)/f + 12*(f*x + e)*b^4*p^2*q^4*log(d)^2/f + 12*(f*x + e)*b^4
*p*q^3*log(f*x + e)*log(c)*log(d)^2/f - 4*(f*x + e)*b^4*p*q^4*log(d)^3/f +
(f*x + e)*b^4*q^4*log(d)^4/f + 24*(f*x + e)*a*b^3*p^3*q^3*log(f*x + e)/f -
24*(f*x + e)*b^4*p^3*q^3*log(c)/f + 12*(f*x + e)*a*b^3*p^2*q^2*log(f*x + e)
^2*log(c)/f - 12*(f*x + e)*b^4*p^2*q^2*log(f*x + e)*log(c)^2/f - 24*(f*x +
e)*a*b^3*p^2*q^3*log(f*x + e)*log(d)/f + 24*(f*x + e)*b^4*p^2*q^3*log(c)*lo
g(d)/f + 12*(f*x + e)*b^4*p*q^2*log(f*x + e)*log(c)^2*log(d)/f + 12*(f*x +
e)*a*b^3*p*q^3*log(f*x + e)*log(d)^2/f - 12*(f*x + e)*b^4*p*q^3*log(c)*log(
d)^2/f + 4*(f*x + e)*b^4*q^3*log(c)*log(d)^3/f - 24*(f*x + e)*a*b^3*p^3*q^3
/f + 6*(f*x + e)*a^2*b^2*p^2*q^2*log(f*x + e)^2/f - 24*(f*x + e)*a*b^3*p^2*
q^2*log(f*x + e)*log(c)/f + 12*(f*x + e)*b^4*p^2*q^2*log(c)^2/f + 4*(f*x +
e)*b^4*p*q*log(f*x + e)*log(c)^3/f + 24*(f*x + e)*a*b^3*p^2*q^3*log(d)/f +
24*(f*x + e)*a*b^3*p*q^2*log(f*x + e)*log(c)*log(d)/f - 12*(f*x + e)*b^4*p*
q^2*log(c)^2*log(d)/f - 12*(f*x + e)*a*b^3*p*q^3*log(d)^2/f + 6*(f*x + e)*b
^4*q^2*log(c)^2*log(d)^2/f + 4*(f*x + e)*a*b^3*q^3*log(d)^3/f - 12*(f*x + e
)*a^2*b^2*p^2*q^2*log(f*x + e)/f + 24*(f*x + e)*a*b^3*p^2*q^2*log(c)/f + 12
*(f*x + e)*a*b^3*p*q*log(f*x + e)*log(c)^2/f - 4*(f*x + e)*b^4*p*q*log(c)^3
/f + 12*(f*x + e)*a^2*b^2*p*q^2*log(f*x + e)*log(d)/f - 24*(f*x + e)*a*b^3*
```

```
p*q^2*log(c)*log(d)/f + 4*(f*x + e)*b^4*q*log(c)^3*log(d)/f + 12*(f*x + e)*
a*b^3*q^2*log(c)*log(d)^2/f + 12*(f*x + e)*a^2*b^2*p^2*q^2/f + 12*(f*x + e)
*a^2*b^2*p*q*log(f*x + e)*log(c)/f - 12*(f*x + e)*a*b^3*p*q*log(c)^2/f + (f
*x + e)*b^4*log(c)^4/f - 12*(f*x + e)*a^2*b^2*p*q^2*log(d)/f + 12*(f*x + e)
*a*b^3*q*log(c)^2*log(d)/f + 6*(f*x + e)*a^2*b^2*q^2*log(d)^2/f + 4*(f*x +
e)*a^3*b*p*q*log(f*x + e)/f - 12*(f*x + e)*a^2*b^2*p*q*log(c)/f + 4*(f*x +
e)*a*b^3*log(c)^3/f + 12*(f*x + e)*a^2*b^2*q*log(c)*log(d)/f - 4*(f*x + e)*
a^3*b*p*q/f + 6*(f*x + e)*a^2*b^2*log(c)^2/f + 4*(f*x + e)*a^3*b*q*log(d)/f
 + 4*(f*x + e)*a^3*b*log(c)/f + (f*x + e)*a^4/f
```

maple [F] time = 0.10, size = 0, normalized size = 0.00

$$\int \left(b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)+a\right)^{4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^4,x)
```

```
[Out] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^4,x)
```

maxima [B] time = 0.88, size = 559, normalized size = 3.49

$$b^4x\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)^4-4\,a^3bfpq\left(\frac{x}{f}-\frac{e\log\left(fx+e\right)}{f^2}\right)+4\,ab^3x\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)^3+6\,a^2b^2x\log\left(\left(\left(fx+e\right)^{p}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^4,x, algorithm="maxima")
```

```
[Out] b^4*x*log(((f*x + e)^p*d)^q*c)^4 - 4*a^3*b*f*p*q*(x/f - e*log(f*x + e)/f^2)
 + 4*a*b^3*x*log(((f*x + e)^p*d)^q*c)^3 + 6*a^2*b^2*x*log(((f*x + e)^p*d)^q
*c)^2 + 4*a^3*b*x*log(((f*x + e)^p*d)^q*c) - 6*(2*f*p*q*(x/f - e*log(f*x +
e)/f^2)*log(((f*x + e)^p*d)^q*c) + (e*log(f*x + e)^2 - 2*f*x + 2*e*log(f*x
+ e))*p^2*q^2/f)*a^2*b^2 - 4*(3*f*p*q*(x/f - e*log(f*x + e)/f^2)*log(((f*x
+ e)^p*d)^q*c)^2 - ((e*log(f*x + e)^3 + 3*e*log(f*x + e)^2 - 6*f*x + 6*e*lo
g(f*x + e))*p^2*q^2/f^2 - 3*(e*log(f*x + e)^2 - 2*f*x + 2*e*log(f*x + e))*p
*q*log(((f*x + e)^p*d)^q*c)/f^2)*f*p*q)*a*b^3 - (4*f*p*q*(x/f - e*log(f*x +
 e)/f^2)*log(((f*x + e)^p*d)^q*c)^3 + (((e*log(f*x + e)^4 + 4*e*log(f*x + e
)^3 + 12*e*log(f*x + e)^2 - 24*f*x + 24*e*log(f*x + e))*p^2*q^2/f^3 - 4*(e*
log(f*x + e)^3 + 3*e*log(f*x + e)^2 - 6*f*x + 6*e*log(f*x + e))*p*q*log(((f
*x + e)^p*d)^q*c)/f^3)*f*p*q + 6*(e*log(f*x + e)^2 - 2*f*x + 2*e*log(f*x +
e))*p*q*log(((f*x + e)^p*d)^q*c)^2/f^2)*f*p*q)*b^4 + a^4*x
```

mupad [B] time = 0.56, size = 380, normalized size = 2.38

$$\ln\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)^{3}\left(\frac{4\left(a\,b^3\,e-b^4\,e\,p\,q\right)}{f}+4\,b^3\,x\left(a-b\,p\,q\right)\right)+\ln\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)^{4}\left(b^4\,x+\frac{b^4\,e}{f}\right)+x\left(a^4-4\,a\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^4,x)
```

```
[Out] log(c*(d*(e + f*x)^p)^q)^3*((4*(a*b^3*e - b^4*e*p*q))/f + 4*b^3*x*(a - b*p*
q)) + log(c*(d*(e + f*x)^p)^q)^4*(b^4*x + (b^4*e)/f) + x*(a^4 + 24*b^4*p^4*
q^4 - 24*a*b^3*p^3*q^3 - 4*a^3*b*p*q + 12*a^2*b^2*p^2*q^2) + log(c*(d*(e +
f*x)^p)^q)^2*((6*(a^2*b^2*e + 2*b^4*e*p^2*q^2 - 2*a*b^3*e*p*q))/f + 6*b^2*x
```

```
*(a^2 + 2*b^2*p^2*q^2 - 2*a*b*p*q)) + (log(c*(d*(e + f*x)^p)^q)*(4*b*e*x*(a
^3 - 6*b^3*p^3*q^3 + 6*a*b^2*p^2*q^2 - 3*a^2*b*p*q) + 4*b*f*x^2*(a^3 - 6*b^
3*p^3*q^3 + 6*a*b^2*p^2*q^2 - 3*a^2*b*p*q)))/(e + f*x) - (log(e + f*x)*(24*
b^4*e*p^4*q^4 - 24*a*b^3*e*p^3*q^3 - 4*a^3*b*e*p*q + 12*a^2*b^2*e*p^2*q^2))
/f
```

sympy [A] time = 22.87, size = 2390, normalized size = 14.94

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**4,x)
```

```
[Out] Piecewise((a**4*x + 4*a**3*b*e*p*q*log(e + f*x)/f + 4*a**3*b*p*q*x*log(e +
f*x) - 4*a**3*b*p*q*x + 4*a**3*b*q*x*log(d) + 4*a**3*b*x*log(c) + 6*a**2*b*
*2*e*p**2*q**2*log(e + f*x)**2/f - 12*a**2*b**2*e*p**2*q**2*log(e + f*x)/f
+ 12*a**2*b**2*e*p*q**2*log(d)*log(e + f*x)/f + 12*a**2*b**2*e*p*q*log(c)*l
og(e + f*x)/f + 6*a**2*b**2*p**2*q**2*x*log(e + f*x)**2 - 12*a**2*b**2*p**2
*q**2*x*log(e + f*x) + 12*a**2*b**2*p**2*q**2*x + 12*a**2*b**2*p*q**2*x*log
(d)*log(e + f*x) - 12*a**2*b**2*p*q**2*x*log(d) + 12*a**2*b**2*p*q*x*log(c)
*log(e + f*x) - 12*a**2*b**2*p*q*x*log(c) + 6*a**2*b**2*q**2*x*log(d)**2 +
12*a**2*b**2*q*x*log(c)*log(d) + 6*a**2*b**2*x*log(c)**2 + 4*a*b**3*e*p**3*
q**3*log(e + f*x)**3/f - 12*a*b**3*e*p**3*q**3*log(e + f*x)**2/f + 24*a*b**
3*e*p**3*q**3*log(e + f*x)/f + 12*a*b**3*e*p**2*q**3*log(d)*log(e + f*x)**2
/f - 24*a*b**3*e*p**2*q**3*log(d)*log(e + f*x)/f + 12*a*b**3*e*p**2*q**2*lo
g(c)*log(e + f*x)**2/f - 24*a*b**3*e*p**2*q**2*log(c)*log(e + f*x)/f + 12*a
*b**3*e*p*q**3*log(d)**2*log(e + f*x)/f + 24*a*b**3*e*p*q**2*log(c)*log(d)*
log(e + f*x)/f + 12*a*b**3*e*p*q*log(c)**2*log(e + f*x)/f + 4*a*b**3*p**3*q
**3*x*log(e + f*x)**3 - 12*a*b**3*p**3*q**3*x*log(e + f*x)**2 + 24*a*b**3*p
**3*q**3*x*log(e + f*x) - 24*a*b**3*p**3*q**3*x + 12*a*b**3*p**2*q**3*x*log
(d)*log(e + f*x)**2 - 24*a*b**3*p**2*q**3*x*log(d)*log(e + f*x) + 24*a*b**3
*p**2*q**3*x*log(d) + 12*a*b**3*p**2*q**2*x*log(c)*log(e + f*x)**2 - 24*a*b
**3*p**2*q**2*x*log(c)*log(e + f*x) + 24*a*b**3*p**2*q**2*x*log(c) + 12*a*b
**3*p*q**3*x*log(d)**2*log(e + f*x) - 12*a*b**3*p*q**3*x*log(d)**2 + 24*a*b
**3*p*q**2*x*log(c)*log(d)*log(e + f*x) - 24*a*b**3*p*q**2*x*log(c)*log(d)
+ 12*a*b**3*p*q*x*log(c)**2*log(e + f*x) - 12*a*b**3*p*q*x*log(c)**2 + 4*a*
b**3*q**3*x*log(d)**3 + 12*a*b**3*q**2*x*log(c)*log(d)**2 + 12*a*b**3*q*x*l
og(c)**2*log(d) + 4*a*b**3*x*log(c)**3 + b**4*e*p**4*q**4*log(e + f*x)**4/f
 - 4*b**4*e*p**4*q**4*log(e + f*x)**3/f + 12*b**4*e*p**4*q**4*log(e + f*x)*
*2/f - 24*b**4*e*p**4*q**4*log(e + f*x)/f + 4*b**4*e*p**3*q**4*log(d)*log(e
 + f*x)**3/f - 12*b**4*e*p**3*q**4*log(d)*log(e + f*x)**2/f + 24*b**4*e*p**
3*q**4*log(d)*log(e + f*x)/f + 4*b**4*e*p**3*q**3*log(c)*log(e + f*x)**3/f
- 12*b**4*e*p**3*q**3*log(c)*log(e + f*x)**2/f + 24*b**4*e*p**3*q**3*log(c)
*log(e + f*x)/f + 6*b**4*e*p**2*q**4*log(d)**2*log(e + f*x)**2/f - 12*b**4*
e*p**2*q**4*log(d)**2*log(e + f*x)/f + 12*b**4*e*p**2*q**3*log(c)*log(d)*lo
g(e + f*x)**2/f - 24*b**4*e*p**2*q**3*log(c)*log(d)*log(e + f*x)/f + 6*b**4
*e*p**2*q**2*log(c)**2*log(e + f*x)**2/f - 12*b**4*e*p**2*q**2*log(c)**2*lo
g(e + f*x)/f + 4*b**4*e*p*q**4*log(d)**3*log(e + f*x)/f + 12*b**4*e*p*q**3*
log(c)*log(d)**2*log(e + f*x)/f + 12*b**4*e*p*q**2*log(c)**2*log(d)*log(e +
 f*x)/f + 4*b**4*e*p*q*log(c)**3*log(e + f*x)/f + b**4*p**4*q**4*x*log(e +
f*x)**4 - 4*b**4*p**4*q**4*x*log(e + f*x)**3 + 12*b**4*p**4*q**4*x*log(e +
f*x)**2 - 24*b**4*p**4*q**4*x*log(e + f*x) + 24*b**4*p**4*q**4*x + 4*b**4*p
**3*q**4*x*log(d)*log(e + f*x)**3 - 12*b**4*p**3*q**4*x*log(d)*log(e + f*x)
**2 + 24*b**4*p**3*q**4*x*log(d)*log(e + f*x) - 24*b**4*p**3*q**4*x*log(d)
+ 4*b**4*p**3*q**3*x*log(c)*log(e + f*x)**3 - 12*b**4*p**3*q**3*x*log(c)*lo
g(e + f*x)**2 + 24*b**4*p**3*q**3*x*log(c)*log(e + f*x) - 24*b**4*p**3*q**3
*x*log(c) + 6*b**4*p**2*q**4*x*log(d)**2*log(e + f*x)**2 - 12*b**4*p**2*q**
4*x*log(d)**2*log(e + f*x) + 12*b**4*p**2*q**4*x*log(d)**2 + 12*b**4*p**2*q
**3*x*log(c)*log(d)*log(e + f*x)**2 - 24*b**4*p**2*q**3*x*log(c)*log(d)*log
(e + f*x) + 24*b**4*p**2*q**3*x*log(c)*log(d) + 6*b**4*p**2*q**2*x*log(c)**
```

```
2*log(e + f*x)**2 - 12*b**4*p**2*q**2*x*log(c)**2*log(e + f*x) + 12*b**4*p*
*2*q**2*x*log(c)**2 + 4*b**4*p*q**4*x*log(d)**3*log(e + f*x) - 4*b**4*p*q**
4*x*log(d)**3 + 12*b**4*p*q**3*x*log(c)*log(d)**2*log(e + f*x) - 12*b**4*p*
q**3*x*log(c)*log(d)**2 + 12*b**4*p*q**2*x*log(c)**2*log(d)*log(e + f*x) -
12*b**4*p*q**2*x*log(c)**2*log(d) + 4*b**4*p*q*x*log(c)**3*log(e + f*x) - 4
*b**4*p*q*x*log(c)**3 + b**4*q**4*x*log(d)**4 + 4*b**4*q**3*x*log(c)*log(d)
**3 + 6*b**4*q**2*x*log(c)**2*log(d)**2 + 4*b**4*q*x*log(c)**3*log(d) + b**
4*x*log(c)**4, Ne(f, 0)), (x*(a + b*log(c*(d*e**p)**q))**4, True))
```

3.442 $\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^4}{g+hx}\,dx$

Optimal. Leaf size=231

$$\frac{24b^3p^3q^3\text{Li}_4\left(-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h}-\frac{12b^2p^2q^2\text{Li}_3\left(-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{h}+$$

```
[Out] (a+b*ln(c*(d*(f*x+e)^p)^q))^4*ln(f*(h*x+g)/(-e*h+f*g))/h+4*b*p*q*(a+b*ln(c*
(d*(f*x+e)^p)^q))^3*polylog(2,-h*(f*x+e)/(-e*h+f*g))/h-12*b^2*p^2*q^2*(a+b*
ln(c*(d*(f*x+e)^p)^q))^2*polylog(3,-h*(f*x+e)/(-e*h+f*g))/h+24*b^3*p^3*q^3*
(a+b*ln(c*(d*(f*x+e)^p)^q))*polylog(4,-h*(f*x+e)/(-e*h+f*g))/h-24*b^4*p^4*q
^4*polylog(5,-h*(f*x+e)/(-e*h+f*g))/h
```

Rubi [A] time = 0.53, antiderivative size = 231, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {2396, 2433, 2374, 2383, 6589, 2445}

$$\frac{24b^3p^3q^3\text{PolyLog}\left(4,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h}-\frac{12b^2p^2q^2\text{PolyLog}\left(3,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e\right.\right.\right.}{h}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^4/(g + h*x),x]
```

```
[Out] ((a + b*Log[c*(d*(e + f*x)^p)^q])^4*Log[(f*(g + h*x))/(f*g - e*h)])/h + (4*
b*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^3*PolyLog[2, -((h*(e + f*x))/(f*g -
e*h))])/h - (12*b^2*p^2*q^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*PolyLog[3, -
((h*(e + f*x))/(f*g - e*h))])/h + (24*b^3*p^3*q^3*(a + b*Log[c*(d*(e + f*x)
^p)^q])*PolyLog[4, -((h*(e + f*x))/(f*g - e*h))])/h - (24*b^4*p^4*q^4*PolyL
og[5, -((h*(e + f*x))/(f*g - e*h))])/h
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2383

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^p)/q
, x] - Dist[(b*n*p)/q, Int[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^(p - 1
))/x, x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
```

```
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^4}{g+hx}\,dx = \text{Subst}\left(\int \frac{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^4}{g+hx}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right.$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^4\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} - \text{Subst}\left(\frac{(4bfpq)\int \frac{(a+b\log(}{}}{}\right.$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^4\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} - \text{Subst}\left(\frac{(4bpq)\,\text{Subst}\left(\int \right.}{}\right.$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^4\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} + \frac{4bpq\left(a+b\log\left(c\left(d(e+\right.\right.\right.}{h}$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^4\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} + \frac{4bpq\left(a+b\log\left(c\left(d(e+\right.\right.\right.}{h}$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^4\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} + \frac{4bpq\left(a+b\log\left(c\left(d(e+\right.\right.\right.}{h}$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^4\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} + \frac{4bpq\left(a+b\log\left(c\left(d(e+\right.\right.\right.}{h}$$

Mathematica [B] time = 0.45, size = 1095, normalized size = 4.74

$$\frac{\log(g+hx)a^4 - 4bpq\log(e+fx)\log(g+hx)a^3 + 4b\log\left(c\left(d(e+fx)^p\right)^q\right)\log(g+hx)a^3 + 4bpq\log(e+fx)\log}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^4/(g + h*x),x]
```

```
[Out] (a^4*Log[g + h*x] - 4*a^3*b*p*q*Log[e + f*x]*Log[g + h*x] + 6*a^2*b^2*p^2*q
^2*Log[e + f*x]^2*Log[g + h*x] - 4*a*b^3*p^3*q^3*Log[e + f*x]^3*Log[g + h*x
] + b^4*p^4*q^4*Log[e + f*x]^4*Log[g + h*x] + 4*a^3*b*Log[c*(d*(e + f*x)^p)
^q]*Log[g + h*x] - 12*a^2*b^2*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log
[g + h*x] + 12*a*b^3*p^2*q^2*Log[e + f*x]^2*Log[c*(d*(e + f*x)^p)^q]*Log[g
+ h*x] - 4*b^4*p^3*q^3*Log[e + f*x]^3*Log[c*(d*(e + f*x)^p)^q]*Log[g + h*x]
```

```
 + 6*a^2*b^2*Log[c*(d*(e + f*x)^p)^q]^2*Log[g + h*x] - 12*a*b^3*p*q*Log[e +
 f*x]*Log[c*(d*(e + f*x)^p)^q]^2*Log[g + h*x] + 6*b^4*p^2*q^2*Log[e + f*x]^
2*Log[c*(d*(e + f*x)^p)^q]^2*Log[g + h*x] + 4*a*b^3*Log[c*(d*(e + f*x)^p)^q
]^3*Log[g + h*x] - 4*b^4*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]^3*Log[g
+ h*x] + b^4*Log[c*(d*(e + f*x)^p)^q]^4*Log[g + h*x] + 4*a^3*b*p*q*Log[e +
f*x]*Log[(f*(g + h*x))/(f*g - e*h)] - 6*a^2*b^2*p^2*q^2*Log[e + f*x]^2*Log[
(f*(g + h*x))/(f*g - e*h)] + 4*a*b^3*p^3*q^3*Log[e + f*x]^3*Log[(f*(g + h*x
))/(f*g - e*h)] - b^4*p^4*q^4*Log[e + f*x]^4*Log[(f*(g + h*x))/(f*g - e*h)]
 + 12*a^2*b^2*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log[(f*(g + h*x))/(
f*g - e*h)] - 12*a*b^3*p^2*q^2*Log[e + f*x]^2*Log[c*(d*(e + f*x)^p)^q]*Log[
(f*(g + h*x))/(f*g - e*h)] + 4*b^4*p^3*q^3*Log[e + f*x]^3*Log[c*(d*(e + f*x
)^p)^q]*Log[(f*(g + h*x))/(f*g - e*h)] + 12*a*b^3*p*q*Log[e + f*x]*Log[c*(d
*(e + f*x)^p)^q]^2*Log[(f*(g + h*x))/(f*g - e*h)] - 6*b^4*p^2*q^2*Log[e + f
*x]^2*Log[c*(d*(e + f*x)^p)^q]^2*Log[(f*(g + h*x))/(f*g - e*h)] + 4*b^4*p*q
*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]^3*Log[(f*(g + h*x))/(f*g - e*h)] + 4
*b*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^3*PolyLog[2, (h*(e + f*x))/(-(f*g)
+ e*h)] - 12*b^2*p^2*q^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*PolyLog[3, (h*(
e + f*x))/(-(f*g) + e*h)] + 24*a*b^3*p^3*q^3*PolyLog[4, (h*(e + f*x))/(-(f*
g) + e*h)] + 24*b^4*p^3*q^3*Log[c*(d*(e + f*x)^p)^q]*PolyLog[4, (h*(e + f*x
))/(-(f*g) + e*h)] - 24*b^4*p^4*q^4*PolyLog[5, (h*(e + f*x))/(-(f*g) + e*h)
])/h
```

fricas [F] time = 0.49, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b^4\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^4+4\,ab^3\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^3+6\,a^2b^2\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^2+4\,a^3b\log\left(\left(\right.\right.\right.}{hx+g}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^4/(h*x+g),x, algorithm="fricas")
```

```
[Out] integral((b^4*log(((f*x + e)^p*d)^q*c)^4 + 4*a*b^3*log(((f*x + e)^p*d)^q*c)
^3 + 6*a^2*b^2*log(((f*x + e)^p*d)^q*c)^2 + 4*a^3*b*log(((f*x + e)^p*d)^q*c
) + a^4)/(h*x + g), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a\right)^4}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^4/(h*x+g),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^4/(h*x + g), x)
```

maple [F] time = 0.37, size = 0, normalized size = 0.00

$$\int \frac{\left(b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)+a\right)^4}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^4/(h*x+g),x)
```

```
[Out] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^4/(h*x+g),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{a^4 \log\left(hx+g\right)}{h}+\int \frac{b^4 \log\left(\left(\left(fx+e\right)^p\right)^q\right)^4 + 4\left(q\log(d)+\log(c)\right)a^3b + 6\left(q^2\log(d)^2 + 2\,q\log(c)\log(d) + \log\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^4/(h*x+g),x, algorithm="maxima")
```

```
[Out] a^4*log(h*x + g)/h + integrate((b^4*log(((f*x + e)^p)^q)^4 + 4*(q*log(d) +
log(c))*a^3*b + 6*(q^2*log(d)^2 + 2*q*log(c)*log(d) + log(c)^2)*a^2*b^2 + 4
*(q^3*log(d)^3 + 3*q^2*log(c)*log(d)^2 + 3*q*log(c)^2*log(d) + log(c)^3)*a*
b^3 + (q^4*log(d)^4 + 4*q^3*log(c)*log(d)^3 + 6*q^2*log(c)^2*log(d)^2 + 4*q
*log(c)^3*log(d) + log(c)^4)*b^4 + 4*((q*log(d) + log(c))*b^4 + a*b^3)*log(
((f*x + e)^p)^q)^3 + 6*(2*(q*log(d) + log(c))*a*b^3 + (q^2*log(d)^2 + 2*q*l
og(c)*log(d) + log(c)^2)*b^4 + a^2*b^2)*log(((f*x + e)^p)^q)^2 + 4*(3*(q*lo
g(d) + log(c))*a^2*b^2 + 3*(q^2*log(d)^2 + 2*q*log(c)*log(d) + log(c)^2)*a*
b^3 + (q^3*log(d)^3 + 3*q^2*log(c)*log(d)^2 + 3*q*log(c)^2*log(d) + log(c)^
3)*b^4 + a^3*b)*log(((f*x + e)^p)^q))/(h*x + g), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a+b\,\ln\left(c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right)\right)^4}{g+h\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^4/(g + h*x),x)
```

```
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))^4/(g + h*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a + b\log\left(c\left(d\left(e + fx\right)^p\right)^q\right)\right)^4}{g + hx}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**4/(h*x+g),x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**4/(g + h*x), x)
```

3.443 $\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^4}{(g+hx)^2}\,dx$

Optimal. Leaf size=274

$$\frac{24b^3fp^3q^3\text{Li}_3\left(-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h(fg-eh)}-\frac{12b^2fp^2q^2\text{Li}_2\left(-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{h(fg-eh)}-4$$

```
[Out] (f*x+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))^4/(-e*h+f*g)/(h*x+g)-4*b*f*p*q*(a+b*ln(
c*(d*(f*x+e)^p)^q))^3*ln(f*(h*x+g)/(-e*h+f*g))/h/(-e*h+f*g)-12*b^2*f*p^2*q^
2*(a+b*ln(c*(d*(f*x+e)^p)^q))^2*polylog(2,-h*(f*x+e)/(-e*h+f*g))/h/(-e*h+f*
g)+24*b^3*f*p^3*q^3*(a+b*ln(c*(d*(f*x+e)^p)^q))*polylog(3,-h*(f*x+e)/(-e*h+
f*g))/h/(-e*h+f*g)-24*b^4*f*p^4*q^4*polylog(4,-h*(f*x+e)/(-e*h+f*g))/h/(-e*
h+f*g)
```

Rubi [A] time = 0.53, antiderivative size = 274, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {2397, 2396, 2433, 2374, 2383, 6589, 2445}

$$\frac{24b^3fp^3q^3\text{PolyLog}\left(3,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h(fg-eh)}-\frac{12b^2fp^2q^2\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e\right.\right.\right.}{h(fg-eh)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^4/(g + h*x)^2,x]
```

```
[Out] ((e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^4)/((f*g - e*h)*(g + h*x)) - (4
*b*f*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^3*Log[(f*(g + h*x))/(f*g - e*h)])
/(h*(f*g - e*h)) - (12*b^2*f*p^2*q^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*Pol
yLog[2, -((h*(e + f*x))/(f*g - e*h))])/(h*(f*g - e*h)) + (24*b^3*f*p^3*q^3*
(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLog[3, -((h*(e + f*x))/(f*g - e*h))])/
(h*(f*g - e*h)) - (24*b^4*f*p^4*q^4*PolyLog[4, -((h*(e + f*x))/(f*g - e*h))
])/(h*(f*g - e*h))
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2383

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^p)/q
, x] - Dist[(b*n*p)/q, Int[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^(p - 1
))/x, x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2397

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_))^2, x_Symbol] :> Simp[((d + e*x)*(a + b*Log[c*(d + e*x)^n])^p)/((e*f
 - d*g)*(f + g*x)), x] - Dist[(b*e*n*p)/(e*f - d*g), Int[(a + b*Log[c*(d +
e*x)^n])^(p - 1)/(f + g*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] &&
 NeQ[e*f - d*g, 0] && GtQ[p, 0]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^4}{(g+hx)^2}\,dx = \text{Subst}\left(\int \frac{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^4}{(g+hx)^2}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^4}{(fg-eh)(g+hx)} - \text{Subst}\left(\frac{(4bfpq)\int \frac{\left(a+b\log\left(cd^q(e+fx\right.\right.}{g+hx}}{fg-eh}\right.$$

$$= \frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^4}{(fg-eh)(g+hx)} - \frac{4bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right.\right.}{h(fg-eh)}$$

$$= \frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^4}{(fg-eh)(g+hx)} - \frac{4bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right.\right.}{h(fg-eh)}$$

$$= \frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^4}{(fg-eh)(g+hx)} - \frac{4bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right.\right.}{h(fg-eh)}$$

$$= \frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^4}{(fg-eh)(g+hx)} - \frac{4bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right.\right.}{h(fg-eh)}$$

$$= \frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^4}{(fg-eh)(g+hx)} - \frac{4bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right.\right.}{h(fg-eh)}$$

Mathematica [B] time = 0.58, size = 1301, normalized size = 4.75

$$\frac{fga^4 - eha^4 - 4bfgpq\log(e+fx)a^3 - 4bfhpqx\log(e+fx)a^3 + 4bfg\log\left(c\left(d(e+fx)^p\right)^q\right)a^3 - 4beh\log\left(c\left(d(e\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^4/(g + h*x)^2,x]
```

```
[Out] (a^4*f*g - a^4*e*h - 4*a^3*b*f*g*p*q*Log[e + f*x] - 4*a^3*b*f*h*p*q*x*Log[e
 + f*x] + 6*a^2*b^2*f*g*p^2*q^2*Log[e + f*x]^2 + 6*a^2*b^2*f*h*p^2*q^2*x*Lo
g[e + f*x]^2 - 4*a*b^3*f*g*p^3*q^3*Log[e + f*x]^3 - 4*a*b^3*f*h*p^3*q^3*x*L
og[e + f*x]^3 + b^4*f*g*p^4*q^4*Log[e + f*x]^4 + b^4*f*h*p^4*q^4*x*Log[e +
f*x]^4 + 4*a^3*b*f*g*Log[c*(d*(e + f*x)^p)^q] - 4*a^3*b*e*h*Log[c*(d*(e + f
*x)^p)^q] - 12*a^2*b^2*f*g*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q] - 12*a
^2*b^2*f*h*p*q*x*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q] + 12*a*b^3*f*g*p^2*q
```

```
^2*Log[e + f*x]^2*Log[c*(d*(e + f*x)^p)^q] + 12*a*b^3*f*h*p^2*q^2*x*Log[e +
 f*x]^2*Log[c*(d*(e + f*x)^p)^q] - 4*b^4*f*g*p^3*q^3*Log[e + f*x]^3*Log[c*(
d*(e + f*x)^p)^q] - 4*b^4*f*h*p^3*q^3*x*Log[e + f*x]^3*Log[c*(d*(e + f*x)^p
)^q] + 6*a^2*b^2*f*g*Log[c*(d*(e + f*x)^p)^q]^2 - 6*a^2*b^2*e*h*Log[c*(d*(e
 + f*x)^p)^q]^2 - 12*a*b^3*f*g*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]^2
- 12*a*b^3*f*h*p*q*x*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]^2 + 6*b^4*f*g*p^
2*q^2*Log[e + f*x]^2*Log[c*(d*(e + f*x)^p)^q]^2 + 6*b^4*f*h*p^2*q^2*x*Log[e
 + f*x]^2*Log[c*(d*(e + f*x)^p)^q]^2 + 4*a*b^3*f*g*Log[c*(d*(e + f*x)^p)^q]
^3 - 4*a*b^3*e*h*Log[c*(d*(e + f*x)^p)^q]^3 - 4*b^4*f*g*p*q*Log[e + f*x]*Lo
g[c*(d*(e + f*x)^p)^q]^3 - 4*b^4*f*h*p*q*x*Log[e + f*x]*Log[c*(d*(e + f*x)^
p)^q]^3 + b^4*f*g*Log[c*(d*(e + f*x)^p)^q]^4 - b^4*e*h*Log[c*(d*(e + f*x)^p
)^q]^4 + 4*a^3*b*f*g*p*q*Log[(f*(g + h*x))/(f*g - e*h)] + 4*a^3*b*f*h*p*q*x
*Log[(f*(g + h*x))/(f*g - e*h)] + 12*a^2*b^2*f*g*p*q*Log[c*(d*(e + f*x)^p)^
q]*Log[(f*(g + h*x))/(f*g - e*h)] + 12*a^2*b^2*f*h*p*q*x*Log[c*(d*(e + f*x)
^p)^q]*Log[(f*(g + h*x))/(f*g - e*h)] + 12*a*b^3*f*g*p*q*Log[c*(d*(e + f*x)
^p)^q]^2*Log[(f*(g + h*x))/(f*g - e*h)] + 12*a*b^3*f*h*p*q*x*Log[c*(d*(e +
f*x)^p)^q]^2*Log[(f*(g + h*x))/(f*g - e*h)] + 4*b^4*f*g*p*q*Log[c*(d*(e + f
*x)^p)^q]^3*Log[(f*(g + h*x))/(f*g - e*h)] + 4*b^4*f*h*p*q*x*Log[c*(d*(e +
f*x)^p)^q]^3*Log[(f*(g + h*x))/(f*g - e*h)] + 12*b^2*f*p^2*q^2*(g + h*x)*(a
 + b*Log[c*(d*(e + f*x)^p)^q])^2*PolyLog[2, (h*(e + f*x))/(-(f*g) + e*h)] -
 24*b^3*f*p^3*q^3*(g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLog[3, (h*
(e + f*x))/(-(f*g) + e*h)] + 24*b^4*f*g*p^4*q^4*PolyLog[4, (h*(e + f*x))/(-
(f*g) + e*h)] + 24*b^4*f*h*p^4*q^4*x*PolyLog[4, (h*(e + f*x))/(-(f*g) + e*h
)])/(h*(-(f*g) + e*h)*(g + h*x))
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b^4 \log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^4 + 4\,ab^3 \log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^3 + 6\,a^2b^2 \log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^2 + 4\,a^3b \log\left(\right.}{h^2x^2+2\,ghx+g^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^4/(h*x+g)^2,x, algorithm="fricas")
```

```
[Out] integral((b^4*log(((f*x + e)^p*d)^q*c)^4 + 4*a*b^3*log(((f*x + e)^p*d)^q*c)
^3 + 6*a^2*b^2*log(((f*x + e)^p*d)^q*c)^2 + 4*a^3*b*log(((f*x + e)^p*d)^q*c
) + a^4)/(h^2*x^2 + 2*g*h*x + g^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a\right)^4}{\left(hx+g\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^4/(h*x+g)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^4/(h*x + g)^2, x)
```

maple [F] time = 0.35, size = 0, normalized size = 0.00

$$\int \frac{\left(b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)+a\right)^4}{\left(hx+g\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^4/(h*x+g)^2,x)
```

```
[Out] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^4/(h*x+g)^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^4/(h*x+g)^2,x, algorithm="maxima")
```

```
[Out] 4*a^3*b*f*p*q*(log(f*x + e)/(f*g*h - e*h^2) - log(h*x + g)/(f*g*h - e*h^2))
 - b^4*log(((f*x + e)^p)^q)^4/(h^2*x + g*h) - 4*a^3*b*log(((f*x + e)^p*d)^q
*c)/(h^2*x + g*h) - a^4/(h^2*x + g*h) + integrate((6*(e*h*q^2*log(d)^2 + 2*
e*h*q*log(c)*log(d) + e*h*log(c)^2)*a^2*b^2 + 4*(e*h*q^3*log(d)^3 + 3*e*h*q
^2*log(c)*log(d)^2 + 3*e*h*q*log(c)^2*log(d) + e*h*log(c)^3)*a*b^3 + (e*h*q
^4*log(d)^4 + 4*e*h*q^3*log(c)*log(d)^3 + 6*e*h*q^2*log(c)^2*log(d)^2 + 4*e
*h*q*log(c)^3*log(d) + e*h*log(c)^4)*b^4 + 4*(a*b^3*e*h + (f*g*p*q + e*h*q*
log(d) + e*h*log(c))*b^4 + (a*b^3*f*h + (f*h*p*q + f*h*q*log(d) + f*h*log(c
))*b^4)*x)*log(((f*x + e)^p)^q)^3 + 6*(a^2*b^2*e*h + 2*(e*h*q*log(d) + e*h*
log(c))*a*b^3 + (e*h*q^2*log(d)^2 + 2*e*h*q*log(c)*log(d) + e*h*log(c)^2)*b
^4 + (a^2*b^2*f*h + 2*(f*h*q*log(d) + f*h*log(c))*a*b^3 + (f*h*q^2*log(d)^2
 + 2*f*h*q*log(c)*log(d) + f*h*log(c)^2)*b^4)*x)*log(((f*x + e)^p)^q)^2 + (
6*(f*h*q^2*log(d)^2 + 2*f*h*q*log(c)*log(d) + f*h*log(c)^2)*a^2*b^2 + 4*(f*
h*q^3*log(d)^3 + 3*f*h*q^2*log(c)*log(d)^2 + 3*f*h*q*log(c)^2*log(d) + f*h*
log(c)^3)*a*b^3 + (f*h*q^4*log(d)^4 + 4*f*h*q^3*log(c)*log(d)^3 + 6*f*h*q^2
*log(c)^2*log(d)^2 + 4*f*h*q*log(c)^3*log(d) + f*h*log(c)^4)*b^4)*x + 4*(3*
(e*h*q*log(d) + e*h*log(c))*a^2*b^2 + 3*(e*h*q^2*log(d)^2 + 2*e*h*q*log(c)*
log(d) + e*h*log(c)^2)*a*b^3 + (e*h*q^3*log(d)^3 + 3*e*h*q^2*log(c)*log(d)^
2 + 3*e*h*q*log(c)^2*log(d) + e*h*log(c)^3)*b^4 + (3*(f*h*q*log(d) + f*h*lo
g(c))*a^2*b^2 + 3*(f*h*q^2*log(d)^2 + 2*f*h*q*log(c)*log(d) + f*h*log(c)^2)
*a*b^3 + (f*h*q^3*log(d)^3 + 3*f*h*q^2*log(c)*log(d)^2 + 3*f*h*q*log(c)^2*l
og(d) + f*h*log(c)^3)*b^4)*x)*log(((f*x + e)^p)^q))/(f*h^3*x^3 + e*g^2*h +
(2*f*g*h^2 + e*h^3)*x^2 + (f*g^2*h + 2*e*g*h^2)*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}^4}{{\left(g+h\,x\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^4/(g + h*x)^2,x)
```

```
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))^4/(g + h*x)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a + b \log{\left(c \left(d \left(e + f x\right)^{p}\right)^{q} \right)}\right)^{4}}{\left(g + h x\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**4/(h*x+g)**2,x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**4/(g + h*x)**2, x)
```

3.444 $\int \log \left(c \left(d(e+fx)^p\right)^q\right) dx$

Optimal. Leaf size=29

$$\frac{(e+fx)\log\left(c\left(d(e+fx)^p\right)^q\right)}{f}-pqx$$

```
[Out] -p*q*x+(f*x+e)*ln(c*(d*(f*x+e)^p)^q)/f
```

Rubi [A] time = 0.02, antiderivative size = 29, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {2389, 2295, 2445}

$$\frac{(e+fx)\log\left(c\left(d(e+fx)^p\right)^q\right)}{f}-pqx$$

Antiderivative was successfully verified.

```
[In] Int[Log[c*(d*(e + f*x)^p)^q],x]
```

```
[Out] -(p*q*x) + ((e + f*x)*Log[c*(d*(e + f*x)^p)^q])/f
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\begin{aligned}
\int \log\left(c\left(d(e+fx)^p\right)^q\right)dx &= \text{Subst}\left(\int \log\left(cd^q(e+fx)^{pq}\right)dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)\\
&= \text{Subst}\left(\frac{\text{Subst}\left(\int \log\left(cd^qx^{pq}\right)dx, x, e+fx\right)}{f}, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)\\
&= -pqx+\frac{(e+fx)\log\left(c\left(d(e+fx)^p\right)^q\right)}{f}
\end{aligned}$$

Mathematica [A] time = 0.01, size = 29, normalized size = 1.00

$$\frac{(e+fx)\log\left(c\left(d(e+fx)^p\right)^q\right)}{f}-pqx$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(d*(e + f*x)^p)^q],x]
```

```
[Out] -(p*q*x) + ((e + f*x)*Log[c*(d*(e + f*x)^p)^q])/f
```

fricas [A] time = 0.46, size = 42, normalized size = 1.45

$$-\frac{fpqx - fqx\log(d) - fx\log(c) - \left(fpqx + epq\right)\log\left(fx + e\right)}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(d*(f*x+e)^p)^q),x, algorithm="fricas")
```

```
[Out] -(f*p*q*x - f*q*x*log(d) - f*x*log(c) - (f*p*q*x + e*p*q)*log(f*x + e))/f
```

giac [A] time = 0.18, size = 58, normalized size = 2.00

$$\frac{\left(fx + e\right)pq\log\left(fx + e\right)}{f} - \frac{\left(fx + e\right)pq}{f} + \frac{\left(fx + e\right)q\log(d)}{f} + \frac{\left(fx + e\right)\log(c)}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(d*(f*x+e)^p)^q),x, algorithm="giac")
```

```
[Out] (f*x + e)*p*q*log(f*x + e)/f - (f*x + e)*p*q/f + (f*x + e)*q*log(d)/f + (f*
x + e)*log(c)/f
```

maple [A] time = 0.05, size = 36, normalized size = 1.24

$$\frac{epq\ln\left(fx + e\right)}{f} - pqx + x\ln\left(c\left(d\left(fx + e\right)^{p}\right)^{q}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(c*(d*(f*x+e)^p)^q),x)
```

```
[Out] x*ln(c*(d*(f*x+e)^p)^q)-p*q*x+q*p/f*e*ln(f*x+e)
```

maxima [A] time = 0.58, size = 40, normalized size = 1.38

$$-fpq\left(\frac{x}{f} - \frac{e\log\left(fx + e\right)}{f^2}\right) + x\log\left(\left(\left(fx + e\right)^{p}d\right)^{q}c\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(d*(f*x+e)^p)^q),x, algorithm="maxima")
```

```
[Out] -f*p*q*(x/f - e*log(f*x + e)/f^2) + x*log(((f*x + e)^p*d)^q*c)
```

mupad [B] time = 0.07, size = 36, normalized size = 1.24

$$x\,\ln\left(c\left(d\left(e + f\,x\right)^{p}\right)^{q}\right) + \frac{p\,q\,\left(e\,\ln\left(e + f\,x\right) - f\,x\right)}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(c*(d*(e + f*x)^p)^q),x)
```

```
[Out] x*log(c*(d*(e + f*x)^p)^q) + (p*q*(e*log(e + f*x) - f*x))/f
```

sympy [A] time = 0.95, size = 53, normalized size = 1.83

$$\begin{cases} \frac{epq\log\left(e+fx\right)}{f} + pqx\log\left(e + fx\right) - pqx + qx\log\left(d\right) + x\log\left(c\right) & \text{for } f \neq 0 \\ x\log\left(c\left(de^{p}\right)^{q}\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(c*(d*(f*x+e)**p)**q),x)
```

```
[Out] Piecewise((e*p*q*log(e + f*x)/f + p*q*x*log(e + f*x) - p*q*x + q*x*log(d) +
 x*log(c), Ne(f, 0)), (x*log(c*(d*e**p)**q), True))
```

3.445 $\int \frac{(g+hx)^2}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$

Optimal. Leaf size=279

$$\frac{2h(e+fx)^2e^{-\frac{2a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\text{Ei}\left(\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{bpq}\right)}{bf^3pq}+\frac{(e+fx)e^{-\frac{a}{bpq}}(fg-eh)^2\left(c\left(d(e+fx)^p\right)^q\right.}{bf^3pq}$$

```
[Out] (-e*h+f*g)^2*(f*x+e)*Ei((a+b*ln(c*(d*(f*x+e)^p)^q))/b/p/q)/b/exp(a/b/p/q)/f
^3/p/q/((c*(d*(f*x+e)^p)^q)^(1/p/q))+2*h*(-e*h+f*g)*(f*x+e)^2*Ei(2*(a+b*ln(
c*(d*(f*x+e)^p)^q))/b/p/q)/b/exp(2*a/b/p/q)/f^3/p/q/((c*(d*(f*x+e)^p)^q)^(2
/p/q))+h^2*(f*x+e)^3*Ei(3*(a+b*ln(c*(d*(f*x+e)^p)^q))/b/p/q)/b/exp(3*a/b/p/
q)/f^3/p/q/((c*(d*(f*x+e)^p)^q)^(3/p/q))
```

Rubi [A] time = 0.78, antiderivative size = 279, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 7, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {2399, 2389, 2300, 2178, 2390, 2310, 2445}

$$\frac{2h(e+fx)^2e^{-\frac{2a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\text{Ei}\left(\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{bpq}\right)}{bf^3pq}+\frac{(e+fx)e^{-\frac{a}{bpq}}(fg-eh)^2\left(c\left(d(e+fx)^p\right)^q\right.}{bf^3pq}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)^2/(a + b*Log[c*(d*(e + f*x)^p)^q]),x]
```

```
[Out] ((f*g - e*h)^2*(e + f*x)*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*
p*q)])/(b*E^(a/(b*p*q))*f^3*p*q*(c*(d*(e + f*x)^p)^q)^(1/(p*q))) + (2*h*(f*
g - e*h)*(e + f*x)^2*ExpIntegralEi[(2*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(b*
p*q)])/(b*E^((2*a)/(b*p*q))*f^3*p*q*(c*(d*(e + f*x)^p)^q)^(2/(p*q))) + (h^2
*(e + f*x)^3*ExpIntegralEi[(3*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(b*p*q)])/(
b*E^((3*a)/(b*p*q))*f^3*p*q*(c*(d*(e + f*x)^p)^q)^(3/(p*q)))
```

Rule 2178

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - (c*f)/d))*ExpIntegralEi[(f*g*(c + d*x)*Log[F])/d])/d, x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2399

```
Int[((f_.) + (g_.)*(x_))^(q_.)/((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)
]*(b_.)), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q/(a + b*Log[c*(d + e*
x)^n]), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] &
& IGtQ[q, 0]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{(g+hx)^2}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx = \text{Subst}\left(\int \frac{(g+hx)^2}{a+b\log\left(cd^q(e+fx)^{pq}\right)}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \text{Subst}\left(\int\left(\frac{(fg-eh)^2}{f^2\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)} + \frac{2h(fg-eh)(e+fx)}{f^2\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)}\right.\right.$$

$$= \text{Subst}\left(\frac{h^2\int \frac{(e+fx)^2}{a+b\log\left(cd^q(e+fx)^{pq}\right)}\,dx}{f^2}, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right) + \text{Subst}\left(\right.$$

$$= \text{Subst}\left(\frac{h^2\,\text{Subst}\left(\int \frac{x^2}{a+b\log(cd^qx^{pq})}\,dx, x, e+fx\right)}{f^3}, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right.\right.$$

$$= \text{Subst}\left(\frac{\left(h^2(e+fx)^3\left(cd^q(e+fx)^{pq}\right)^{-\frac{3}{pq}}\right)\text{Subst}\left(\int \frac{e^{\frac{3x}{pq}}}{a+bx}\,dx, x, \log\left(cd^q(e+\right.\right.}{f^3pq}\right.$$

$$= \frac{e^{-\frac{a}{bpq}}(fg-eh)^2(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)}{bf^3pq} + \frac{2e^{-\frac{2}{b}}}{}$$

Mathematica [A] time = 0.84, size = 252, normalized size = 0.90

$$\frac{(e+fx)e^{-\frac{3a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{3}{pq}}\left(e^{\frac{2a}{bpq}}(fg-eh)^2\left(c\left(d(e+fx)^p\right)^q\right)^{\frac{2}{pq}}\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right) - h(e+fx)\left(-2e^{\frac{a}{bp}}\right.\right.}{bf^3pq}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)^2/(a + b*Log[c*(d*(e + f*x)^p)^q]),x]
```

```
[Out] ((e + f*x)*(E^((2*a)/(b*p*q))*(f*g - e*h)^2*(c*(d*(e + f*x)^p)^q)^(2/(p*q))
*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)] - h*(e + f*x)*(-2*
E^(a/(b*p*q))*(f*g - e*h)*(c*(d*(e + f*x)^p)^q)^(1/(p*q))*ExpIntegralEi[(2*
(a + b*Log[c*(d*(e + f*x)^p)^q]))/(b*p*q)] - h*(e + f*x)*ExpIntegralEi[(3*(
a + b*Log[c*(d*(e + f*x)^p)^q]))/(b*p*q)])))/(b*E^((3*a)/(b*p*q))*f^3*p*q*(
c*(d*(e + f*x)^p)^q)^(3/(p*q)))
```

fricas [A] time = 0.44, size = 243, normalized size = 0.87

$$\frac{\left(h^2 \operatorname{log\_integral}\left(\left(f^3x^3+3\,ef^2x^2+3\,e^2fx+e^3\right)e^{\left(\frac{3\left(bq\log(d)+b\log(c)+a\right)}{bpq}\right)}\right)+2\left(fgh-eh^2\right)e^{\left(\frac{bq\log(d)+b\log(c)+a}{bpq}\right)}\operatorname{log\_integra}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="fricas")
```

```
[Out] (h^2*log_integral((f^3*x^3 + 3*e*f^2*x^2 + 3*e^2*f*x + e^3)*e^(3*(b*q*log(d
) + b*log(c) + a)/(b*p*q))) + 2*(f*g*h - e*h^2)*e^((b*q*log(d) + b*log(c) +
 a)/(b*p*q))*log_integral((f^2*x^2 + 2*e*f*x + e^2)*e^(2*(b*q*log(d) + b*lo
g(c) + a)/(b*p*q))) + (f^2*g^2 - 2*e*f*g*h + e^2*h^2)*e^(2*(b*q*log(d) + b*
log(c) + a)/(b*p*q))*log_integral((f*x + e)*e^((b*q*log(d) + b*log(c) + a)/
(b*p*q))))*e^(-3*(b*q*log(d) + b*log(c) + a)/(b*p*q))/(b*f^3*p*q)
```

giac [A] time = 0.31, size = 524, normalized size = 1.88

$$\frac{g^2\operatorname{Ei}\left(\frac{\log(d)}{p}+\frac{\log(c)}{pq}+\frac{a}{bpq}+\log\left(fx+e\right)\right)e^{\left(-\frac{a}{bpq}\right)}}{bc^{\frac{1}{pq}}d^{\left(\frac{1}{p}\right)}fpq}-\frac{2\,gh\operatorname{Ei}\left(\frac{\log(d)}{p}+\frac{\log(c)}{pq}+\frac{a}{bpq}+\log\left(fx+e\right)\right)e^{\left(-\frac{a}{bpq}+1\right)}}{bc^{\frac{1}{pq}}d^{\left(\frac{1}{p}\right)}f^2pq}+\frac{2\,gh\operatorname{Ei}\left(\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="giac")
```

```
[Out] g^2*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q))/(
b*c^(1/(p*q))*d^(1/p)*f*p*q) - 2*g*h*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q)
 + log(f*x + e))*e^(-a/(b*p*q) + 1)/(b*c^(1/(p*q))*d^(1/p)*f^2*p*q) + 2*g*h
*Ei(2*log(d)/p + 2*log(c)/(p*q) + 2*a/(b*p*q) + 2*log(f*x + e))*e^(-2*a/(b*
p*q))/(b*c^(2/(p*q))*d^(2/p)*f^2*p*q) + h^2*Ei(log(d)/p + log(c)/(p*q) + a/
(b*p*q) + log(f*x + e))*e^(-a/(b*p*q) + 2)/(b*c^(1/(p*q))*d^(1/p)*f^3*p*q)
- 2*h^2*Ei(2*log(d)/p + 2*log(c)/(p*q) + 2*a/(b*p*q) + 2*log(f*x + e))*e^(-
2*a/(b*p*q) + 1)/(b*c^(2/(p*q))*d^(2/p)*f^3*p*q) + h^2*Ei(3*log(d)/p + 3*lo
g(c)/(p*q) + 3*a/(b*p*q) + 3*log(f*x + e))*e^(-3*a/(b*p*q))/(b*c^(3/(p*q))*
d^(3/p)*f^3*p*q)
```

maple [F] time = 0.33, size = 0, normalized size = 0.00

$$\int \frac{\left(hx+g\right)^2}{b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^2/(b*ln(c*(d*(f*x+e)^p)^q)+a),x)
```

```
[Out] int((h*x+g)^2/(b*ln(c*(d*(f*x+e)^p)^q)+a),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(hx+g)^2}{b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="maxima")
[Out] integrate((h*x + g)^2/(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(g+hx)^2}{a+b\,\ln\left(c\left(d\left(e+fx\right)^p\right)^q\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)^2/(a + b*log(c*(d*(e + f*x)^p)^q)),x)
[Out] int((g + h*x)^2/(a + b*log(c*(d*(e + f*x)^p)^q)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(g+hx)^2}{a+b\log\left(c\left(d\left(e+fx\right)^p\right)^q\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**2/(a+b*ln(c*(d*(f*x+e)**p)**q)),x)
[Out] Integral((g + h*x)**2/(a + b*log(c*(d*(e + f*x)**p)**q)), x)
```

3.446 $\int \frac{g+hx}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$

Optimal. Leaf size=179

$$\frac{(e+fx)e^{-\frac{a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\operatorname{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)}{bf^2pq}+\frac{h(e+fx)^2e^{-\frac{2a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\operatorname{Ei}\left(\frac{2(a+b\cdots}{\cdots}\right)}{bf^2pq}$$

```
[Out] (-e*h+f*g)*(f*x+e)*Ei((a+b*ln(c*(d*(f*x+e)^p)^q))/b/p/q)/b/exp(a/b/p/q)/f^2
/p/q/((c*(d*(f*x+e)^p)^q)^(1/p/q))+h*(f*x+e)^2*Ei(2*(a+b*ln(c*(d*(f*x+e)^p)
^q))/b/p/q)/b/exp(2*a/b/p/q)/f^2/p/q/((c*(d*(f*x+e)^p)^q)^(2/p/q))
```

Rubi [A] time = 0.42, antiderivative size = 179, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.269$, Rules used = {2399, 2389, 2300, 2178, 2390, 2310, 2445}

$$\frac{(e+fx)e^{-\frac{a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\operatorname{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)}{bf^2pq}+\frac{h(e+fx)^2e^{-\frac{2a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\operatorname{Ei}\left(\frac{2(a+b\cdots}{\cdots}\right)}{bf^2pq}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)/(a + b*Log[c*(d*(e + f*x)^p)^q]),x]
```

```
[Out] ((f*g - e*h)*(e + f*x)*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*
q)])/(b*E^(a/(b*p*q))*f^2*p*q*(c*(d*(e + f*x)^p)^q)^(1/(p*q))) + (h*(e + f*
x)^2*ExpIntegralEi[(2*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(b*p*q)])/(b*E^((2*
a)/(b*p*q))*f^2*p*q*(c*(d*(e + f*x)^p)^q)^(2/(p*q)))
```

Rule 2178

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - (c*f)/d))*ExpIntegralEi[(f*g*(c + d*x)*Log[F])/d])/d, x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
```

```
qQ[e*f - d*g, 0]
```

Rule 2399

```
Int[((f_.) + (g_.)*(x_))^(q_.)/((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)
]*(b_.)), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q/(a + b*Log[c*(d + e*
x)^n]), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] &
& IGtQ[q, 0]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] && !IntegerQ[n] && !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{g+hx}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx = \text{Subst}\left(\int \frac{g+hx}{a+b\log\left(cd^q(e+fx)^{pq}\right)}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \text{Subst}\left(\int\left(\frac{fg-eh}{f\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)}+\frac{h(e+fx)}{f\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)}\right)$$

$$= \text{Subst}\left(\frac{h\int\frac{e+fx}{a+b\log\left(cd^q(e+fx)^{pq}\right)}\,dx}{f}, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)+\text{Subst}\left(\right.$$

$$= \text{Subst}\left(\frac{h\,\text{Subst}\left(\int\frac{x}{a+b\log(cd^qx^{pq})}\,dx, x, e+fx\right)}{f^2}, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right.\right.$$

$$= \text{Subst}\left(\frac{\left(h(e+fx)^2\left(cd^q(e+fx)^{pq}\right)^{-\frac{2}{pq}}\right)\text{Subst}\left(\int\frac{e^{\frac{2x}{pq}}}{a+bx}\,dx, x, \log\left(cd^q(e+f\right.\right.}{f^2pq}\right.$$

$$= \frac{e^{-\frac{a}{bpq}}(fg-eh)(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)}{bf^2pq}+\frac{e^{-\frac{2a}{bpq}}h}{}$$

Mathematica [A] time = 0.27, size = 164, normalized size = 0.92

$$\frac{(e+fx)e^{-\frac{2a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\left(e^{\frac{a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)+h(e+fx)\text{Ei}\left(\frac{2(a+}{}\right.\right.}{bf^2pq}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)/(a + b*Log[c*(d*(e + f*x)^p)^q]),x]
```

```
[Out] ((e + f*x)*(E^(a/(b*p*q))*(f*g - e*h)*(c*(d*(e + f*x)^p)^q)^(1/(p*q))*ExpIn
tegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)] + h*(e + f*x)*ExpIntegra
```

```
1Ei[(2*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(b*p*q)]))/(b*E^((2*a)/(b*p*q))*f^
2*p*q*(c*(d*(e + f*x)^p)^q)^(2/(p*q)))
```

fricas [A] time = 0.45, size = 140, normalized size = 0.78

$$\frac{\left((fg-eh)e^{\left(\frac{bq\log(d)+b\log(c)+a}{bpq}\right)}\operatorname{log\_integral}\left((fx+e)e^{\left(\frac{bq\log(d)+b\log(c)+a}{bpq}\right)}\right)+h\operatorname{log\_integral}\left((f^2x^2+2efx+e^2)e^{\left(\frac{2(bq\log\dots}{}\right)}\right.\right.}{bf^2pq}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="fricas")
```

```
[Out] ((f*g - e*h)*e^((b*q*log(d) + b*log(c) + a)/(b*p*q))*log_integral((f*x + e)
*e^((b*q*log(d) + b*log(c) + a)/(b*p*q))) + h*log_integral((f^2*x^2 + 2*e*f
*x + e^2)*e^(2*(b*q*log(d) + b*log(c) + a)/(b*p*q))))*e^(-2*(b*q*log(d) + b
*log(c) + a)/(b*p*q))/(b*f^2*p*q)
```

giac [A] time = 0.22, size = 252, normalized size = 1.41

$$\frac{g\operatorname{Ei}\left(\frac{\log(d)}{p}+\frac{\log(c)}{pq}+\frac{a}{bpq}+\log\left(fx+e\right)\right)e^{\left(-\frac{a}{bpq}\right)}}{bc^{\frac{1}{pq}}d^{\left(\frac{1}{p}\right)}fpq}-\frac{h\operatorname{Ei}\left(\frac{\log(d)}{p}+\frac{\log(c)}{pq}+\frac{a}{bpq}+\log\left(fx+e\right)\right)e^{\left(-\frac{a}{bpq}+1\right)}}{bc^{\frac{1}{pq}}d^{\left(\frac{1}{p}\right)}f^2pq}+\frac{h\operatorname{Ei}\left(\frac{2\log(d)}{p}\dots\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="giac")
```

```
[Out] g*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q))/(b*
c^(1/(p*q))*d^(1/p)*f*p*q) - h*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log
(f*x + e))*e^(-a/(b*p*q) + 1)/(b*c^(1/(p*q))*d^(1/p)*f^2*p*q) + h*Ei(2*log(
d)/p + 2*log(c)/(p*q) + 2*a/(b*p*q) + 2*log(f*x + e))*e^(-2*a/(b*p*q))/(b*c
^(2/(p*q))*d^(2/p)*f^2*p*q)
```

maple [F] time = 0.08, size = 0, normalized size = 0.00

$$\int \frac{hx+g}{b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)/(b*ln(c*(d*(f*x+e)^p)^q)+a),x)
```

```
[Out] int((h*x+g)/(b*ln(c*(d*(f*x+e)^p)^q)+a),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{hx+g}{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="maxima")
```

```
[Out] integrate((h*x + g)/(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{g+h\,x}{a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)/(a + b*log(c*(d*(e + f*x)^p)^q)),x)
```

```
[Out] int((g + h*x)/(a + b*log(c*(d*(e + f*x)^p)^q)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{g + hx}{a + b \log \left(c \left(d \left(e + fx\right)^{p}\right)^{q}\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*ln(c*(d*(f*x+e)**p)**q)),x)
```

```
[Out] Integral((g + h*x)/(a + b*log(c*(d*(e + f*x)**p)**q)), x)
```

3.447 $\int \frac{1}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$

Optimal. Leaf size=83

$$\frac{(e+fx)e^{-\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\operatorname{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)}{bfpq}$$

```
[Out] (f*x+e)*Ei((a+b*ln(c*(d*(f*x+e)^p)^q))/b/p/q)/b/exp(a/b/p/q)/f/p/q/((c*(d*(
f*x+e)^p)^q)^(1/p/q))
```

Rubi [A] time = 0.12, antiderivative size = 83, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {2389, 2300, 2178, 2445}

$$\frac{(e+fx)e^{-\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\operatorname{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)}{bfpq}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^(-1),x]
```

```
[Out] ((e + f*x)*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)])/(b*E^(a
/(b*p*q))*f*p*q*(c*(d*(e + f*x)^p)^q)^(1/(p*q)))
```

Rule 2178

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - (c*f)/d))*ExpIntegralEi[(f*g*(c + d*x)*Log[F])/d])/d, x] /; F
reeQ[{F, c, d, e, f, g}, x] && !$UseGamma === True
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] && !IntegerQ[n] && !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{1}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx = \text{Subst}\left(\int \frac{1}{a+b\log\left(cd^q(e+fx)^{pq}\right)}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \frac{1}{a+b\log(cd^q x^{pq})}\,dx, x, e+fx\right)}{f}, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right.$$

$$= \text{Subst}\left(\frac{\left((e+fx)\left(cd^q(e+fx)^{pq}\right)^{-\frac{1}{pq}}\right)\text{Subst}\left(\int \frac{e^{\frac{x}{pq}}}{a+bx}\,dx, x, \log\left(cd^q(e+fx)^{p}\right.\right.}{fpq}\right.$$

$$= \frac{e^{-\frac{a}{bpq}}(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)}{bfpq}$$

Mathematica [**A**] time = 0.06, size = 83, normalized size = 1.00

$$\frac{(e+fx)e^{-\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)}{bfpq}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^(-1),x]
```

```
[Out] ((e + f*x)*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)])/(b*E^(a
/(b*p*q))*f*p*q*(c*(d*(e + f*x)^p)^q)^(1/(p*q)))
```

fricas [**A**] time = 0.45, size = 65, normalized size = 0.78

$$\frac{e^{\left(-\frac{bq\log(d)+b\log(c)+a}{bpq}\right)}\text{log\_integral}\left(\left(fx+e\right)e^{\left(\frac{bq\log(d)+b\log(c)+a}{bpq}\right)}\right)}{bfpq}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="fricas")
```

```
[Out] e^(-(b*q*log(d) + b*log(c) + a)/(b*p*q))*log_integral((f*x + e)*e^((b*q*log
(d) + b*log(c) + a)/(b*p*q)))/(b*f*p*q)
```

giac [**A**] time = 0.17, size = 79, normalized size = 0.95

$$\frac{\text{Ei}\left(\frac{\log(d)}{p}+\frac{\log(c)}{pq}+\frac{a}{bpq}+\log\left(fx+e\right)\right)e^{\left(-\frac{a}{bpq}\right)}}{bc^{\frac{1}{pq}}d^{\left(\frac{1}{p}\right)}fpq}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="giac")
```

```
[Out] Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q))/(b*c^
(1/(p*q))*d^(1/p)*f*p*q)
```

maple [F] time = 0.08, size = 0, normalized size = 0.00

$$\int \frac{1}{b \ln \left(c \left(d \left(f x+e\right)^{p}\right)^{q}\right)+a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*ln(c*(d*(f*x+e)^p)^q)+a),x)
[Out] int(1/(b*ln(c*(d*(f*x+e)^p)^q)+a),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{b \log \left(\left(\left(f x+e\right)^{p} d\right)^{q} c\right)+a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="maxima")
[Out] integrate(1/(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*log(c*(d*(e + f*x)^p)^q)),x)
[Out] int(1/(a + b*log(c*(d*(e + f*x)^p)^q)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{a + b \log{\left(c \left(d \left(e + f x\right)^{p}\right)^{q} \right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(d*(f*x+e)**p)**q)),x)
[Out] Integral(1/(a + b*log(c*(d*(e + f*x)**p)**q)), x)
```

3.448 $\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)},x\right)$$

```
[Out] Unintegrable(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

Rubi [A] time = 0.07, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])),x]
[Out] Defer[Int][1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])), x]
```

Rubi steps

$$\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx=\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$$

Mathematica [A] time = 0.26, size = 0, normalized size = 0.00

$$\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])),x]
[Out] Integrate[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])), x]
```

fricas [A] time = 0.47, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{1}{ahx+ag+\left(bhx+bg\right)\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="fricas")
[Out] integral(1/(a*h*x + a*g + (b*h*x + b*g)*log(((f*x + e)^p*d)^q*c)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(hx+g\right)\left(b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="giac")
[Out] integrate(1/((h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

maple [A] time = 0.38, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(hx+g\right)\left(b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(h*x+g)/(b*ln(c*(d*(f*x+e)^p)^q)+a),x)
[Out] int(1/(h*x+g)/(b*ln(c*(d*(f*x+e)^p)^q)+a),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(hx+g\right)\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="maxima")
[Out] integrate(1/((h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{\left(g+h\,x\right)\,\left(a+b\,\ln\left(c\,\left(d\,\left(e+f\,x\right)^{p}\right)^{q}\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((g + h*x)*(a + b*log(c*(d*(e + f*x)^p)^q))),x)
[Out] int(1/((g + h*x)*(a + b*log(c*(d*(e + f*x)^p)^q))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)\right)\left(g+hx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)**p)**q)),x)
[Out] Integral(1/((a + b*log(c*(d*(e + f*x)**p)**q))*(g + h*x)), x)
```

3.449 $\int \frac{1}{(g+hx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{1}{(g+hx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)},x\right)$$

```
[Out] Unintegrable(1/(h*x+g)^2/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

Rubi [A] time = 0.07, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(g+hx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])),x]
```

```
[Out] Defer[Int][1/((g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])), x]
```

Rubi steps

$$\int \frac{1}{(g+hx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx=\int \frac{1}{(g+hx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$$

Mathematica [A] time = 0.82, size = 0, normalized size = 0.00

$$\int \frac{1}{(g+hx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])),x]
```

```
[Out] Integrate[1/((g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])), x]
```

fricas [A] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{1}{ah^2x^2+2\,aghx+ag^2+\left(bh^2x^2+2\,bghx+bg^2\right)\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="fricas")
```

```
[Out] integral(1/(a*h^2*x^2 + 2*a*g*h*x + a*g^2 + (b*h^2*x^2 + 2*b*g*h*x + b*g^2)
*log(((f*x + e)^p*d)^q*c)), x)
```

giac [**A**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(hx+g)^2\left(b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="giac")
[Out] integrate(1/((h*x + g)^2*(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

maple [**A**] time = 0.35, size = 0, normalized size = 0.00

$$\int \frac{1}{(hx+g)^2\left(b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(h*x+g)^2/(b*ln(c*(d*(f*x+e)^p)^q)+a),x)
[Out] int(1/(h*x+g)^2/(b*ln(c*(d*(f*x+e)^p)^q)+a),x)
```

maxima [**A**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(hx+g)^2\left(b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="maxima")
[Out] integrate(1/((h*x + g)^2*(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

mupad [**A**] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{(g+h\,x)^2\,\left(a+b\,\ln\left(c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((g + h*x)^2*(a + b*log(c*(d*(e + f*x)^p)^q))),x)
[Out] int(1/((g + h*x)^2*(a + b*log(c*(d*(e + f*x)^p)^q))), x)
```

sympy [**A**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\log\left(c\left(d\left(e+fx\right)^p\right)^q\right)\right)(g+hx)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)**2/(a+b*ln(c*(d*(f*x+e)**p)**q)),x)
[Out] Integral(1/((a + b*log(c*(d*(e + f*x)**p)**q))*(g + h*x)**2), x)
```

3.450 $\int \frac{(g+hx)^2}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$

Optimal. Leaf size=326

$$\frac{4h(e+fx)^2e^{-\frac{2a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\text{Ei}\left(\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{bpq}\right)}{b^2f^3p^2q^2}+\frac{(e+fx)e^{-\frac{a}{bpq}}(fg-eh)^2\left(c\left(d(e+fx)\right.\right.}{b^2f^3p^2q}$$

```
[Out] (-e*h+f*g)^2*(f*x+e)*Ei((a+b*ln(c*(d*(f*x+e)^p)^q))/b/p/q)/b^2/exp(a/b/p/q)
/f^3/p^2/q^2/((c*(d*(f*x+e)^p)^q)^(1/p/q))+4*h*(-e*h+f*g)*(f*x+e)^2*Ei(2*(a
+b*ln(c*(d*(f*x+e)^p)^q))/b/p/q)/b^2/exp(2*a/b/p/q)/f^3/p^2/q^2/((c*(d*(f*x
+e)^p)^q)^(2/p/q))+3*h^2*(f*x+e)^3*Ei(3*(a+b*ln(c*(d*(f*x+e)^p)^q))/b/p/q)/
b^2/exp(3*a/b/p/q)/f^3/p^2/q^2/((c*(d*(f*x+e)^p)^q)^(3/p/q))-(f*x+e)*(h*x+g
)^2/b/f/p/q/(a+b*ln(c*(d*(f*x+e)^p)^q))
```

Rubi [A] time = 1.29, antiderivative size = 326, normalized size of antiderivative = 1.00, number of steps used = 21, number of rules used = 8, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {2400, 2399, 2389, 2300, 2178, 2390, 2310, 2445}

$$\frac{4h(e+fx)^2e^{-\frac{2a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\text{Ei}\left(\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{bpq}\right)}{b^2f^3p^2q^2}+\frac{(e+fx)e^{-\frac{a}{bpq}}(fg-eh)^2\left(c\left(d(e+fx)\right.\right.}{b^2f^3p^2q}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)^2/(a + b*Log[c*(d*(e + f*x)^p)^q])^2,x]
```

```
[Out] ((f*g - e*h)^2*(e + f*x)*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*
p*q)])/(b^2*E^(a/(b*p*q))*f^3*p^2*q^2*(c*(d*(e + f*x)^p)^q)^(1/(p*q))) + (4
*h*(f*g - e*h)*(e + f*x)^2*ExpIntegralEi[(2*(a + b*Log[c*(d*(e + f*x)^p)^q]
))/(b*p*q)])/(b^2*E^((2*a)/(b*p*q))*f^3*p^2*q^2*(c*(d*(e + f*x)^p)^q)^(2/(p
*q))) + (3*h^2*(e + f*x)^3*ExpIntegralEi[(3*(a + b*Log[c*(d*(e + f*x)^p)^q]
))/(b*p*q)])/(b^2*E^((3*a)/(b*p*q))*f^3*p^2*q^2*(c*(d*(e + f*x)^p)^q)^(3/(p
*q))) - ((e + f*x)*(g + h*x)^2)/(b*f*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q]))
```

Rule 2178

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - (c*f)/d))*ExpIntegralEi[(f*g*(c + d*x)*Log[F])/d])/d, x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2399

```
Int[((f_.) + (g_.)*(x_))^(q_.)/((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)
]*(b_.)), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q/(a + b*Log[c*(d + e*
x)^n]), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] &
& IGtQ[q, 0]
```

Rule 2400

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((d + e*x)*(f + g*x)^q*(a + b*Log[c*(d + e
*x)^n])^(p + 1))/(b*e*n*(p + 1)), x] + (-Dist[(q + 1)/(b*n*(p + 1)), Int[(f
 + g*x)^q*(a + b*Log[c*(d + e*x)^n])^(p + 1), x], x] + Dist[(q*(e*f - d*g))
/(b*e*n*(p + 1)), Int[(f + g*x)^(q - 1)*(a + b*Log[c*(d + e*x)^n])^(p + 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] && LtQ[
p, -1] && GtQ[q, 0]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{(g+hx)^2}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx = \text{Subst}\left(\int \frac{(g+hx)^2}{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right.$$

$$= -\frac{(e+fx)(g+hx)^2}{bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)} + \text{Subst}\left(\frac{3\int \frac{(g+hx)^2}{a+b\log\left(cd^q(e+fx)^{pq}\right)}\,dx}{bpq},\right.$$

$$= -\frac{(e+fx)(g+hx)^2}{bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)} + \text{Subst}\left(\frac{3\int\left(\frac{(fg-eh)^2}{f^2\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)}\right.}{}\right.$$

$$= -\frac{(e+fx)(g+hx)^2}{bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)} + \text{Subst}\left(\frac{\left(3h^2\right)\int \frac{(e+fx)^2}{a+b\log\left(cd^q(e+fx)^{pq}\right)}}{bf^2pq}\right.$$

$$= -\frac{(e+fx)(g+hx)^2}{bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)} + \text{Subst}\left(\frac{\left(3h^2\right)\text{Subst}\left(\int \frac{x^2}{a+b\log(cd^q}\right.}{bf^3pq}\right.$$

$$= -\frac{(e+fx)(g+hx)^2}{bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)} + \text{Subst}\left(\frac{\left(3h^2(e+fx)^3\left(cd^q(e+f\right.\right.}{}\right.$$

$$= \frac{e^{-\frac{a}{bpq}}(fg-eh)^2(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)}{b^2f^3p^2q^2} + -\ 4$$

Mathematica [B] time = 0.98, size = 1310, normalized size = 4.02

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)^2/(a + b*Log[c*(d*(e + f*x)^p)^q])^2,x]
```

```
[Out] (-(b*e*E^((3*a)/(b*p*q))*f^2*g^2*p*q*(c*(d*(e + f*x)^p)^q)^(3/(p*q))) - b*E
^((3*a)/(b*p*q))*f^3*g^2*p*q*x*(c*(d*(e + f*x)^p)^q)^(3/(p*q)) - 2*b*e*E^((
3*a)/(b*p*q))*f^2*g*h*p*q*x*(c*(d*(e + f*x)^p)^q)^(3/(p*q)) - 2*b*E^((3*a)/
(b*p*q))*f^3*g*h*p*q*x^2*(c*(d*(e + f*x)^p)^q)^(3/(p*q)) - b*e*E^((3*a)/(b*
p*q))*f^2*h^2*p*q*x^2*(c*(d*(e + f*x)^p)^q)^(3/(p*q)) - b*E^((3*a)/(b*p*q))
*f^3*h^2*p*q*x^3*(c*(d*(e + f*x)^p)^q)^(3/(p*q)) + a*E^((2*a)/(b*p*q))*f^2*
g^2*(e + f*x)*(c*(d*(e + f*x)^p)^q)^(2/(p*q))*ExpIntegralEi[(a + b*Log[c*(d
*(e + f*x)^p)^q])/(b*p*q)] - 2*a*e*E^((2*a)/(b*p*q))*f*g*h*(e + f*x)*(c*(d*
(e + f*x)^p)^q)^(2/(p*q))*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b
*p*q)] + a*e^2*E^((2*a)/(b*p*q))*h^2*(e + f*x)*(c*(d*(e + f*x)^p)^q)^(2/(p*
q))*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)] + 4*a*E^(a/(b*p
*q))*f*g*h*(e + f*x)^2*(c*(d*(e + f*x)^p)^q)^(1/(p*q))*ExpIntegralEi[(2*(a
+ b*Log[c*(d*(e + f*x)^p)^q]))/(b*p*q)] - 4*a*e*E^(a/(b*p*q))*h^2*(e + f*x)
^2*(c*(d*(e + f*x)^p)^q)^(1/(p*q))*ExpIntegralEi[(2*(a + b*Log[c*(d*(e + f*
x)^p)^q]))/(b*p*q)] + 3*a*h^2*(e + f*x)^3*ExpIntegralEi[(3*(a + b*Log[c*(d*
(e + f*x)^p)^q]))/(b*p*q)] + b*E^((2*a)/(b*p*q))*f^2*g^2*(e + f*x)*(c*(d*(e
 + f*x)^p)^q)^(2/(p*q))*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p
```

```
*q)]*Log[c*(d*(e + f*x)^p)^q] - 2*b*e*E^((2*a)/(b*p*q))*f*g*h*(e + f*x)*(c*
(d*(e + f*x)^p)^q)^(2/(p*q))*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])
/(b*p*q)]*Log[c*(d*(e + f*x)^p)^q] + b*e^2*E^((2*a)/(b*p*q))*h^2*(e + f*x)*
(c*(d*(e + f*x)^p)^q)^(2/(p*q))*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^
q])/(b*p*q)]*Log[c*(d*(e + f*x)^p)^q] + 4*b*E^(a/(b*p*q))*f*g*h*(e + f*x)^2
*(c*(d*(e + f*x)^p)^q)^(1/(p*q))*ExpIntegralEi[(2*(a + b*Log[c*(d*(e + f*x)
^p)^q]))/(b*p*q)]*Log[c*(d*(e + f*x)^p)^q] - 4*b*e*E^(a/(b*p*q))*h^2*(e + f
*x)^2*(c*(d*(e + f*x)^p)^q)^(1/(p*q))*ExpIntegralEi[(2*(a + b*Log[c*(d*(e +
 f*x)^p)^q]))/(b*p*q)]*Log[c*(d*(e + f*x)^p)^q] + 3*b*h^2*(e + f*x)^3*ExpIn
tegralEi[(3*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(b*p*q)]*Log[c*(d*(e + f*x)^p
)^q])/(b^2*E^((3*a)/(b*p*q))*f^3*p^2*q^2*(c*(d*(e + f*x)^p)^q)^(3/(p*q))*(a
 + b*Log[c*(d*(e + f*x)^p)^q]))
```

fricas [A] time = 0.45, size = 573, normalized size = 1.76

$$\left(4\left(afgh - aeh^2 + \left(bfgh - beh^2\right)pq\log\left(fx+e\right) + \left(bfgh - beh^2\right)q\log(d) + \left(bfgh - beh^2\right)\log(c)\right)e^{\left(\frac{bq\log(d)+b\log(c)+a}{bpq}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="fricas")
```

```
[Out] (4*(a*f*g*h - a*e*h^2 + (b*f*g*h - b*e*h^2)*p*q*log(f*x + e) + (b*f*g*h - b
*e*h^2)*q*log(d) + (b*f*g*h - b*e*h^2)*log(c))*e^((b*q*log(d) + b*log(c) +
a)/(b*p*q))*log_integral((f^2*x^2 + 2*e*f*x + e^2)*e^(2*(b*q*log(d) + b*log
(c) + a)/(b*p*q))) + (a*f^2*g^2 - 2*a*e*f*g*h + a*e^2*h^2 + (b*f^2*g^2 - 2*
b*e*f*g*h + b*e^2*h^2)*p*q*log(f*x + e) + (b*f^2*g^2 - 2*b*e*f*g*h + b*e^2*
h^2)*q*log(d) + (b*f^2*g^2 - 2*b*e*f*g*h + b*e^2*h^2)*log(c))*e^(2*(b*q*log
(d) + b*log(c) + a)/(b*p*q))*log_integral((f*x + e)*e^((b*q*log(d) + b*log(
c) + a)/(b*p*q))) - (b*f^3*h^2*p*q*x^3 + b*e*f^2*g^2*p*q + (2*b*f^3*g*h + b
*e*f^2*h^2)*p*q*x^2 + (b*f^3*g^2 + 2*b*e*f^2*g*h)*p*q*x)*e^(3*(b*q*log(d) +
 b*log(c) + a)/(b*p*q)) + 3*(b*h^2*p*q*log(f*x + e) + b*h^2*q*log(d) + b*h^
2*log(c) + a*h^2)*log_integral((f^3*x^3 + 3*e*f^2*x^2 + 3*e^2*f*x + e^3)*e^
(3*(b*q*log(d) + b*log(c) + a)/(b*p*q))))*e^(-3*(b*q*log(d) + b*log(c) + a)
/(b*p*q))/(b^3*f^3*p^3*q^3*log(f*x + e) + b^3*f^3*p^2*q^3*log(d) + b^3*f^3*
p^2*q^2*log(c) + a*b^2*f^3*p^2*q^2)
```

giac [B] time = 0.84, size = 4046, normalized size = 12.41

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="giac")
```

```
[Out] -(f*x + e)*b*f^2*g^2*p*q/(b^3*f^3*p^3*q^3*log(f*x + e) + b^3*f^3*p^2*q^3*lo
g(d) + b^3*f^3*p^2*q^2*log(c) + a*b^2*f^3*p^2*q^2) - 2*(f*x + e)^2*b*f*g*h*
p*q/(b^3*f^3*p^3*q^3*log(f*x + e) + b^3*f^3*p^2*q^3*log(d) + b^3*f^3*p^2*q^
2*log(c) + a*b^2*f^3*p^2*q^2) - (f*x + e)^3*b*h^2*p*q/(b^3*f^3*p^3*q^3*log(
f*x + e) + b^3*f^3*p^2*q^3*log(d) + b^3*f^3*p^2*q^2*log(c) + a*b^2*f^3*p^2*
q^2) + 2*(f*x + e)*b*f*g*h*p*q*e/(b^3*f^3*p^3*q^3*log(f*x + e) + b^3*f^3*p^
2*q^3*log(d) + b^3*f^3*p^2*q^2*log(c) + a*b^2*f^3*p^2*q^2) + 2*(f*x + e)^2*
b*h^2*p*q*e/(b^3*f^3*p^3*q^3*log(f*x + e) + b^3*f^3*p^2*q^3*log(d) + b^3*f^
3*p^2*q^2*log(c) + a*b^2*f^3*p^2*q^2) + b*f^2*g^2*p*q*Ei(log(d)/p + log(c)/
(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q))*log(f*x + e)/((b^3*f^3*p^3
*q^3*log(f*x + e) + b^3*f^3*p^2*q^3*log(d) + b^3*f^3*p^2*q^2*log(c) + a*b^2
*f^3*p^2*q^2)*c^(1/(p*q))*d^(1/p)) - (f*x + e)*b*h^2*p*q*e^2/(b^3*f^3*p^3*q
^3*log(f*x + e) + b^3*f^3*p^2*q^3*log(d) + b^3*f^3*p^2*q^2*log(c) + a*b^2*f
^3*p^2*q^2) - 2*b*f*g*h*p*q*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*
```

```
x + e))*e^(-a/(b*p*q) + 1)*log(f*x + e)/((b^3*f^3*p^3*q^3*log(f*x + e) + b^
3*f^3*p^2*q^3*log(d) + b^3*f^3*p^2*q^2*log(c) + a*b^2*f^3*p^2*q^2)*c^(1/(p*
q))*d^(1/p)) + 4*b*f*g*h*p*q*Ei(2*log(d)/p + 2*log(c)/(p*q) + 2*a/(b*p*q) +
 2*log(f*x + e))*e^(-2*a/(b*p*q))*log(f*x + e)/((b^3*f^3*p^3*q^3*log(f*x +
e) + b^3*f^3*p^2*q^3*log(d) + b^3*f^3*p^2*q^2*log(c) + a*b^2*f^3*p^2*q^2)*c
^(2/(p*q))*d^(2/p)) + b*f^2*g^2*q*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) +
log(f*x + e))*e^(-a/(b*p*q))*log(d)/((b^3*f^3*p^3*q^3*log(f*x + e) + b^3*f^
3*p^2*q^3*log(d) + b^3*f^3*p^2*q^2*log(c) + a*b^2*f^3*p^2*q^2)*c^(1/(p*q))*
d^(1/p)) + b*h^2*p*q*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))
*e^(-a/(b*p*q) + 2)*log(f*x + e)/((b^3*f^3*p^3*q^3*log(f*x + e) + b^3*f^3*p
^2*q^3*log(d) + b^3*f^3*p^2*q^2*log(c) + a*b^2*f^3*p^2*q^2)*c^(1/(p*q))*d^(
1/p)) - 4*b*h^2*p*q*Ei(2*log(d)/p + 2*log(c)/(p*q) + 2*a/(b*p*q) + 2*log(f*
x + e))*e^(-2*a/(b*p*q) + 1)*log(f*x + e)/((b^3*f^3*p^3*q^3*log(f*x + e) +
b^3*f^3*p^2*q^3*log(d) + b^3*f^3*p^2*q^2*log(c) + a*b^2*f^3*p^2*q^2)*c^(2/(
p*q))*d^(2/p)) + 3*b*h^2*p*q*Ei(3*log(d)/p + 3*log(c)/(p*q) + 3*a/(b*p*q) +
 3*log(f*x + e))*e^(-3*a/(b*p*q))*log(f*x + e)/((b^3*f^3*p^3*q^3*log(f*x +
e) + b^3*f^3*p^2*q^3*log(d) + b^3*f^3*p^2*q^2*log(c) + a*b^2*f^3*p^2*q^2)*c
^(3/(p*q))*d^(3/p)) + b*f^2*g^2*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + lo
g(f*x + e))*e^(-a/(b*p*q))*log(c)/((b^3*f^3*p^3*q^3*log(f*x + e) + b^3*f^3*
p^2*q^3*log(d) + b^3*f^3*p^2*q^2*log(c) + a*b^2*f^3*p^2*q^2)*c^(1/(p*q))*d^
(1/p)) - 2*b*f*g*h*q*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))
*e^(-a/(b*p*q) + 1)*log(d)/((b^3*f^3*p^3*q^3*log(f*x + e) + b^3*f^3*p^2*q^3
*log(d) + b^3*f^3*p^2*q^2*log(c) + a*b^2*f^3*p^2*q^2)*c^(1/(p*q))*d^(1/p))
+ 4*b*f*g*h*q*Ei(2*log(d)/p + 2*log(c)/(p*q) + 2*a/(b*p*q) + 2*log(f*x + e)
)*e^(-2*a/(b*p*q))*log(d)/((b^3*f^3*p^3*q^3*log(f*x + e) + b^3*f^3*p^2*q^3*
log(d) + b^3*f^3*p^2*q^2*log(c) + a*b^2*f^3*p^2*q^2)*c^(2/(p*q))*d^(2/p)) +
 a*f^2*g^2*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*
p*q))/((b^3*f^3*p^3*q^3*log(f*x + e) + b^3*f^3*p^2*q^3*log(d) + b^3*f^3*p^2
*q^2*log(c) + a*b^2*f^3*p^2*q^2)*c^(1/(p*q))*d^(1/p)) - 2*b*f*g*h*Ei(log(d)
/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q) + 1)*log(c)/((b
^3*f^3*p^3*q^3*log(f*x + e) + b^3*f^3*p^2*q^3*log(d) + b^3*f^3*p^2*q^2*log(
c) + a*b^2*f^3*p^2*q^2)*c^(1/(p*q))*d^(1/p)) + 4*b*f*g*h*Ei(2*log(d)/p + 2*
log(c)/(p*q) + 2*a/(b*p*q) + 2*log(f*x + e))*e^(-2*a/(b*p*q))*log(c)/((b^3*
f^3*p^3*q^3*log(f*x + e) + b^3*f^3*p^2*q^3*log(d) + b^3*f^3*p^2*q^2*log(c)
+ a*b^2*f^3*p^2*q^2)*c^(2/(p*q))*d^(2/p)) + b*h^2*q*Ei(log(d)/p + log(c)/(p
*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q) + 2)*log(d)/((b^3*f^3*p^3*q^3
*log(f*x + e) + b^3*f^3*p^2*q^3*log(d) + b^3*f^3*p^2*q^2*log(c) + a*b^2*f^3
*p^2*q^2)*c^(1/(p*q))*d^(1/p)) - 4*b*h^2*q*Ei(2*log(d)/p + 2*log(c)/(p*q) +
 2*a/(b*p*q) + 2*log(f*x + e))*e^(-2*a/(b*p*q) + 1)*log(d)/((b^3*f^3*p^3*q^
3*log(f*x + e) + b^3*f^3*p^2*q^3*log(d) + b^3*f^3*p^2*q^2*log(c) + a*b^2*f^
3*p^2*q^2)*c^(2/(p*q))*d^(2/p)) + 3*b*h^2*q*Ei(3*log(d)/p + 3*log(c)/(p*q)
+ 3*a/(b*p*q) + 3*log(f*x + e))*e^(-3*a/(b*p*q))*log(d)/((b^3*f^3*p^3*q^3*l
og(f*x + e) + b^3*f^3*p^2*q^3*log(d) + b^3*f^3*p^2*q^2*log(c) + a*b^2*f^3*p
^2*q^2)*c^(3/(p*q))*d^(3/p)) - 2*a*f*g*h*Ei(log(d)/p + log(c)/(p*q) + a/(b*
p*q) + log(f*x + e))*e^(-a/(b*p*q) + 1)/((b^3*f^3*p^3*q^3*log(f*x + e) + b^
3*f^3*p^2*q^3*log(d) + b^3*f^3*p^2*q^2*log(c) + a*b^2*f^3*p^2*q^2)*c^(1/(p*
q))*d^(1/p)) + 4*a*f*g*h*Ei(2*log(d)/p + 2*log(c)/(p*q) + 2*a/(b*p*q) + 2*l
og(f*x + e))*e^(-2*a/(b*p*q))/((b^3*f^3*p^3*q^3*log(f*x + e) + b^3*f^3*p^2*
q^3*log(d) + b^3*f^3*p^2*q^2*log(c) + a*b^2*f^3*p^2*q^2)*c^(2/(p*q))*d^(2/p
)) + b*h^2*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*
p*q) + 2)*log(c)/((b^3*f^3*p^3*q^3*log(f*x + e) + b^3*f^3*p^2*q^3*log(d) +
b^3*f^3*p^2*q^2*log(c) + a*b^2*f^3*p^2*q^2)*c^(1/(p*q))*d^(1/p)) - 4*b*h^2*
Ei(2*log(d)/p + 2*log(c)/(p*q) + 2*a/(b*p*q) + 2*log(f*x + e))*e^(-2*a/(b*p
*q) + 1)*log(c)/((b^3*f^3*p^3*q^3*log(f*x + e) + b^3*f^3*p^2*q^3*log(d) + b
^3*f^3*p^2*q^2*log(c) + a*b^2*f^3*p^2*q^2)*c^(2/(p*q))*d^(2/p)) + 3*b*h^2*E
i(3*log(d)/p + 3*log(c)/(p*q) + 3*a/(b*p*q) + 3*log(f*x + e))*e^(-3*a/(b*p*
q))*log(c)/((b^3*f^3*p^3*q^3*log(f*x + e) + b^3*f^3*p^2*q^3*log(d) + b^3*f^
3*p^2*q^2*log(c) + a*b^2*f^3*p^2*q^2)*c^(3/(p*q))*d^(3/p)) + a*h^2*Ei(log(d
)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q) + 2)/((b^3*f^3
```

```
*p^3*q^3*log(f*x + e) + b^3*f^3*p^2*q^3*log(d) + b^3*f^3*p^2*q^2*log(c) + a
*b^2*f^3*p^2*q^2)*c^(1/(p*q))*d^(1/p)) - 4*a*h^2*Ei(2*log(d)/p + 2*log(c)/(
p*q) + 2*a/(b*p*q) + 2*log(f*x + e))*e^(-2*a/(b*p*q) + 1)/((b^3*f^3*p^3*q^3
*log(f*x + e) + b^3*f^3*p^2*q^3*log(d) + b^3*f^3*p^2*q^2*log(c) + a*b^2*f^3
*p^2*q^2)*c^(2/(p*q))*d^(2/p)) + 3*a*h^2*Ei(3*log(d)/p + 3*log(c)/(p*q) + 3
*a/(b*p*q) + 3*log(f*x + e))*e^(-3*a/(b*p*q))/((b^3*f^3*p^3*q^3*log(f*x + e
) + b^3*f^3*p^2*q^3*log(d) + b^3*f^3*p^2*q^2*log(c) + a*b^2*f^3*p^2*q^2)*c^
(3/(p*q))*d^(3/p))
```

maple [F] time = 0.33, size = 0, normalized size = 0.00

$$\int \frac{\left(hx+g\right)^{2}}{\left(b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)+a\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^2/(b*ln(c*(d*(f*x+e)^p)^q)+a)^2,x)
```

```
[Out] int((h*x+g)^2/(b*ln(c*(d*(f*x+e)^p)^q)+a)^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{fh^{2}x^{3}+eg^{2}+\left(2\,fgh+eh^{2}\right)x^{2}+\left(fg^{2}+2\,egh\right)x}{b^{2}fpq\log\left(\left(\left(fx+e\right)^{p}\right)^{q}\right)+abfpq+\left(fpq^{2}\log\left(d\right)+fpq\log\left(c\right)\right)b^{2}}+\int\frac{3\,fh^{2}x^{2}+fg^{2}+2\,egh+2\,(2}{b^{2}fpq\log\left(\left(\left(fx+e\right)^{p}\right)^{q}\right)+abfpq+\left(fp\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="maxima")
```

```
[Out] -(f*h^2*x^3 + e*g^2 + (2*f*g*h + e*h^2)*x^2 + (f*g^2 + 2*e*g*h)*x)/(b^2*f*p
*q*log(((f*x + e)^p)^q) + a*b*f*p*q + (f*p*q^2*log(d) + f*p*q*log(c))*b^2)
+ integrate((3*f*h^2*x^2 + f*g^2 + 2*e*g*h + 2*(2*f*g*h + e*h^2)*x)/(b^2*f*
p*q*log(((f*x + e)^p)^q) + a*b*f*p*q + (f*p*q^2*log(d) + f*p*q*log(c))*b^2)
, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(g+h\,x\right)}^2}{{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)^2/(a + b*log(c*(d*(e + f*x)^p)^q))^2,x)
```

```
[Out] int((g + h*x)^2/(a + b*log(c*(d*(e + f*x)^p)^q))^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(g+hx\right)^{2}}{\left(a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**2/(a+b*ln(c*(d*(f*x+e)**p)**q))**2,x)
```

```
[Out] Integral((g + h*x)**2/(a + b*log(c*(d*(e + f*x)**p)**q))**2, x)
```

3.451 $\int \frac{g+hx}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$

Optimal. Leaf size=224

$$\frac{(e+fx)e^{-\frac{a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)}{b^2f^2p^2q^2}+\frac{2h(e+fx)^2e^{-\frac{2a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\text{Ei}\left(2\right.}{b^2f^2p^2q^2}$$

```
[Out] (-e*h+f*g)*(f*x+e)*Ei((a+b*ln(c*(d*(f*x+e)^p)^q))/b/p/q)/b^2/exp(a/b/p/q)/f
^2/p^2/q^2/((c*(d*(f*x+e)^p)^q)^(1/p/q))+2*h*(f*x+e)^2*Ei(2*(a+b*ln(c*(d*(f
*x+e)^p)^q))/b/p/q)/b^2/exp(2*a/b/p/q)/f^2/p^2/q^2/((c*(d*(f*x+e)^p)^q)^(2/
p/q))-(f*x+e)*(h*x+g)/b/f/p/q/(a+b*ln(c*(d*(f*x+e)^p)^q))
```

Rubi [A] time = 0.62, antiderivative size = 224, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 8, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308, Rules used = {2400, 2399, 2389, 2300, 2178, 2390, 2310, 2445}

$$\frac{(e+fx)e^{-\frac{a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)}{b^2f^2p^2q^2}+\frac{2h(e+fx)^2e^{-\frac{2a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\text{Ei}\left(2\right.}{b^2f^2p^2q^2}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)/(a + b*Log[c*(d*(e + f*x)^p)^q])^2,x]
```

```
[Out] ((f*g - e*h)*(e + f*x)*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*
q)])/(b^2*E^(a/(b*p*q))*f^2*p^2*q^2*(c*(d*(e + f*x)^p)^q)^(1/(p*q))) + (2*h
*(e + f*x)^2*ExpIntegralEi[(2*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(b*p*q)])/(
b^2*E^((2*a)/(b*p*q))*f^2*p^2*q^2*(c*(d*(e + f*x)^p)^q)^(2/(p*q))) - ((e +
f*x)*(g + h*x))/(b*f*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q]))
```

Rule 2178

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - (c*f)/d))*ExpIntegralEi[(f*g*(c + d*x)*Log[F])/d])/d, x] /; F
reeQ[{F, c, d, e, f, g}, x] && !$UseGamma === True
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2399

```
Int[((f_.) + (g_.)*(x_))^(q_.)/((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)
]*(b_.)), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q/(a + b*Log[c*(d + e*
x)^n]), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] &
& IGtQ[q, 0]
```

Rule 2400

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((d + e*x)*(f + g*x)^q*(a + b*Log[c*(d + e
*x)^n])^(p + 1))/(b*e*n*(p + 1)), x] + (-Dist[(q + 1)/(b*n*(p + 1)), Int[(f
 + g*x)^q*(a + b*Log[c*(d + e*x)^n])^(p + 1), x], x] + Dist[(q*(e*f - d*g))
/(b*e*n*(p + 1)), Int[(f + g*x)^(q - 1)*(a + b*Log[c*(d + e*x)^n])^(p + 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] && LtQ[
p, -1] && GtQ[q, 0]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] && !IntegerQ[n] && !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{g+hx}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx = \text{Subst}\left(\int \frac{g+hx}{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right.$$

$$= -\frac{(e+fx)(g+hx)}{bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)} + \text{Subst}\left(\frac{2\int \frac{g+hx}{a+b\log\left(cd^q(e+fx)^{pq}\right)}\,dx}{bpq},\right.$$

$$= -\frac{(e+fx)(g+hx)}{bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)} + \text{Subst}\left(\frac{2\int\left(\frac{fg-eh}{f\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)}\right.}{b}\right.$$

$$= -\frac{(e+fx)(g+hx)}{bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)} + \text{Subst}\left(\frac{(2h)\int \frac{e+fx}{a+b\log\left(cd^q(e+fx)^{pq}\right)}\,d}{bfpq}\right.$$

$$= -\frac{e^{-\frac{a}{bpq}}(fg-eh)(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)}{b^2f^2p^2q^2} - \frac{}{b}$$

$$= -\frac{e^{-\frac{a}{bpq}}(fg-eh)(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)}{b^2f^2p^2q^2} - \frac{}{b}$$

$$= \frac{e^{-\frac{a}{bpq}}(fg-eh)(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)}{b^2f^2p^2q^2} + \frac{2e}{}$$

Mathematica [A] time = 0.46, size = 269, normalized size = 1.20

$$-\frac{(e+fx)e^{-\frac{2a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\left(-e^{\frac{a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{\frac{1}{pq}}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\text{Ei}\left(\frac{a+b\log(}{}\right.\right.}{b^2f^2p^2q^2\left(a+\right.}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)/(a + b*Log[c*(d*(e + f*x)^p)^q])^2,x]
```

```
[Out] -(((e + f*x)*(b*E^((2*a)/(b*p*q))*f*p*q*(c*(d*(e + f*x)^p)^q)^(2/(p*q))*(g
+ h*x) - E^(a/(b*p*q))*(f*g - e*h)*(c*(d*(e + f*x)^p)^q)^(1/(p*q))*ExpInteg
ralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)]*(a + b*Log[c*(d*(e + f*x)^p
)^q]) - 2*h*(e + f*x)*ExpIntegralEi[(2*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(b
*p*q)]*(a + b*Log[c*(d*(e + f*x)^p)^q])))/(b^2*E^((2*a)/(b*p*q))*f^2*p^2*q^
2*(c*(d*(e + f*x)^p)^q)^(2/(p*q))*(a + b*Log[c*(d*(e + f*x)^p)^q])))
```

fricas [A] time = 0.47, size = 328, normalized size = 1.46

$$\left(\left(\left(bfg-beh\right)pq\log\left(fx+e\right)+afg-aeh+\left(bfg-beh\right)q\log(d)+\left(bfg-beh\right)\log(c)\right)e^{\left(\frac{bq\log(d)+b\log(c)+a}{bpq}\right)}\text{log\_in}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="fricas")
```

```
[Out] (((b*f*g - b*e*h)*p*q*log(f*x + e) + a*f*g - a*e*h + (b*f*g - b*e*h)*q*log(
d) + (b*f*g - b*e*h)*log(c))*e^((b*q*log(d) + b*log(c) + a)/(b*p*q))*log_in
tegral((f*x + e)*e^((b*q*log(d) + b*log(c) + a)/(b*p*q))) - (b*f^2*h*p*q*x^
2 + b*e*f*g*p*q + (b*f^2*g + b*e*f*h)*p*q*x)*e^(2*(b*q*log(d) + b*log(c) +
a)/(b*p*q)) + 2*(b*h*p*q*log(f*x + e) + b*h*q*log(d) + b*h*log(c) + a*h)*lo
g_integral((f^2*x^2 + 2*e*f*x + e^2)*e^(2*(b*q*log(d) + b*log(c) + a)/(b*p*
q))))*e^(-2*(b*q*log(d) + b*log(c) + a)/(b*p*q))/(b^3*f^2*p^3*q^3*log(f*x +
 e) + b^3*f^2*p^2*q^3*log(d) + b^3*f^2*p^2*q^2*log(c) + a*b^2*f^2*p^2*q^2)
```

giac [B] time = 0.48, size = 1968, normalized size = 8.79

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="giac")
```

```
[Out] -(f*x + e)*b*f*g*p*q/(b^3*f^2*p^3*q^3*log(f*x + e) + b^3*f^2*p^2*q^3*log(d)
 + b^3*f^2*p^2*q^2*log(c) + a*b^2*f^2*p^2*q^2) - (f*x + e)^2*b*h*p*q/(b^3*f
^2*p^3*q^3*log(f*x + e) + b^3*f^2*p^2*q^3*log(d) + b^3*f^2*p^2*q^2*log(c) +
 a*b^2*f^2*p^2*q^2) + (f*x + e)*b*h*p*q*e/(b^3*f^2*p^3*q^3*log(f*x + e) + b
^3*f^2*p^2*q^3*log(d) + b^3*f^2*p^2*q^2*log(c) + a*b^2*f^2*p^2*q^2) + b*f*g
*p*q*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q))*
log(f*x + e)/((b^3*f^2*p^3*q^3*log(f*x + e) + b^3*f^2*p^2*q^3*log(d) + b^3*
f^2*p^2*q^2*log(c) + a*b^2*f^2*p^2*q^2)*c^(1/(p*q))*d^(1/p)) - b*h*p*q*Ei(l
og(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q) + 1)*log(f
*x + e)/((b^3*f^2*p^3*q^3*log(f*x + e) + b^3*f^2*p^2*q^3*log(d) + b^3*f^2*p
^2*q^2*log(c) + a*b^2*f^2*p^2*q^2)*c^(1/(p*q))*d^(1/p)) + 2*b*h*p*q*Ei(2*lo
g(d)/p + 2*log(c)/(p*q) + 2*a/(b*p*q) + 2*log(f*x + e))*e^(-2*a/(b*p*q))*lo
g(f*x + e)/((b^3*f^2*p^3*q^3*log(f*x + e) + b^3*f^2*p^2*q^3*log(d) + b^3*f^
2*p^2*q^2*log(c) + a*b^2*f^2*p^2*q^2)*c^(2/(p*q))*d^(2/p)) + b*f*g*q*Ei(log
(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q))*log(d)/((b^
3*f^2*p^3*q^3*log(f*x + e) + b^3*f^2*p^2*q^3*log(d) + b^3*f^2*p^2*q^2*log(c
) + a*b^2*f^2*p^2*q^2)*c^(1/(p*q))*d^(1/p)) + b*f*g*Ei(log(d)/p + log(c)/(p
*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q))*log(c)/((b^3*f^2*p^3*q^3*log
(f*x + e) + b^3*f^2*p^2*q^3*log(d) + b^3*f^2*p^2*q^2*log(c) + a*b^2*f^2*p^2
*q^2)*c^(1/(p*q))*d^(1/p)) - b*h*q*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) +
 log(f*x + e))*e^(-a/(b*p*q) + 1)*log(d)/((b^3*f^2*p^3*q^3*log(f*x + e) + b
^3*f^2*p^2*q^3*log(d) + b^3*f^2*p^2*q^2*log(c) + a*b^2*f^2*p^2*q^2)*c^(1/(p
*q))*d^(1/p)) + 2*b*h*q*Ei(2*log(d)/p + 2*log(c)/(p*q) + 2*a/(b*p*q) + 2*lo
g(f*x + e))*e^(-2*a/(b*p*q))*log(d)/((b^3*f^2*p^3*q^3*log(f*x + e) + b^3*f^
2*p^2*q^3*log(d) + b^3*f^2*p^2*q^2*log(c) + a*b^2*f^2*p^2*q^2)*c^(2/(p*q))*
d^(2/p)) + a*f*g*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(
-a/(b*p*q))/((b^3*f^2*p^3*q^3*log(f*x + e) + b^3*f^2*p^2*q^3*log(d) + b^3*f
^2*p^2*q^2*log(c) + a*b^2*f^2*p^2*q^2)*c^(1/(p*q))*d^(1/p)) - b*h*Ei(log(d)
/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q) + 1)*log(c)/((b
^3*f^2*p^3*q^3*log(f*x + e) + b^3*f^2*p^2*q^3*log(d) + b^3*f^2*p^2*q^2*log(
c) + a*b^2*f^2*p^2*q^2)*c^(1/(p*q))*d^(1/p)) + 2*b*h*Ei(2*log(d)/p + 2*log(
c)/(p*q) + 2*a/(b*p*q) + 2*log(f*x + e))*e^(-2*a/(b*p*q))*log(c)/((b^3*f^2*
p^3*q^3*log(f*x + e) + b^3*f^2*p^2*q^3*log(d) + b^3*f^2*p^2*q^2*log(c) + a*
b^2*f^2*p^2*q^2)*c^(2/(p*q))*d^(2/p)) - a*h*Ei(log(d)/p + log(c)/(p*q) + a/
(b*p*q) + log(f*x + e))*e^(-a/(b*p*q) + 1)/((b^3*f^2*p^3*q^3*log(f*x + e) +
 b^3*f^2*p^2*q^3*log(d) + b^3*f^2*p^2*q^2*log(c) + a*b^2*f^2*p^2*q^2)*c^(1/
(p*q))*d^(1/p)) + 2*a*h*Ei(2*log(d)/p + 2*log(c)/(p*q) + 2*a/(b*p*q) + 2*lo
g(f*x + e))*e^(-2*a/(b*p*q))/((b^3*f^2*p^3*q^3*log(f*x + e) + b^3*f^2*p^2*q
^3*log(d) + b^3*f^2*p^2*q^2*log(c) + a*b^2*f^2*p^2*q^2)*c^(2/(p*q))*d^(2/p)
)
```

maple [F] time = 0.08, size = 0, normalized size = 0.00

$$\int \frac{hx+g}{\left(b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)+a\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)/(b*ln(c*(d*(f*x+e)^p)^q)+a)^2,x)
```

```
[Out] int((h*x+g)/(b*ln(c*(d*(f*x+e)^p)^q)+a)^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{fhx^{2}+eg+\left(fg+eh\right)x}{b^{2}fpq\log\left(\left(\left(fx+e\right)^{p}\right)^{q}\right)+abfpq+\left(fpq^{2}\log(d)+fpq\log(c)\right)b^{2}}+\int \frac{2\,fhx+fg+}{b^{2}fpq\log\left(\left(\left(fx+e\right)^{p}\right)^{q}\right)+abfpq+(}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="maxima")
```

```
[Out] -(f*h*x^2 + e*g + (f*g + e*h)*x)/(b^2*f*p*q*log(((f*x + e)^p)^q) + a*b*f*p*
q + (f*p*q^2*log(d) + f*p*q*log(c))*b^2) + integrate((2*f*h*x + f*g + e*h)/
(b^2*f*p*q*log(((f*x + e)^p)^q) + a*b*f*p*q + (f*p*q^2*log(d) + f*p*q*log(c
))*b^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{g+h\,x}{{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)/(a + b*log(c*(d*(e + f*x)^p)^q))^2,x)
```

```
[Out] int((g + h*x)/(a + b*log(c*(d*(e + f*x)^p)^q))^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{g+hx}{\left(a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*ln(c*(d*(f*x+e)**p)**q))**2,x)
```

```
[Out] Integral((g + h*x)/(a + b*log(c*(d*(e + f*x)**p)**q))**2, x)
```

3.452 $\int \frac{1}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$

Optimal. Leaf size=123

$$\frac{(e+fx)e^{-\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\operatorname{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)}{b^2fp^2q^2}-\frac{e+fx}{bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}$$

```
[Out] (f*x+e)*Ei((a+b*ln(c*(d*(f*x+e)^p)^q))/b/p/q)/b^2/exp(a/b/p/q)/f/p^2/q^2/((
c*(d*(f*x+e)^p)^q)^(1/p/q))+(-f*x-e)/b/f/p/q/(a+b*ln(c*(d*(f*x+e)^p)^q))
```

Rubi [A] time = 0.16, antiderivative size = 123, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {2389, 2297, 2300, 2178, 2445}

$$\frac{(e+fx)e^{-\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\operatorname{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)}{b^2fp^2q^2}-\frac{e+fx}{bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^(-2),x]
```

```
[Out] ((e + f*x)*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)])/(b^2*E^
(a/(b*p*q))*f*p^2*q^2*(c*(d*(e + f*x)^p)^q)^(1/(p*q))) - (e + f*x)/(b*f*p*q
*(a + b*Log[c*(d*(e + f*x)^p)^q]))
```

Rule 2178

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - (c*f)/d))*ExpIntegralEi[(f*g*(c + d*x)*Log[F])/d])/d, x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2297

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[(x*(a + b
*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
gerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
```

```
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] && !IntegerQ[n] && !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{1}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx = \text{Subst}\left(\int \frac{1}{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right.$$

$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \frac{1}{\left(a+b\log(cd^q x^{pq})\right)^2}\,dx, x, e+fx\right)}{f}, cd^q(e+fx)^{pq}, c\left(d(e+f\right.\right.$$

$$= -\frac{e+fx}{bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)} + \text{Subst}\left(\frac{\text{Subst}\left(\int \frac{1}{a+b\log(cd^q x^{pq})}\,dx\right.}{bfpq}\right.$$

$$= -\frac{e+fx}{bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)} + \text{Subst}\left(\frac{\left((e+fx)\left(cd^q(e+fx)^{pq}\right)\right.}{}\right.$$

$$= \frac{e^{-\frac{a}{bpq}}(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)}{b^2fp^2q^2} - \frac{}{bfpq\left(a+b\right.}$$

Mathematica [A] time = 0.12, size = 163, normalized size = 1.33

$$-\frac{(e+fx)e^{-\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\left(bpqe^{\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{\frac{1}{pq}} - \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+\right.\right.}{bpq}\right.\right.}{b^2fp^2q^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^(-2),x]
```

```
[Out] -(((e + f*x)*(b*E^(a/(b*p*q))*p*q*(c*(d*(e + f*x)^p)^q)^(1/(p*q)) - ExpInte
gralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)]*(a + b*Log[c*(d*(e + f*x)^
p)^q])))/(b^2*E^(a/(b*p*q))*f*p^2*q^2*(c*(d*(e + f*x)^p)^q)^(1/(p*q))*(a +
b*Log[c*(d*(e + f*x)^p)^q])))
```

fricas [A] time = 0.45, size = 171, normalized size = 1.39

$$-\frac{\left((bfpqx+bepq)e^{\left(\frac{bq\log(d)+b\log(c)+a}{bpq}\right)} - \left(bpq\log\left(fx+e\right)+bq\log(d)+b\log(c)+a\right)\text{log\_integral}\left(\left(fx+e\right)e^{\left(\frac{bq\log}{}\right.}\right.\right.}{b^3fp^3q^3\log\left(fx+e\right)+b^3fp^2q^3\log(d)+b^3fp^2q^2\log(c)+ab^2fp^2q^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="fricas")
```

```
[Out] -((b*f*p*q*x + b*e*p*q)*e^((b*q*log(d) + b*log(c) + a)/(b*p*q)) - (b*p*q*lo
g(f*x + e) + b*q*log(d) + b*log(c) + a)*log_integral((f*x + e)*e^((b*q*log(
```

```
d) + b*log(c) + a)/(b*p*q))))*e^(-(b*q*log(d) + b*log(c) + a)/(b*p*q))/(b^3
*f*p^3*q^3*log(f*x + e) + b^3*f*p^2*q^3*log(d) + b^3*f*p^2*q^2*log(c) + a*b
^2*f*p^2*q^2)
```

giac [B] time = 0.24, size = 593, normalized size = 4.82

$$-\frac{(fx+e)bpq}{b^3fp^3q^3\log(fx+e)+b^3fp^2q^3\log(d)+b^3fp^2q^2\log(c)+ab^2fp^2q^2}+\frac{bpq\mathrm{Ei}\left(\frac{\log(d)}{p}+\frac{\log(c)}{pq}+\frac{a}{bpq}+\log(\right.}{(b^3fp^3q^3\log(fx+e)+b^3fp^2q^3\log(d)+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="giac")
```

```
[Out] -(f*x + e)*b*p*q/(b^3*f*p^3*q^3*log(f*x + e) + b^3*f*p^2*q^3*log(d) + b^3*f
*p^2*q^2*log(c) + a*b^2*f*p^2*q^2) + b*p*q*Ei(log(d)/p + log(c)/(p*q) + a/(
b*p*q) + log(f*x + e))*e^(-a/(b*p*q))*log(f*x + e)/((b^3*f*p^3*q^3*log(f*x
+ e) + b^3*f*p^2*q^3*log(d) + b^3*f*p^2*q^2*log(c) + a*b^2*f*p^2*q^2)*c^(1/
(p*q))*d^(1/p)) + b*q*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e)
)*e^(-a/(b*p*q))*log(d)/((b^3*f*p^3*q^3*log(f*x + e) + b^3*f*p^2*q^3*log(d)
 + b^3*f*p^2*q^2*log(c) + a*b^2*f*p^2*q^2)*c^(1/(p*q))*d^(1/p)) + b*Ei(log(
d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q))*log(c)/((b^3
*f*p^3*q^3*log(f*x + e) + b^3*f*p^2*q^3*log(d) + b^3*f*p^2*q^2*log(c) + a*b
^2*f*p^2*q^2)*c^(1/(p*q))*d^(1/p)) + a*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*
q) + log(f*x + e))*e^(-a/(b*p*q))/((b^3*f*p^3*q^3*log(f*x + e) + b^3*f*p^2*
q^3*log(d) + b^3*f*p^2*q^2*log(c) + a*b^2*f*p^2*q^2)*c^(1/(p*q))*d^(1/p))
```

maple [F] time = 0.08, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)+a\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*ln(c*(d*(f*x+e)^p)^q)+a)^2,x)
```

```
[Out] int(1/(b*ln(c*(d*(f*x+e)^p)^q)+a)^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{fx+e}{b^2fpq\log\left(\left(\left(fx+e\right)^{p}\right)^{q}\right)+abfpq+\left(fpq^2\log(d)+fpq\log(c)\right)b^2}+\int\frac{1}{b^2pq\log\left(\left(\left(fx+e\right)^{p}\right)^{q}\right)+abpq+\left(pq^2\mathrm{lo}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="maxima")
```

```
[Out] -(f*x + e)/(b^2*f*p*q*log(((f*x + e)^p)^q) + a*b*f*p*q + (f*p*q^2*log(d) +
f*p*q*log(c))*b^2) + integrate(1/(b^2*p*q*log(((f*x + e)^p)^q) + a*b*p*q +
(p*q^2*log(d) + p*q*log(c))*b^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{\left(a+b\,\ln\left(c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*log(c*(d*(e + f*x)^p)^q))^2,x)
```

```
[Out] int(1/(a + b*log(c*(d*(e + f*x)^p)^q))^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a + b\log\left(c\left(d\left(e + fx\right)^{p}\right)^{q}\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(d*(f*x+e)**p)**q))**2,x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**(-2), x)
```

3.453 $\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2} dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2},x\right)$$

```
[Out] Unintegrable(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

Rubi [A] time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2} dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2),x]
[Out] Defer[Int][1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2), x]
```

Rubi steps

$$\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2} dx = \int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2} dx$$

Mathematica [A] time = 1.40, size = 0, normalized size = 0.00

$$\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2} dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2),x]
[Out] Integrate[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2), x]
```

fricas [A] time = 0.49, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{1}{a^2hx + a^2g + \left(b^2hx + b^2g\right)\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^2 + 2\left(abhx + abg\right)\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="fricas")
[Out] integral(1/(a^2*h*x + a^2*g + (b^2*h*x + b^2*g)*log(((f*x + e)^p*d)^q*c)^2
+ 2*(a*b*h*x + a*b*g)*log(((f*x + e)^p*d)^q*c)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(hx+g)\left(b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="giac")
```

```
[Out] integrate(1/((h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a)^2), x)
```

maple [A] time = 0.37, size = 0, normalized size = 0.00

$$\int \frac{1}{(hx+g)\left(b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(h*x+g)/(b*ln(c*(d*(f*x+e)^p)^q)+a)^2,x)
```

```
[Out] int(1/(h*x+g)/(b*ln(c*(d*(f*x+e)^p)^q)+a)^2,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$(fg-eh)\int \frac{}{abfg^2pq+\left(fg^2pq^2\log(d)+fg^2pq\log(c)\right)b^2+\left(abfh^2pq+\left(fh^2pq^2\log(d)+fh^2pq\log(c)\right)b^2\right)x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="maxima")
```

```
[Out] (f*g - e*h)*integrate(1/(a*b*f*g^2*p*q + (f*g^2*p*q^2*log(d) + f*g^2*p*q*lo
g(c))*b^2 + (a*b*f*h^2*p*q + (f*h^2*p*q^2*log(d) + f*h^2*p*q*log(c))*b^2)*x
^2 + 2*(a*b*f*g*h*p*q + (f*g*h*p*q^2*log(d) + f*g*h*p*q*log(c))*b^2)*x + (b
^2*f*h^2*p*q*x^2 + 2*b^2*f*g*h*p*q*x + b^2*f*g^2*p*q)*log(((f*x + e)^p)^q))
, x) - (f*x + e)/(a*b*f*g*p*q + (f*g*p*q^2*log(d) + f*g*p*q*log(c))*b^2 + (
a*b*f*h*p*q + (f*h*p*q^2*log(d) + f*h*p*q*log(c))*b^2)*x + (b^2*f*h*p*q*x +
 b^2*f*g*p*q)*log(((f*x + e)^p)^q))
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{\left(g+h\,x\right)\,{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((g + h*x)*(a + b*log(c*(d*(e + f*x)^p)^q))^2),x)
```

```
[Out] int(1/((g + h*x)*(a + b*log(c*(d*(e + f*x)^p)^q))^2), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\log\left(c\left(d\left(e+fx\right)^p\right)^q\right)\right)^2\left(g+hx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)**p)**q))**2,x)
```

```
[Out] Integral(1/((a + b*log(c*(d*(e + f*x)**p)**q))**2*(g + h*x)), x)
```

3.454 $\int \frac{1}{(g+hx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$

Optimal. Leaf size=31

$$\mathrm{Int}\left(\frac{1}{(g+hx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2},x\right)$$

```
[Out] Unintegrable(1/(h*x+g)^2/(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

Rubi [A] time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(g+hx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2),x]
[Out] Defer[Int][1/((g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2), x]
```

Rubi steps

$$\int \frac{1}{(g+hx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx=\int \frac{1}{(g+hx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$$

Mathematica [A] time = 18.60, size = 0, normalized size = 0.00

$$\int \frac{1}{(g+hx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2),x]
[Out] Integrate[1/((g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2), x]
```

fricas [A] time = 0.46, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{1}{a^2h^2x^2+2\,a^2ghx+a^2g^2+\left(b^2h^2x^2+2\,b^2ghx+b^2g^2\right)\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^2+2\left(abh^2x^2+2\,abghx+a\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="fricas")
[Out] integral(1/(a^2*h^2*x^2 + 2*a^2*g*h*x + a^2*g^2 + (b^2*h^2*x^2 + 2*b^2*g*h*
x + b^2*g^2)*log(((f*x + e)^p*d)^q*c)^2 + 2*(a*b*h^2*x^2 + 2*a*b*g*h*x + a*
b*g^2)*log(((f*x + e)^p*d)^q*c)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(hx+g)^2\left(b\log\left(\left((fx+e)^p d\right)^q c\right)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="giac")
```

```
[Out] integrate(1/((h*x + g)^2*(b*log(((f*x + e)^p*d)^q*c) + a)^2), x)
```

maple [A] time = 0.35, size = 0, normalized size = 0.00

$$\int \frac{1}{(hx+g)^2\left(b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(h*x+g)^2/(b*ln(c*(d*(f*x+e)^p)^q)+a)^2,x)
```

```
[Out] int(1/(h*x+g)^2/(b*ln(c*(d*(f*x+e)^p)^q)+a)^2,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{fx+e}{abfg^2pq+\left(fg^2pq^2\log(d)+fg^2pq\log(c)\right)b^2+\left(abfh^2pq+\left(fh^2pq^2\log(d)+fh^2pq\log(c)\right)b^2\right)x^2+2\left(abfgh\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="maxima")
```

```
[Out] -(f*x + e)/(a*b*f*g^2*p*q + (f*g^2*p*q^2*log(d) + f*g^2*p*q*log(c))*b^2 + (
a*b*f*h^2*p*q + (f*h^2*p*q^2*log(d) + f*h^2*p*q*log(c))*b^2)*x^2 + 2*(a*b*f
*g*h*p*q + (f*g*h*p*q^2*log(d) + f*g*h*p*q*log(c))*b^2)*x + (b^2*f*h^2*p*q*
x^2 + 2*b^2*f*g*h*p*q*x + b^2*f*g^2*p*q)*log(((f*x + e)^p)^q)) - integrate(
(f*h*x - f*g + 2*e*h)/(a*b*f*g^3*p*q + (a*b*f*h^3*p*q + (f*h^3*p*q^2*log(d)
 + f*h^3*p*q*log(c))*b^2)*x^3 + (f*g^3*p*q^2*log(d) + f*g^3*p*q*log(c))*b^2
 + 3*(a*b*f*g*h^2*p*q + (f*g*h^2*p*q^2*log(d) + f*g*h^2*p*q*log(c))*b^2)*x^
2 + 3*(a*b*f*g^2*h*p*q + (f*g^2*h*p*q^2*log(d) + f*g^2*h*p*q*log(c))*b^2)*x
 + (b^2*f*h^3*p*q*x^3 + 3*b^2*f*g*h^2*p*q*x^2 + 3*b^2*f*g^2*h*p*q*x + b^2*f
*g^3*p*q)*log(((f*x + e)^p)^q)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{\left(g+h\,x\right)^2\,\left(a+b\,\ln\left(c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((g + h*x)^2*(a + b*log(c*(d*(e + f*x)^p)^q))^2),x)
```

```
[Out] int(1/((g + h*x)^2*(a + b*log(c*(d*(e + f*x)^p)^q))^2), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\log\left(c\left(d\left(e+fx\right)^p\right)^q\right)\right)^2\left(g+hx\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)**2/(a+b*ln(c*(d*(f*x+e)**p)**q))**2,x)
[Out] Integral(1/((a + b*log(c*(d*(e + f*x)**p)**q))**2*(g + h*x)**2), x)
```

3.455 $\int \frac{(g+hx)^2}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}\,dx$

Optimal. Leaf size=432

$$\frac{4h(e+fx)^2e^{-\frac{2a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\text{Ei}\left(\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{bpq}\right)}{b^3f^3p^3q^3}+\frac{(e+fx)e^{-\frac{a}{bpq}}(fg-eh)^2\left(c\left(d(e+fx)\right.\right.}{2b^3f^3p^3}$$

```
[Out] 1/2*(-e*h+f*g)^2*(f*x+e)*Ei((a+b*ln(c*(d*(f*x+e)^p)^q))/b/p/q)/b^3/exp(a/b/
p/q)/f^3/p^3/q^3/((c*(d*(f*x+e)^p)^q)^(1/p/q))+4*h*(-e*h+f*g)*(f*x+e)^2*Ei(
2*(a+b*ln(c*(d*(f*x+e)^p)^q))/b/p/q)/b^3/exp(2*a/b/p/q)/f^3/p^3/q^3/((c*(d*
(f*x+e)^p)^q)^(2/p/q))+9/2*h^2*(f*x+e)^3*Ei(3*(a+b*ln(c*(d*(f*x+e)^p)^q))/b
/p/q)/b^3/exp(3*a/b/p/q)/f^3/p^3/q^3/((c*(d*(f*x+e)^p)^q)^(3/p/q))-1/2*(f*x
+e)*(h*x+g)^2/b/f/p/q/(a+b*ln(c*(d*(f*x+e)^p)^q))^2+(-e*h+f*g)*(f*x+e)*(h*x
+g)/b^2/f^2/p^2/q^2/(a+b*ln(c*(d*(f*x+e)^p)^q))-3/2*(f*x+e)*(h*x+g)^2/b^2/f
/p^2/q^2/(a+b*ln(c*(d*(f*x+e)^p)^q))
```

Rubi [A] time = 2.13, antiderivative size = 432, normalized size of antiderivative = 1.00, number of steps used = 34, number of rules used = 8, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {2400, 2399, 2389, 2300, 2178, 2390, 2310, 2445}

$$\frac{4h(e+fx)^2e^{-\frac{2a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\text{Ei}\left(\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{bpq}\right)}{b^3f^3p^3q^3}+\frac{(e+fx)e^{-\frac{a}{bpq}}(fg-eh)^2\left(c\left(d(e+fx)\right.\right.}{2b^3f^3p^3}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)^2/(a + b*Log[c*(d*(e + f*x)^p)^q])^3,x]
```

```
[Out] ((f*g - e*h)^2*(e + f*x)*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*
p*q)])/(2*b^3*E^(a/(b*p*q))*f^3*p^3*q^3*(c*(d*(e + f*x)^p)^q)^(1/(p*q))) +
(4*h*(f*g - e*h)*(e + f*x)^2*ExpIntegralEi[(2*(a + b*Log[c*(d*(e + f*x)^p)^
q]))/(b*p*q)])/(b^3*E^((2*a)/(b*p*q))*f^3*p^3*q^3*(c*(d*(e + f*x)^p)^q)^(2/
(p*q))) + (9*h^2*(e + f*x)^3*ExpIntegralEi[(3*(a + b*Log[c*(d*(e + f*x)^p)^
q]))/(b*p*q)])/(2*b^3*E^((3*a)/(b*p*q))*f^3*p^3*q^3*(c*(d*(e + f*x)^p)^q)^(
3/(p*q))) - ((e + f*x)*(g + h*x)^2)/(2*b*f*p*q*(a + b*Log[c*(d*(e + f*x)^p)
^q])^2) + ((f*g - e*h)*(e + f*x)*(g + h*x))/(b^2*f^2*p^2*q^2*(a + b*Log[c*(
d*(e + f*x)^p)^q])) - (3*(e + f*x)*(g + h*x)^2)/(2*b^2*f*p^2*q^2*(a + b*Log
[c*(d*(e + f*x)^p)^q]))
```

Rule 2178

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - (c*f)/d))*ExpIntegralEi[(f*g*(c + d*x)*Log[F])/d])/d, x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
```

```
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2399

```
Int[((f_.) + (g_.)*(x_))^(q_.)/((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)
]*(b_.)), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q/(a + b*Log[c*(d + e*
x)^n]), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] &
& IGtQ[q, 0]
```

Rule 2400

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((d + e*x)*(f + g*x)^q*(a + b*Log[c*(d + e
*x)^n])^(p + 1))/(b*e*n*(p + 1)), x] + (-Dist[(q + 1)/(b*n*(p + 1)), Int[(f
 + g*x)^q*(a + b*Log[c*(d + e*x)^n])^(p + 1), x], x] + Dist[(q*(e*f - d*g))
/(b*e*n*(p + 1)), Int[(f + g*x)^(q - 1)*(a + b*Log[c*(d + e*x)^n])^(p + 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] && LtQ[
p, -1] && GtQ[q, 0]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{(g+hx)^2}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}\,dx = \text{Subst}\left(\int \frac{(g+hx)^2}{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right.$$

$$= -\frac{(e+fx)(g+hx)^2}{2bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2} + \text{Subst}\left(\frac{3\int \frac{(g+hx)^2}{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}}{2bpq}\right.$$

$$= -\frac{(e+fx)(g+hx)^2}{2bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2} + \frac{(fg-eh)(e+fx)(g+h}{b^2f^2p^2q^2\left(a+b\log\left(c\left(d(e+\right.\right.\right.}$$

$$= -\frac{(e+fx)(g+hx)^2}{2bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2} + \frac{(fg-eh)(e+fx)(g+h}{b^2f^2p^2q^2\left(a+b\log\left(c\left(d(e+\right.\right.\right.}$$

$$= -\frac{(e+fx)(g+hx)^2}{2bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2} + \frac{(fg-eh)(e+fx)(g+h}{b^2f^2p^2q^2\left(a+b\log\left(c\left(d(e+\right.\right.\right.}$$

$$= \frac{e^{-\frac{a}{bpq}}(fg-eh)^2(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)}{b^3f^3p^3q^3} - \frac{}{2}$$

$$= \frac{e^{-\frac{a}{bpq}}(fg-eh)^2(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)}{b^3f^3p^3q^3} - \frac{}{2}$$

$$= \frac{e^{-\frac{a}{bpq}}(fg-eh)^2(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)}{2b^3f^3p^3q^3} + \frac{4}{}$$

Mathematica [A] time = 2.32, size = 438, normalized size = 1.01

$$\frac{(e+fx)e^{-\frac{3a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{3}{pq}}\left(-8h(e+fx)e^{\frac{a}{bpq}}(eh-fg)\left(c\left(d(e+fx)^p\right)^q\right)^{\frac{1}{pq}}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)^2/(a + b*Log[c*(d*(e + f*x)^p)^q])^3,x]
```

```
[Out] ((e + f*x)*(E^((2*a)/(b*p*q))*(f*g - e*h)^2*(c*(d*(e + f*x)^p)^q)^(2/(p*q))
*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)]*(a + b*Log[c*(d*(e
 + f*x)^p)^q])^2 - 8*E^(a/(b*p*q))*h*(-(f*g) + e*h)*(e + f*x)*(c*(d*(e + f*
x)^p)^q)^(1/(p*q))*ExpIntegralEi[(2*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(b*p*
q)]*(a + b*Log[c*(d*(e + f*x)^p)^q])^2 + 9*h^2*(e + f*x)^2*ExpIntegralEi[(3
*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(b*p*q)]*(a + b*Log[c*(d*(e + f*x)^p)^q]
```

```
)^2 - b*E^((3*a)/(b*p*q))*f*p*q*(c*(d*(e + f*x)^p)^q)^(3/(p*q))*(g + h*x)*(
b*f*p*q*(g + h*x) + a*(f*g + 2*e*h + 3*f*h*x) + b*(2*e*h + f*(g + 3*h*x))*L
og[c*(d*(e + f*x)^p)^q])))/(2*b^3*E^((3*a)/(b*p*q))*f^3*p^3*q^3*(c*(d*(e +
f*x)^p)^q)^(3/(p*q))*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)
```

fricas [B] time = 0.53, size = 1682, normalized size = 3.89

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="fricas")
```

```
[Out] 1/2*(8*((b^2*f*g*h - b^2*e*h^2)*p^2*q^2*log(f*x + e)^2 + a^2*f*g*h - a^2*e*
h^2 + (b^2*f*g*h - b^2*e*h^2)*q^2*log(d)^2 + (b^2*f*g*h - b^2*e*h^2)*log(c)
^2 + 2*((b^2*f*g*h - b^2*e*h^2)*p*q^2*log(d) + (b^2*f*g*h - b^2*e*h^2)*p*q*
log(c) + (a*b*f*g*h - a*b*e*h^2)*p*q)*log(f*x + e) + 2*(a*b*f*g*h - a*b*e*h
^2)*log(c) + 2*((b^2*f*g*h - b^2*e*h^2)*q*log(c) + (a*b*f*g*h - a*b*e*h^2)*
q)*log(d))*e^((b*q*log(d) + b*log(c) + a)/(b*p*q))*log_integral((f^2*x^2 +
2*e*f*x + e^2)*e^(2*(b*q*log(d) + b*log(c) + a)/(b*p*q))) + ((b^2*f^2*g^2 -
 2*b^2*e*f*g*h + b^2*e^2*h^2)*p^2*q^2*log(f*x + e)^2 + a^2*f^2*g^2 - 2*a^2*
e*f*g*h + a^2*e^2*h^2 + (b^2*f^2*g^2 - 2*b^2*e*f*g*h + b^2*e^2*h^2)*q^2*log
(d)^2 + (b^2*f^2*g^2 - 2*b^2*e*f*g*h + b^2*e^2*h^2)*log(c)^2 + 2*((b^2*f^2*
g^2 - 2*b^2*e*f*g*h + b^2*e^2*h^2)*p*q^2*log(d) + (b^2*f^2*g^2 - 2*b^2*e*f*
g*h + b^2*e^2*h^2)*p*q*log(c) + (a*b*f^2*g^2 - 2*a*b*e*f*g*h + a*b*e^2*h^2)
*p*q)*log(f*x + e) + 2*(a*b*f^2*g^2 - 2*a*b*e*f*g*h + a*b*e^2*h^2)*log(c) +
 2*((b^2*f^2*g^2 - 2*b^2*e*f*g*h + b^2*e^2*h^2)*q*log(c) + (a*b*f^2*g^2 - 2
*a*b*e*f*g*h + a*b*e^2*h^2)*q)*log(d))*e^(2*(b*q*log(d) + b*log(c) + a)/(b*
p*q))*log_integral((f*x + e)*e^((b*q*log(d) + b*log(c) + a)/(b*p*q))) - (b^
2*e*f^2*g^2*p^2*q^2 + (b^2*f^3*h^2*p^2*q^2 + 3*a*b*f^3*h^2*p*q)*x^3 + (a*b*
e*f^2*g^2 + 2*a*b*e^2*f*g*h)*p*q + ((2*b^2*f^3*g*h + b^2*e*f^2*h^2)*p^2*q^2
 + (4*a*b*f^3*g*h + 5*a*b*e*f^2*h^2)*p*q)*x^2 + ((b^2*f^3*g^2 + 2*b^2*e*f^2
*g*h)*p^2*q^2 + (a*b*f^3*g^2 + 6*a*b*e*f^2*g*h + 2*a*b*e^2*f*h^2)*p*q)*x +
(3*b^2*f^3*h^2*p^2*q^2*x^3 + (4*b^2*f^3*g*h + 5*b^2*e*f^2*h^2)*p^2*q^2*x^2
+ (b^2*f^3*g^2 + 6*b^2*e*f^2*g*h + 2*b^2*e^2*f*h^2)*p^2*q^2*x + (b^2*e*f^2*
g^2 + 2*b^2*e^2*f*g*h)*p^2*q^2)*log(f*x + e) + (3*b^2*f^3*h^2*p*q*x^3 + (4*
b^2*f^3*g*h + 5*b^2*e*f^2*h^2)*p*q*x^2 + (b^2*f^3*g^2 + 6*b^2*e*f^2*g*h + 2
*b^2*e^2*f*h^2)*p*q*x + (b^2*e*f^2*g^2 + 2*b^2*e^2*f*g*h)*p*q)*log(c) + (3*
b^2*f^3*h^2*p*q^2*x^3 + (4*b^2*f^3*g*h + 5*b^2*e*f^2*h^2)*p*q^2*x^2 + (b^2*
f^3*g^2 + 6*b^2*e*f^2*g*h + 2*b^2*e^2*f*h^2)*p*q^2*x + (b^2*e*f^2*g^2 + 2*b
^2*e^2*f*g*h)*p*q^2)*log(d))*e^(3*(b*q*log(d) + b*log(c) + a)/(b*p*q)) + 9*
(b^2*h^2*p^2*q^2*log(f*x + e)^2 + b^2*h^2*q^2*log(d)^2 + b^2*h^2*log(c)^2 +
 2*a*b*h^2*log(c) + a^2*h^2 + 2*(b^2*h^2*p*q^2*log(d) + b^2*h^2*p*q*log(c)
+ a*b*h^2*p*q)*log(f*x + e) + 2*(b^2*h^2*q*log(c) + a*b*h^2*q)*log(d))*log_
integral((f^3*x^3 + 3*e*f^2*x^2 + 3*e^2*f*x + e^3)*e^(3*(b*q*log(d) + b*log
(c) + a)/(b*p*q))))*e^(-3*(b*q*log(d) + b*log(c) + a)/(b*p*q))/(b^5*f^3*p^5
*q^5*log(f*x + e)^2 + b^5*f^3*p^3*q^5*log(d)^2 + b^5*f^3*p^3*q^3*log(c)^2 +
 2*a*b^4*f^3*p^3*q^3*log(c) + a^2*b^3*f^3*p^3*q^3 + 2*(b^5*f^3*p^4*q^5*log(
d) + b^5*f^3*p^4*q^4*log(c) + a*b^4*f^3*p^4*q^4)*log(f*x + e) + 2*(b^5*f^3*
p^3*q^4*log(c) + a*b^4*f^3*p^3*q^4)*log(d))
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.33, size = 0, normalized size = 0.00

$$\int \frac{(hx+g)^2}{\left(b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)+a\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^2/(b*ln(c*(d*(f*x+e)^p)^q)+a)^3,x)
```

```
[Out] int((h*x+g)^2/(b*ln(c*(d*(f*x+e)^p)^q)+a)^3,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{\left(3\,af^2h^2+\left(f^2h^2pq+3\,f^2h^2q\log(d)+3\,f^2h^2\log(c)\right)b\right)x^3+\left(\left(4\,f^2gh+5\,efh^2\right)a+\left(2\,f^2ghpq+efh^2pq+\left(4\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="maxima")
```

```
[Out] -1/2*((3*a*f^2*h^2 + (f^2*h^2*p*q + 3*f^2*h^2*q*log(d) + 3*f^2*h^2*log(c))*
b)*x^3 + ((4*f^2*g*h + 5*e*f*h^2)*a + (2*f^2*g*h*p*q + e*f*h^2*p*q + (4*f^2
*g*h + 5*e*f*h^2)*log(c) + (4*f^2*g*h*q + 5*e*f*h^2*q)*log(d))*b)*x^2 + (e*
f*g^2 + 2*e^2*g*h)*a + (e*f*g^2*p*q + (e*f*g^2 + 2*e^2*g*h)*log(c) + (e*f*g
^2*q + 2*e^2*g*h*q)*log(d))*b + ((f^2*g^2 + 6*e*f*g*h + 2*e^2*h^2)*a + (f^2
*g^2*p*q + 2*e*f*g*h*p*q + (f^2*g^2 + 6*e*f*g*h + 2*e^2*h^2)*log(c) + (f^2*
g^2*q + 6*e*f*g*h*q + 2*e^2*h^2*q)*log(d))*b)*x + (3*b*f^2*h^2*x^3 + (4*f^2
*g*h + 5*e*f*h^2)*b*x^2 + (f^2*g^2 + 6*e*f*g*h + 2*e^2*h^2)*b*x + (e*f*g^2
+ 2*e^2*g*h)*b)*log(((f*x + e)^p)^q))/(b^4*f^2*p^2*q^2*log(((f*x + e)^p)^q)
^2 + a^2*b^2*f^2*p^2*q^2 + 2*(f^2*p^2*q^3*log(d) + f^2*p^2*q^2*log(c))*a*b^
3 + (f^2*p^2*q^4*log(d)^2 + 2*f^2*p^2*q^3*log(c)*log(d) + f^2*p^2*q^2*log(c
)^2)*b^4 + 2*(a*b^3*f^2*p^2*q^2 + (f^2*p^2*q^3*log(d) + f^2*p^2*q^2*log(c))
*b^4)*log(((f*x + e)^p)^q)) + integrate(1/2*(9*f^2*h^2*x^2 + f^2*g^2 + 6*e*
f*g*h + 2*e^2*h^2 + 2*(4*f^2*g*h + 5*e*f*h^2)*x)/(b^3*f^2*p^2*q^2*log(((f*x
 + e)^p)^q) + a*b^2*f^2*p^2*q^2 + (f^2*p^2*q^3*log(d) + f^2*p^2*q^2*log(c))
*b^3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(g+h\,x)^2}{\left(a+b\,\ln\left(c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right)\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)^2/(a + b*log(c*(d*(e + f*x)^p)^q))^3,x)
```

```
[Out] int((g + h*x)^2/(a + b*log(c*(d*(e + f*x)^p)^q))^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(g+hx)^2}{\left(a+b\log\left(c\left(d\left(e+fx\right)^p\right)^q\right)\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**2/(a+b*ln(c*(d*(f*x+e)**p)**q))**3,x)
```

```
[Out] Integral((g + h*x)**2/(a + b*log(c*(d*(e + f*x)**p)**q))**3, x)
```

3.456 $\int \frac{g+hx}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}\,dx$

Optimal. Leaf size=322

$$\frac{(e+fx)e^{-\frac{a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\operatorname{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)}{2b^3f^2p^3q^3}+\frac{2h(e+fx)^2e^{-\frac{2a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\operatorname{Ei}\left(\frac{2}{-}\right.}{b^3f^2p^3q^3}$$

```
[Out] 1/2*(-e*h+f*g)*(f*x+e)*Ei((a+b*ln(c*(d*(f*x+e)^p)^q))/b/p/q)/b^3/exp(a/b/p/
q)/f^2/p^3/q^3/((c*(d*(f*x+e)^p)^q)^(1/p/q))+2*h*(f*x+e)^2*Ei(2*(a+b*ln(c*(
d*(f*x+e)^p)^q))/b/p/q)/b^3/exp(2*a/b/p/q)/f^2/p^3/q^3/((c*(d*(f*x+e)^p)^q)
^(2/p/q))-1/2*(f*x+e)*(h*x+g)/b/f/p/q/(a+b*ln(c*(d*(f*x+e)^p)^q))^2+1/2*(-e
*h+f*g)*(f*x+e)/b^2/f^2/p^2/q^2/(a+b*ln(c*(d*(f*x+e)^p)^q))-(f*x+e)*(h*x+g)
/b^2/f/p^2/q^2/(a+b*ln(c*(d*(f*x+e)^p)^q))
```

Rubi [A] time = 0.93, antiderivative size = 322, normalized size of antiderivative = 1.00, number of steps used = 18, number of rules used = 9, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.346, Rules used = {2400, 2399, 2389, 2300, 2178, 2390, 2310, 2297, 2445}

$$\frac{(e+fx)e^{-\frac{a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\operatorname{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)}{2b^3f^2p^3q^3}+\frac{2h(e+fx)^2e^{-\frac{2a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\operatorname{Ei}\left(\frac{2}{-}\right.}{b^3f^2p^3q^3}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)/(a + b*Log[c*(d*(e + f*x)^p)^q])^3,x]
```

```
[Out] ((f*g - e*h)*(e + f*x)*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*
q)])/(2*b^3*E^(a/(b*p*q))*f^2*p^3*q^3*(c*(d*(e + f*x)^p)^q)^(1/(p*q))) + (2
*h*(e + f*x)^2*ExpIntegralEi[(2*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(b*p*q)])
/(b^3*E^((2*a)/(b*p*q))*f^2*p^3*q^3*(c*(d*(e + f*x)^p)^q)^(2/(p*q))) - ((e
+ f*x)*(g + h*x))/(2*b*f*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^2) + ((f*g -
e*h)*(e + f*x))/(2*b^2*f^2*p^2*q^2*(a + b*Log[c*(d*(e + f*x)^p)^q])) - ((e
+ f*x)*(g + h*x))/(b^2*f*p^2*q^2*(a + b*Log[c*(d*(e + f*x)^p)^q]))
```

Rule 2178

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - (c*f)/d))*ExpIntegralEi[(f*g*(c + d*x)*Log[F])/d])/d, x] /; F
reeQ[{F, c, d, e, f, g}, x] && !$UseGamma === True
```

Rule 2297

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[(x*(a + b
*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
gerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2399

```
Int[((f_.) + (g_.)*(x_))^(q_.)/((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)
]*(b_.)), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q/(a + b*Log[c*(d + e*
x)^n]), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] &
& IGtQ[q, 0]
```

Rule 2400

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((d + e*x)*(f + g*x)^q*(a + b*Log[c*(d + e
*x)^n])^(p + 1))/(b*e*n*(p + 1)), x] + (-Dist[(q + 1)/(b*n*(p + 1)), Int[(f
 + g*x)^q*(a + b*Log[c*(d + e*x)^n])^(p + 1), x], x] + Dist[(q*(e*f - d*g))
/(b*e*n*(p + 1)), Int[(f + g*x)^(q - 1)*(a + b*Log[c*(d + e*x)^n])^(p + 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] && LtQ[
p, -1] && GtQ[q, 0]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{g+hx}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}\,dx = \text{Subst}\left(\int \frac{g+hx}{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right.$$

$$= -\frac{(e+fx)(g+hx)}{2bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2} + \text{Subst}\left(\frac{\int \frac{g+hx}{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}\,d}{bpq}\right.$$

$$= -\frac{(e+fx)(g+hx)}{2bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2} - \frac{(e+fx)(g+hx)}{b^2fp^2q^2\left(a+b\log\left(c\left(d(e+f\right.\right.\right.}$$

$$= -\frac{(e+fx)(g+hx)}{2bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2} + \frac{(fg-eh)(e+fx)}{2b^2f^2p^2q^2\left(a+b\log\left(c\left(d(e+\right.\right.\right.}$$

$$= -\frac{(e+fx)(g+hx)}{2bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2} + \frac{(fg-eh)(e+fx)}{2b^2f^2p^2q^2\left(a+b\log\left(c\left(d(e+\right.\right.\right.}$$

$$= -\frac{3e^{-\frac{a}{bpq}}(fg-eh)(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)}{2b^3f^2p^3q^3} -$$

$$= -\frac{3e^{-\frac{a}{bpq}}(fg-eh)(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)}{2b^3f^2p^3q^3} -$$

$$= \frac{e^{-\frac{a}{bpq}}(fg-eh)(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)}{2b^3f^2p^3q^3} + \frac{2e}{}$$

Mathematica [A] time = 0.85, size = 322, normalized size = 1.00

$$-\frac{(e+fx)e^{-\frac{2a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\left(-e^{\frac{a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{\frac{1}{pq}}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2\text{Ei}\left(\frac{a+b\log}{}\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)/(a + b*Log[c*(d*(e + f*x)^p)^q])^3,x]
```

```
[Out] -1/2*((e + f*x)*(-(E^(a/(b*p*q))*(f*g - e*h)*(c*(d*(e + f*x)^p)^q)^(1/(p*q)
)*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)]*(a + b*Log[c*(d*(
e + f*x)^p)^q])^2) - 4*h*(e + f*x)*ExpIntegralEi[(2*(a + b*Log[c*(d*(e + f*
x)^p)^q]))/(b*p*q)]*(a + b*Log[c*(d*(e + f*x)^p)^q])^2 + b*E^((2*a)/(b*p*q)
)*p*q*(c*(d*(e + f*x)^p)^q)^(2/(p*q))*(b*f*p*q*(g + h*x) + a*(f*g + e*h + 2
```

```
*f*h*x) + b*(e*h + f*(g + 2*h*x))*Log[c*(d*(e + f*x)^p)^q])))/(b^3*E^((2*a)
/(b*p*q))*f^2*p^3*q^3*(c*(d*(e + f*x)^p)^q)^(2/(p*q))*(a + b*Log[c*(d*(e +
f*x)^p)^q])^2)
```

fricas [B] time = 0.49, size = 931, normalized size = 2.89

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="fricas")
```

```
[Out] 1/2*(((b^2*f*g - b^2*e*h)*p^2*q^2*log(f*x + e)^2 + (b^2*f*g - b^2*e*h)*q^2*
log(d)^2 + a^2*f*g - a^2*e*h + (b^2*f*g - b^2*e*h)*log(c)^2 + 2*((b^2*f*g -
 b^2*e*h)*p*q^2*log(d) + (b^2*f*g - b^2*e*h)*p*q*log(c) + (a*b*f*g - a*b*e*
h)*p*q)*log(f*x + e) + 2*(a*b*f*g - a*b*e*h)*log(c) + 2*((b^2*f*g - b^2*e*h
)*q*log(c) + (a*b*f*g - a*b*e*h)*q)*log(d))*e^((b*q*log(d) + b*log(c) + a)/
(b*p*q))*log_integral((f*x + e)*e^((b*q*log(d) + b*log(c) + a)/(b*p*q))) -
(b^2*e*f*g*p^2*q^2 + (a*b*e*f*g + a*b*e^2*h)*p*q + (b^2*f^2*h*p^2*q^2 + 2*a
*b*f^2*h*p*q)*x^2 + ((b^2*f^2*g + b^2*e*f*h)*p^2*q^2 + (a*b*f^2*g + 3*a*b*e
*f*h)*p*q)*x + (2*b^2*f^2*h*p^2*q^2*x^2 + (b^2*f^2*g + 3*b^2*e*f*h)*p^2*q^2
*x + (b^2*e*f*g + b^2*e^2*h)*p^2*q^2)*log(f*x + e) + (2*b^2*f^2*h*p*q*x^2 +
 (b^2*f^2*g + 3*b^2*e*f*h)*p*q*x + (b^2*e*f*g + b^2*e^2*h)*p*q)*log(c) + (2
*b^2*f^2*h*p*q^2*x^2 + (b^2*f^2*g + 3*b^2*e*f*h)*p*q^2*x + (b^2*e*f*g + b^2
*e^2*h)*p*q^2)*log(d))*e^(2*(b*q*log(d) + b*log(c) + a)/(b*p*q)) + 4*(b^2*h
*p^2*q^2*log(f*x + e)^2 + b^2*h*q^2*log(d)^2 + b^2*h*log(c)^2 + 2*a*b*h*log
(c) + a^2*h + 2*(b^2*h*p*q^2*log(d) + b^2*h*p*q*log(c) + a*b*h*p*q)*log(f*x
 + e) + 2*(b^2*h*q*log(c) + a*b*h*q)*log(d))*log_integral((f^2*x^2 + 2*e*f*
x + e^2)*e^(2*(b*q*log(d) + b*log(c) + a)/(b*p*q))))*e^(-2*(b*q*log(d) + b*
log(c) + a)/(b*p*q))/(b^5*f^2*p^5*q^5*log(f*x + e)^2 + b^5*f^2*p^3*q^5*log(
d)^2 + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*
p^3*q^3 + 2*(b^5*f^2*p^4*q^5*log(d) + b^5*f^2*p^4*q^4*log(c) + a*b^4*f^2*p^
4*q^4)*log(f*x + e) + 2*(b^5*f^2*p^3*q^4*log(c) + a*b^4*f^2*p^3*q^4)*log(d)
)
```

giac [B] time = 1.31, size = 11533, normalized size = 35.82

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="giac")
```

```
[Out] -1/2*(f*x + e)*b^2*f*g*p^2*q^2*log(f*x + e)/(b^5*f^2*p^5*q^5*log(f*x + e)^2
 + 2*b^5*f^2*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*x + e)*l
og(c) + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e) + 2*b^5
*f^2*p^3*q^4*log(c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q^4
*log(d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3) - (f*x + e)^2*b
^2*h*p^2*q^2*log(f*x + e)/(b^5*f^2*p^5*q^5*log(f*x + e)^2 + 2*b^5*f^2*p^4*q
^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*x + e)*log(c) + b^5*f^2*p^
3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e) + 2*b^5*f^2*p^3*q^4*log(c
)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q^4*log(d) + 2*a*b^4*
f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3) + 1/2*(f*x + e)*b^2*h*p^2*q^2*e*l
og(f*x + e)/(b^5*f^2*p^5*q^5*log(f*x + e)^2 + 2*b^5*f^2*p^4*q^5*log(f*x + e
)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*x + e)*log(c) + b^5*f^2*p^3*q^5*log(d)^2
 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e) + 2*b^5*f^2*p^3*q^4*log(c)*log(d) + b^5
*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q^4*log(d) + 2*a*b^4*f^2*p^3*q^3*lo
g(c) + a^2*b^3*f^2*p^3*q^3) + 1/2*b^2*f*g*p^2*q^2*Ei(log(d)/p + log(c)/(p*q
) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q))*log(f*x + e)^2/((b^5*f^2*p^5*q
^5*log(f*x + e)^2 + 2*b^5*f^2*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q
^4*log(f*x + e)*log(c) + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log
(f*x + e) + 2*b^5*f^2*p^3*q^4*log(c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*
```

a*b^4*f^2*p^3*q^4*log(d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3
)*c^(1/(p*q))*d^(1/p)) - 1/2*(f*x + e)*b^2*f*g*p^2*q^2/(b^5*f^2*p^5*q^5*log
(f*x + e)^2 + 2*b^5*f^2*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log
(f*x + e)*log(c) + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x +
 e) + 2*b^5*f^2*p^3*q^4*log(c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*
f^2*p^3*q^4*log(d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3) - 1/
2*(f*x + e)^2*b^2*h*p^2*q^2/(b^5*f^2*p^5*q^5*log(f*x + e)^2 + 2*b^5*f^2*p^4
*q^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*x + e)*log(c) + b^5*f^2*
p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e) + 2*b^5*f^2*p^3*q^4*log
(c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q^4*log(d) + 2*a*b^
4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3) + 1/2*(f*x + e)*b^2*h*p^2*q^2*e
/(b^5*f^2*p^5*q^5*log(f*x + e)^2 + 2*b^5*f^2*p^4*q^5*log(f*x + e)*log(d) +
2*b^5*f^2*p^4*q^4*log(f*x + e)*log(c) + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b^4*
f^2*p^4*q^4*log(f*x + e) + 2*b^5*f^2*p^3*q^4*log(c)*log(d) + b^5*f^2*p^3*q^
3*log(c)^2 + 2*a*b^4*f^2*p^3*q^4*log(d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*
b^3*f^2*p^3*q^3) - 1/2*b^2*h*p^2*q^2*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q)
 + log(f*x + e))*e^(-a/(b*p*q) + 1)*log(f*x + e)^2/((b^5*f^2*p^5*q^5*log(f*
x + e)^2 + 2*b^5*f^2*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*
x + e)*log(c) + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e)
 + 2*b^5*f^2*p^3*q^4*log(c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2
*p^3*q^4*log(d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3)*c^(1/(p
*q))*d^(1/p)) + 2*b^2*h*p^2*q^2*Ei(2*log(d)/p + 2*log(c)/(p*q) + 2*a/(b*p*q
) + 2*log(f*x + e))*e^(-2*a/(b*p*q))*log(f*x + e)^2/((b^5*f^2*p^5*q^5*log(f
*x + e)^2 + 2*b^5*f^2*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f
*x + e)*log(c) + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e
) + 2*b^5*f^2*p^3*q^4*log(c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^
2*p^3*q^4*log(d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3)*c^(2/(
p*q))*d^(2/p)) - 1/2*(f*x + e)*b^2*f*g*p*q^2*log(d)/(b^5*f^2*p^5*q^5*log(f*
x + e)^2 + 2*b^5*f^2*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*
x + e)*log(c) + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e)
 + 2*b^5*f^2*p^3*q^4*log(c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2
*p^3*q^4*log(d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3) - (f*x
+ e)^2*b^2*h*p*q^2*log(d)/(b^5*f^2*p^5*q^5*log(f*x + e)^2 + 2*b^5*f^2*p^4*q
^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*x + e)*log(c) + b^5*f^2*p^
3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e) + 2*b^5*f^2*p^3*q^4*log(c
)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q^4*log(d) + 2*a*b^4*
f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3) + 1/2*(f*x + e)*b^2*h*p*q^2*e*log
(d)/(b^5*f^2*p^5*q^5*log(f*x + e)^2 + 2*b^5*f^2*p^4*q^5*log(f*x + e)*log(d)
 + 2*b^5*f^2*p^4*q^4*log(f*x + e)*log(c) + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b
^4*f^2*p^4*q^4*log(f*x + e) + 2*b^5*f^2*p^3*q^4*log(c)*log(d) + b^5*f^2*p^3
*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q^4*log(d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a
^2*b^3*f^2*p^3*q^3) + b^2*f*g*p*q^2*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q)
+ log(f*x + e))*e^(-a/(b*p*q))*log(f*x + e)*log(d)/((b^5*f^2*p^5*q^5*log(f*
x + e)^2 + 2*b^5*f^2*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*
x + e)*log(c) + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e)
 + 2*b^5*f^2*p^3*q^4*log(c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2
*p^3*q^4*log(d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3)*c^(1/(p
*q))*d^(1/p)) - 1/2*(f*x + e)*b^2*f*g*p*q*log(c)/(b^5*f^2*p^5*q^5*log(f*x +
 e)^2 + 2*b^5*f^2*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*x +
 e)*log(c) + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e) +
2*b^5*f^2*p^3*q^4*log(c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2*p^
3*q^4*log(d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3) - (f*x + e
)^2*b^2*h*p*q*log(c)/(b^5*f^2*p^5*q^5*log(f*x + e)^2 + 2*b^5*f^2*p^4*q^5*lo
g(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*x + e)*log(c) + b^5*f^2*p^3*q^5
*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e) + 2*b^5*f^2*p^3*q^4*log(c)*log
(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q^4*log(d) + 2*a*b^4*f^2*p
^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3) + 1/2*(f*x + e)*b^2*h*p*q*e*log(c)/(b^
5*f^2*p^5*q^5*log(f*x + e)^2 + 2*b^5*f^2*p^4*q^5*log(f*x + e)*log(d) + 2*b^
5*f^2*p^4*q^4*log(f*x + e)*log(c) + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b^4*f^2*

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p^4*q^4*log(f*x + e) + 2*b^5*f^2*p^3*q^4*log(c)*log(d) + b^5*f^2*p^3*q^3*lo
g(c)^2 + 2*a*b^4*f^2*p^3*q^4*log(d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*b^3*
f^2*p^3*q^3) + b^2*f*g*p*q*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x
 + e))*e^(-a/(b*p*q))*log(f*x + e)*log(c)/((b^5*f^2*p^5*q^5*log(f*x + e)^2
+ 2*b^5*f^2*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*x + e)*lo
g(c) + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e) + 2*b^5*
f^2*p^3*q^4*log(c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q^4*
log(d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3)*c^(1/(p*q))*d^(1
/p)) - b^2*h*p*q^2*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e
^(-a/(b*p*q) + 1)*log(f*x + e)*log(d)/((b^5*f^2*p^5*q^5*log(f*x + e)^2 + 2*
b^5*f^2*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*x + e)*log(c)
 + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e) + 2*b^5*f^2*
p^3*q^4*log(c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q^4*log(
d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3)*c^(1/(p*q))*d^(1/p))
 + 4*b^2*h*p*q^2*Ei(2*log(d)/p + 2*log(c)/(p*q) + 2*a/(b*p*q) + 2*log(f*x +
 e))*e^(-2*a/(b*p*q))*log(f*x + e)*log(d)/((b^5*f^2*p^5*q^5*log(f*x + e)^2
+ 2*b^5*f^2*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*x + e)*lo
g(c) + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e) + 2*b^5*
f^2*p^3*q^4*log(c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q^4*
log(d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3)*c^(2/(p*q))*d^(2
/p)) + 1/2*b^2*f*g*q^2*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e
))*e^(-a/(b*p*q))*log(d)^2/((b^5*f^2*p^5*q^5*log(f*x + e)^2 + 2*b^5*f^2*p^4
*q^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*x + e)*log(c) + b^5*f^2*
p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e) + 2*b^5*f^2*p^3*q^4*log
(c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q^4*log(d) + 2*a*b^
4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3)*c^(1/(p*q))*d^(1/p)) - 1/2*(f*x
 + e)*a*b*f*g*p*q/(b^5*f^2*p^5*q^5*log(f*x + e)^2 + 2*b^5*f^2*p^4*q^5*log(f
*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*x + e)*log(c) + b^5*f^2*p^3*q^5*lo
g(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e) + 2*b^5*f^2*p^3*q^4*log(c)*log(d)
 + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q^4*log(d) + 2*a*b^4*f^2*p^3*
q^3*log(c) + a^2*b^3*f^2*p^3*q^3) - (f*x + e)^2*a*b*h*p*q/(b^5*f^2*p^5*q^5*
log(f*x + e)^2 + 2*b^5*f^2*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*
log(f*x + e)*log(c) + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*
x + e) + 2*b^5*f^2*p^3*q^4*log(c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b
^4*f^2*p^3*q^4*log(d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3) +
 1/2*(f*x + e)*a*b*h*p*q*e/(b^5*f^2*p^5*q^5*log(f*x + e)^2 + 2*b^5*f^2*p^4*
q^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*x + e)*log(c) + b^5*f^2*p
^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e) + 2*b^5*f^2*p^3*q^4*log(
c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q^4*log(d) + 2*a*b^4
*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3) + a*b*f*g*p*q*Ei(log(d)/p + log(
c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q))*log(f*x + e)/((b^5*f^2*
p^5*q^5*log(f*x + e)^2 + 2*b^5*f^2*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f^2*
p^4*q^4*log(f*x + e)*log(c) + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^
4*log(f*x + e) + 2*b^5*f^2*p^3*q^4*log(c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2
 + 2*a*b^4*f^2*p^3*q^4*log(d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^
3*q^3)*c^(1/(p*q))*d^(1/p)) - b^2*h*p*q*Ei(log(d)/p + log(c)/(p*q) + a/(b*p
*q) + log(f*x + e))*e^(-a/(b*p*q) + 1)*log(f*x + e)*log(c)/((b^5*f^2*p^5*q^
5*log(f*x + e)^2 + 2*b^5*f^2*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^
4*log(f*x + e)*log(c) + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(
f*x + e) + 2*b^5*f^2*p^3*q^4*log(c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a
*b^4*f^2*p^3*q^4*log(d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3)
*c^(1/(p*q))*d^(1/p)) + 4*b^2*h*p*q*Ei(2*log(d)/p + 2*log(c)/(p*q) + 2*a/(b
*p*q) + 2*log(f*x + e))*e^(-2*a/(b*p*q))*log(f*x + e)*log(c)/((b^5*f^2*p^5*
q^5*log(f*x + e)^2 + 2*b^5*f^2*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*
q^4*log(f*x + e)*log(c) + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*lo
g(f*x + e) + 2*b^5*f^2*p^3*q^4*log(c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2
*a*b^4*f^2*p^3*q^4*log(d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^
3)*c^(2/(p*q))*d^(2/p)) + b^2*f*g*q*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q)
+ log(f*x + e))*e^(-a/(b*p*q))*log(c)*log(d)/((b^5*f^2*p^5*q^5*log(f*x + e)
```

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^2 + 2*b^5*f^2*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*x + e)
*log(c) + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e) + 2*b
^5*f^2*p^3*q^4*log(c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q
^4*log(d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3)*c^(1/(p*q))*d
^(1/p)) - 1/2*b^2*h*q^2*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x +
e))*e^(-a/(b*p*q) + 1)*log(d)^2/((b^5*f^2*p^5*q^5*log(f*x + e)^2 + 2*b^5*f^
2*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*x + e)*log(c) + b^5
*f^2*p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e) + 2*b^5*f^2*p^3*q^
4*log(c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q^4*log(d) + 2
*a*b^4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3)*c^(1/(p*q))*d^(1/p)) + 2*b
^2*h*q^2*Ei(2*log(d)/p + 2*log(c)/(p*q) + 2*a/(b*p*q) + 2*log(f*x + e))*e^(
-2*a/(b*p*q))*log(d)^2/((b^5*f^2*p^5*q^5*log(f*x + e)^2 + 2*b^5*f^2*p^4*q^5
*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*x + e)*log(c) + b^5*f^2*p^3*
q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e) + 2*b^5*f^2*p^3*q^4*log(c)*
log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q^4*log(d) + 2*a*b^4*f^
2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3)*c^(2/(p*q))*d^(2/p)) - a*b*h*p*q*Ei
(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q) + 1)*log
(f*x + e)/((b^5*f^2*p^5*q^5*log(f*x + e)^2 + 2*b^5*f^2*p^4*q^5*log(f*x + e)
*log(d) + 2*b^5*f^2*p^4*q^4*log(f*x + e)*log(c) + b^5*f^2*p^3*q^5*log(d)^2
+ 2*a*b^4*f^2*p^4*q^4*log(f*x + e) + 2*b^5*f^2*p^3*q^4*log(c)*log(d) + b^5*
f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q^4*log(d) + 2*a*b^4*f^2*p^3*q^3*log
(c) + a^2*b^3*f^2*p^3*q^3)*c^(1/(p*q))*d^(1/p)) + 4*a*b*h*p*q*Ei(2*log(d)/p
 + 2*log(c)/(p*q) + 2*a/(b*p*q) + 2*log(f*x + e))*e^(-2*a/(b*p*q))*log(f*x
+ e)/((b^5*f^2*p^5*q^5*log(f*x + e)^2 + 2*b^5*f^2*p^4*q^5*log(f*x + e)*log(
d) + 2*b^5*f^2*p^4*q^4*log(f*x + e)*log(c) + b^5*f^2*p^3*q^5*log(d)^2 + 2*a
*b^4*f^2*p^4*q^4*log(f*x + e) + 2*b^5*f^2*p^3*q^4*log(c)*log(d) + b^5*f^2*p
^3*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q^4*log(d) + 2*a*b^4*f^2*p^3*q^3*log(c) +
 a^2*b^3*f^2*p^3*q^3)*c^(2/(p*q))*d^(2/p)) + 1/2*b^2*f*g*Ei(log(d)/p + log(
c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q))*log(c)^2/((b^5*f^2*p^5*
q^5*log(f*x + e)^2 + 2*b^5*f^2*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*
q^4*log(f*x + e)*log(c) + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*lo
g(f*x + e) + 2*b^5*f^2*p^3*q^4*log(c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2
*a*b^4*f^2*p^3*q^4*log(d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^
3)*c^(1/(p*q))*d^(1/p)) + a*b*f*g*q*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q)
+ log(f*x + e))*e^(-a/(b*p*q))*log(d)/((b^5*f^2*p^5*q^5*log(f*x + e)^2 + 2*
b^5*f^2*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*x + e)*log(c)
 + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e) + 2*b^5*f^2*
p^3*q^4*log(c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q^4*log(
d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3)*c^(1/(p*q))*d^(1/p))
 - b^2*h*q*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*
p*q) + 1)*log(c)*log(d)/((b^5*f^2*p^5*q^5*log(f*x + e)^2 + 2*b^5*f^2*p^4*q^
5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*x + e)*log(c) + b^5*f^2*p^3
*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e) + 2*b^5*f^2*p^3*q^4*log(c)
*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q^4*log(d) + 2*a*b^4*f
^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3)*c^(1/(p*q))*d^(1/p)) + 4*b^2*h*q*E
i(2*log(d)/p + 2*log(c)/(p*q) + 2*a/(b*p*q) + 2*log(f*x + e))*e^(-2*a/(b*p*
q))*log(c)*log(d)/((b^5*f^2*p^5*q^5*log(f*x + e)^2 + 2*b^5*f^2*p^4*q^5*log(
f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*x + e)*log(c) + b^5*f^2*p^3*q^5*l
og(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e) + 2*b^5*f^2*p^3*q^4*log(c)*log(d
) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q^4*log(d) + 2*a*b^4*f^2*p^3
*q^3*log(c) + a^2*b^3*f^2*p^3*q^3)*c^(2/(p*q))*d^(2/p)) + a*b*f*g*Ei(log(d)
/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q))*log(c)/((b^5*f
^2*p^5*q^5*log(f*x + e)^2 + 2*b^5*f^2*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f
^2*p^4*q^4*log(f*x + e)*log(c) + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4
*q^4*log(f*x + e) + 2*b^5*f^2*p^3*q^4*log(c)*log(d) + b^5*f^2*p^3*q^3*log(c
)^2 + 2*a*b^4*f^2*p^3*q^4*log(d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2
*p^3*q^3)*c^(1/(p*q))*d^(1/p)) - 1/2*b^2*h*Ei(log(d)/p + log(c)/(p*q) + a/(
b*p*q) + log(f*x + e))*e^(-a/(b*p*q) + 1)*log(c)^2/((b^5*f^2*p^5*q^5*log(f*
x + e)^2 + 2*b^5*f^2*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*
```

```
x + e)*log(c) + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e)
 + 2*b^5*f^2*p^3*q^4*log(c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2
*p^3*q^4*log(d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3)*c^(1/(p
*q))*d^(1/p)) + 2*b^2*h*Ei(2*log(d)/p + 2*log(c)/(p*q) + 2*a/(b*p*q) + 2*lo
g(f*x + e))*e^(-2*a/(b*p*q))*log(c)^2/((b^5*f^2*p^5*q^5*log(f*x + e)^2 + 2*
b^5*f^2*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*x + e)*log(c)
 + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e) + 2*b^5*f^2*
p^3*q^4*log(c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q^4*log(
d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3)*c^(2/(p*q))*d^(2/p))
 - a*b*h*q*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*
p*q) + 1)*log(d)/((b^5*f^2*p^5*q^5*log(f*x + e)^2 + 2*b^5*f^2*p^4*q^5*log(f
*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*x + e)*log(c) + b^5*f^2*p^3*q^5*lo
g(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e) + 2*b^5*f^2*p^3*q^4*log(c)*log(d)
 + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q^4*log(d) + 2*a*b^4*f^2*p^3*
q^3*log(c) + a^2*b^3*f^2*p^3*q^3)*c^(1/(p*q))*d^(1/p)) + 4*a*b*h*q*Ei(2*log
(d)/p + 2*log(c)/(p*q) + 2*a/(b*p*q) + 2*log(f*x + e))*e^(-2*a/(b*p*q))*log
(d)/((b^5*f^2*p^5*q^5*log(f*x + e)^2 + 2*b^5*f^2*p^4*q^5*log(f*x + e)*log(d
) + 2*b^5*f^2*p^4*q^4*log(f*x + e)*log(c) + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*
b^4*f^2*p^4*q^4*log(f*x + e) + 2*b^5*f^2*p^3*q^4*log(c)*log(d) + b^5*f^2*p^
3*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q^4*log(d) + 2*a*b^4*f^2*p^3*q^3*log(c) +
a^2*b^3*f^2*p^3*q^3)*c^(2/(p*q))*d^(2/p)) + 1/2*a^2*f*g*Ei(log(d)/p + log(c
)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q))/((b^5*f^2*p^5*q^5*log(f*
x + e)^2 + 2*b^5*f^2*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*
x + e)*log(c) + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e)
 + 2*b^5*f^2*p^3*q^4*log(c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2
*p^3*q^4*log(d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3)*c^(1/(p
*q))*d^(1/p)) - a*b*h*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e)
)*e^(-a/(b*p*q) + 1)*log(c)/((b^5*f^2*p^5*q^5*log(f*x + e)^2 + 2*b^5*f^2*p^
4*q^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*x + e)*log(c) + b^5*f^2
*p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e) + 2*b^5*f^2*p^3*q^4*lo
g(c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q^4*log(d) + 2*a*b
^4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3)*c^(1/(p*q))*d^(1/p)) + 4*a*b*h
*Ei(2*log(d)/p + 2*log(c)/(p*q) + 2*a/(b*p*q) + 2*log(f*x + e))*e^(-2*a/(b*
p*q))*log(c)/((b^5*f^2*p^5*q^5*log(f*x + e)^2 + 2*b^5*f^2*p^4*q^5*log(f*x +
 e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*x + e)*log(c) + b^5*f^2*p^3*q^5*log(d)
^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e) + 2*b^5*f^2*p^3*q^4*log(c)*log(d) + b
^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q^4*log(d) + 2*a*b^4*f^2*p^3*q^3*
log(c) + a^2*b^3*f^2*p^3*q^3)*c^(2/(p*q))*d^(2/p)) - 1/2*a^2*h*Ei(log(d)/p
+ log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q) + 1)/((b^5*f^2*p^5
*q^5*log(f*x + e)^2 + 2*b^5*f^2*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4
*q^4*log(f*x + e)*log(c) + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*l
og(f*x + e) + 2*b^5*f^2*p^3*q^4*log(c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 +
2*a*b^4*f^2*p^3*q^4*log(d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q
^3)*c^(1/(p*q))*d^(1/p)) + 2*a^2*h*Ei(2*log(d)/p + 2*log(c)/(p*q) + 2*a/(b*
p*q) + 2*log(f*x + e))*e^(-2*a/(b*p*q))/((b^5*f^2*p^5*q^5*log(f*x + e)^2 +
2*b^5*f^2*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*x + e)*log(
c) + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e) + 2*b^5*f^
2*p^3*q^4*log(c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q^4*lo
g(d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3)*c^(2/(p*q))*d^(2/p
))
```

maple [F] time = 0.08, size = 0, normalized size = 0.00

$$\int \frac{hx+g}{\left(b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)+a\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)/(b*ln(c*(d*(f*x+e)^p)^q)+a)^3,x)
```

```
[Out] int((h*x+g)/(b*ln(c*(d*(f*x+e)^p)^q)+a)^3,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{\left(2\,af^2h+\left(f^2hpq+2\,f^2hq\log(d)+2\,f^2h\log(c)\right)b\right)x^2+\left(efg+e^2h\right)a+\left(efgpq+\left(efg+e^2h\right)\log(c)+\left(efg\right.\right.}{2\left(b^4f^2p^2q^2\log\left(\left(\left(fx+e\right)^p\right)^q\right)^2+a^2b^2f^2p^2q^2+2\left(f^2p^2q^3\log(d)+f^2p^2q^2\log\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="maxima")
```

```
[Out] -1/2*((2*a*f^2*h + (f^2*h*p*q + 2*f^2*h*q*log(d) + 2*f^2*h*log(c))*b)*x^2 +
 (e*f*g + e^2*h)*a + (e*f*g*p*q + (e*f*g + e^2*h)*log(c) + (e*f*g*q + e^2*h
*q)*log(d))*b + ((f^2*g + 3*e*f*h)*a + (f^2*g*p*q + e*f*h*p*q + (f^2*g + 3*
e*f*h)*log(c) + (f^2*g*q + 3*e*f*h*q)*log(d))*b)*x + (2*b*f^2*h*x^2 + (f^2*
g + 3*e*f*h)*b*x + (e*f*g + e^2*h)*b)*log(((f*x + e)^p)^q))/(b^4*f^2*p^2*q^
2*log(((f*x + e)^p)^q)^2 + a^2*b^2*f^2*p^2*q^2 + 2*(f^2*p^2*q^3*log(d) + f^
2*p^2*q^2*log(c))*a*b^3 + (f^2*p^2*q^4*log(d)^2 + 2*f^2*p^2*q^3*log(c)*log(
d) + f^2*p^2*q^2*log(c)^2)*b^4 + 2*(a*b^3*f^2*p^2*q^2 + (f^2*p^2*q^3*log(d)
 + f^2*p^2*q^2*log(c))*b^4)*log(((f*x + e)^p)^q)) + integrate(1/2*(4*f*h*x
+ f*g + 3*e*h)/(b^3*f*p^2*q^2*log(((f*x + e)^p)^q) + a*b^2*f*p^2*q^2 + (f*p
^2*q^3*log(d) + f*p^2*q^2*log(c))*b^3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{g+h\,x}{{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)/(a + b*log(c*(d*(e + f*x)^p)^q))^3,x)
```

```
[Out] int((g + h*x)/(a + b*log(c*(d*(e + f*x)^p)^q))^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{g + hx}{\left(a + b \log{\left(c \left(d \left(e + fx\right)^{p}\right)^{q} \right)}\right)^{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*ln(c*(d*(f*x+e)**p)**q))**3,x)
```

```
[Out] Integral((g + h*x)/(a + b*log(c*(d*(e + f*x)**p)**q))**3, x)
```

3.457 $\int \frac{1}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}\,dx$

Optimal. Leaf size=169

$$\frac{(e+fx)e^{-\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)}{2b^3fp^3q^3}-\frac{e+fx}{2b^2fp^2q^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}-\frac{\ldots}{2bfpq\left(a+b\log\ldots\right.}$$

```
[Out] 1/2*(f*x+e)*Ei((a+b*ln(c*(d*(f*x+e)^p)^q))/b/p/q)/b^3/exp(a/b/p/q)/f/p^3/q^
3/((c*(d*(f*x+e)^p)^q)^(1/p/q))+1/2*(-f*x-e)/b/f/p/q/(a+b*ln(c*(d*(f*x+e)^p
)^q))^2+1/2*(-f*x-e)/b^2/f/p^2/q^2/(a+b*ln(c*(d*(f*x+e)^p)^q))
```

Rubi [A] time = 0.21, antiderivative size = 169, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {2389, 2297, 2300, 2178, 2445}

$$\frac{(e+fx)e^{-\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)}{2b^3fp^3q^3}-\frac{e+fx}{2b^2fp^2q^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}-\frac{\ldots}{2bfpq\left(a+b\log\ldots\right.}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^(-3),x]
```

```
[Out] ((e + f*x)*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)])/(2*b^3*
E^(a/(b*p*q))*f*p^3*q^3*(c*(d*(e + f*x)^p)^q)^(1/(p*q))) - (e + f*x)/(2*b*f
*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^2) - (e + f*x)/(2*b^2*f*p^2*q^2*(a +
b*Log[c*(d*(e + f*x)^p)^q]))
```

Rule 2178

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - (c*f)/d))*ExpIntegralEi[(f*g*(c + d*x)*Log[F])/d])/d, x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2297

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[(x*(a + b
*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
gerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{1}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}\,dx = \text{Subst}\left(\int \frac{1}{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right.$$

$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \frac{1}{\left(a+b\log\left(cd^q x^{pq}\right)\right)^3}\,dx, x, e+fx\right)}{f}, cd^q(e+fx)^{pq}, c\left(d(e+f\right.\right.$$

$$= -\frac{e+fx}{2bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2} + \text{Subst}\left(\frac{\text{Subst}\left(\int \frac{1}{\left(a+b\log\left(cd^q x^{pq}\right)\right.}\right.}{2bfpq}\right.$$

$$= -\frac{e+fx}{2bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2} - \frac{e+fx}{2b^2fp^2q^2\left(a+b\log\left(c\left(d(e+\right.\right.\right.}$$

$$= -\frac{e+fx}{2bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2} - \frac{e+fx}{2b^2fp^2q^2\left(a+b\log\left(c\left(d(e+\right.\right.\right.}$$

$$= \frac{e^{-\frac{a}{bpq}}(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)}{2b^3fp^3q^3} - \frac{}{2bfpq\left(a+\right.}$$

Mathematica [A] time = 0.32, size = 189, normalized size = 1.12

$$-\frac{(e+fx)e^{-\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\left(bpqe^{\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{\frac{1}{pq}}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)+bpq\right)-\left(a+b\log\right.\right.}{2b^3fp^3q^3\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^(-3),x]
```

```
[Out] -1/2*((e + f*x)*(-(ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)]*
(a + b*Log[c*(d*(e + f*x)^p)^q])^2) + b*E^(a/(b*p*q))*p*q*(c*(d*(e + f*x)^p
)^q)^(1/(p*q))*(a + b*p*q + b*Log[c*(d*(e + f*x)^p)^q])))/(b^3*E^(a/(b*p*q)
)*f*p^3*q^3*(c*(d*(e + f*x)^p)^q)^(1/(p*q))*(a + b*Log[c*(d*(e + f*x)^p)^q]
)^2)
```

fricas [B] time = 0.46, size = 444, normalized size = 2.63

$$-\frac{\left(\left(b^2ep^2q^2+abepq+\left(b^2fp^2q^2+abfpq\right)x+\left(b^2fp^2q^2x+b^2ep^2q^2\right)\log\left(fx+e\right)+\left(b^2fpqx+b^2epq\right)\log(c)+\left(b^2\right.\right.\right.}{2\left(b^5fp^5q^5\log\left(fx+e\right)^2+b^5\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="fricas")
```

```
[Out] -1/2*((b^2*e*p^2*q^2 + a*b*e*p*q + (b^2*f*p^2*q^2 + a*b*f*p*q)*x + (b^2*f*p
^2*q^2*x + b^2*e*p^2*q^2)*log(f*x + e) + (b^2*f*p*q*x + b^2*e*p*q)*log(c) +
 (b^2*f*p*q^2*x + b^2*e*p*q^2)*log(d))*e^((b*q*log(d) + b*log(c) + a)/(b*p*
q)) - (b^2*p^2*q^2*log(f*x + e)^2 + b^2*q^2*log(d)^2 + b^2*log(c)^2 + 2*a*b
*log(c) + a^2 + 2*(b^2*p*q^2*log(d) + b^2*p*q*log(c) + a*b*p*q)*log(f*x + e
) + 2*(b^2*q*log(c) + a*b*q)*log(d))*log_integral((f*x + e)*e^((b*q*log(d)
+ b*log(c) + a)/(b*p*q))))*e^(-(b*q*log(d) + b*log(c) + a)/(b*p*q))/(b^5*f*
p^5*q^5*log(f*x + e)^2 + b^5*f*p^3*q^5*log(d)^2 + b^5*f*p^3*q^3*log(c)^2 +
2*a*b^4*f*p^3*q^3*log(c) + a^2*b^3*f*p^3*q^3 + 2*(b^5*f*p^4*q^5*log(d) + b^
5*f*p^4*q^4*log(c) + a*b^4*f*p^4*q^4)*log(f*x + e) + 2*(b^5*f*p^3*q^4*log(c
) + a*b^4*f*p^3*q^4)*log(d))
```

giac [B] time = 0.43, size = 3481, normalized size = 20.60

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="giac")
```

```
[Out] -1/2*(f*x + e)*b^2*p^2*q^2*log(f*x + e)/(b^5*f*p^5*q^5*log(f*x + e)^2 + 2*b
^5*f*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f*p^4*q^4*log(f*x + e)*log(c) + b^
5*f*p^3*q^5*log(d)^2 + 2*a*b^4*f*p^4*q^4*log(f*x + e) + 2*b^5*f*p^3*q^4*log
(c)*log(d) + b^5*f*p^3*q^3*log(c)^2 + 2*a*b^4*f*p^3*q^4*log(d) + 2*a*b^4*f*
p^3*q^3*log(c) + a^2*b^3*f*p^3*q^3) + 1/2*b^2*p^2*q^2*Ei(log(d)/p + log(c)/
(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q))*log(f*x + e)^2/((b^5*f*p^5
*q^5*log(f*x + e)^2 + 2*b^5*f*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f*p^4*q^4
*log(f*x + e)*log(c) + b^5*f*p^3*q^5*log(d)^2 + 2*a*b^4*f*p^4*q^4*log(f*x +
 e) + 2*b^5*f*p^3*q^4*log(c)*log(d) + b^5*f*p^3*q^3*log(c)^2 + 2*a*b^4*f*p^
3*q^4*log(d) + 2*a*b^4*f*p^3*q^3*log(c) + a^2*b^3*f*p^3*q^3)*c^(1/(p*q))*d^
(1/p)) - 1/2*(f*x + e)*b^2*p^2*q^2/(b^5*f*p^5*q^5*log(f*x + e)^2 + 2*b^5*f*
p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f*p^4*q^4*log(f*x + e)*log(c) + b^5*f*p
^3*q^5*log(d)^2 + 2*a*b^4*f*p^4*q^4*log(f*x + e) + 2*b^5*f*p^3*q^4*log(c)*l
og(d) + b^5*f*p^3*q^3*log(c)^2 + 2*a*b^4*f*p^3*q^4*log(d) + 2*a*b^4*f*p^3*q
^3*log(c) + a^2*b^3*f*p^3*q^3) - 1/2*(f*x + e)*b^2*p*q^2*log(d)/(b^5*f*p^5*
q^5*log(f*x + e)^2 + 2*b^5*f*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f*p^4*q^4*
log(f*x + e)*log(c) + b^5*f*p^3*q^5*log(d)^2 + 2*a*b^4*f*p^4*q^4*log(f*x +
e) + 2*b^5*f*p^3*q^4*log(c)*log(d) + b^5*f*p^3*q^3*log(c)^2 + 2*a*b^4*f*p^3
*q^4*log(d) + 2*a*b^4*f*p^3*q^3*log(c) + a^2*b^3*f*p^3*q^3) + b^2*p*q^2*Ei(
log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q))*log(f*x
+ e)*log(d)/((b^5*f*p^5*q^5*log(f*x + e)^2 + 2*b^5*f*p^4*q^5*log(f*x + e)*l
og(d) + 2*b^5*f*p^4*q^4*log(f*x + e)*log(c) + b^5*f*p^3*q^5*log(d)^2 + 2*a*
b^4*f*p^4*q^4*log(f*x + e) + 2*b^5*f*p^3*q^4*log(c)*log(d) + b^5*f*p^3*q^3*
log(c)^2 + 2*a*b^4*f*p^3*q^4*log(d) + 2*a*b^4*f*p^3*q^3*log(c) + a^2*b^3*f*
p^3*q^3)*c^(1/(p*q))*d^(1/p)) - 1/2*(f*x + e)*b^2*p*q*log(c)/(b^5*f*p^5*q^5
*log(f*x + e)^2 + 2*b^5*f*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f*p^4*q^4*log
(f*x + e)*log(c) + b^5*f*p^3*q^5*log(d)^2 + 2*a*b^4*f*p^4*q^4*log(f*x + e)
+ 2*b^5*f*p^3*q^4*log(c)*log(d) + b^5*f*p^3*q^3*log(c)^2 + 2*a*b^4*f*p^3*q^
4*log(d) + 2*a*b^4*f*p^3*q^3*log(c) + a^2*b^3*f*p^3*q^3) + b^2*p*q*Ei(log(d
)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q))*log(f*x + e)*
```

```
log(c)/((b^5*f*p^5*q^5*log(f*x + e)^2 + 2*b^5*f*p^4*q^5*log(f*x + e)*log(d)
 + 2*b^5*f*p^4*q^4*log(f*x + e)*log(c) + b^5*f*p^3*q^5*log(d)^2 + 2*a*b^4*f
*p^4*q^4*log(f*x + e) + 2*b^5*f*p^3*q^4*log(c)*log(d) + b^5*f*p^3*q^3*log(c
)^2 + 2*a*b^4*f*p^3*q^4*log(d) + 2*a*b^4*f*p^3*q^3*log(c) + a^2*b^3*f*p^3*q
^3)*c^(1/(p*q))*d^(1/p)) + 1/2*b^2*q^2*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*
q) + log(f*x + e))*e^(-a/(b*p*q))*log(d)^2/((b^5*f*p^5*q^5*log(f*x + e)^2 +
 2*b^5*f*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f*p^4*q^4*log(f*x + e)*log(c)
+ b^5*f*p^3*q^5*log(d)^2 + 2*a*b^4*f*p^4*q^4*log(f*x + e) + 2*b^5*f*p^3*q^4
*log(c)*log(d) + b^5*f*p^3*q^3*log(c)^2 + 2*a*b^4*f*p^3*q^4*log(d) + 2*a*b^
4*f*p^3*q^3*log(c) + a^2*b^3*f*p^3*q^3)*c^(1/(p*q))*d^(1/p)) - 1/2*(f*x + e
)*a*b*p*q/(b^5*f*p^5*q^5*log(f*x + e)^2 + 2*b^5*f*p^4*q^5*log(f*x + e)*log(
d) + 2*b^5*f*p^4*q^4*log(f*x + e)*log(c) + b^5*f*p^3*q^5*log(d)^2 + 2*a*b^4
*f*p^4*q^4*log(f*x + e) + 2*b^5*f*p^3*q^4*log(c)*log(d) + b^5*f*p^3*q^3*log
(c)^2 + 2*a*b^4*f*p^3*q^4*log(d) + 2*a*b^4*f*p^3*q^3*log(c) + a^2*b^3*f*p^3
*q^3) + a*b*p*q*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-
a/(b*p*q))*log(f*x + e)/((b^5*f*p^5*q^5*log(f*x + e)^2 + 2*b^5*f*p^4*q^5*lo
g(f*x + e)*log(d) + 2*b^5*f*p^4*q^4*log(f*x + e)*log(c) + b^5*f*p^3*q^5*log
(d)^2 + 2*a*b^4*f*p^4*q^4*log(f*x + e) + 2*b^5*f*p^3*q^4*log(c)*log(d) + b^
5*f*p^3*q^3*log(c)^2 + 2*a*b^4*f*p^3*q^4*log(d) + 2*a*b^4*f*p^3*q^3*log(c)
+ a^2*b^3*f*p^3*q^3)*c^(1/(p*q))*d^(1/p)) + b^2*q*Ei(log(d)/p + log(c)/(p*q
) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q))*log(c)*log(d)/((b^5*f*p^5*q^5*
log(f*x + e)^2 + 2*b^5*f*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f*p^4*q^4*log(
f*x + e)*log(c) + b^5*f*p^3*q^5*log(d)^2 + 2*a*b^4*f*p^4*q^4*log(f*x + e) +
 2*b^5*f*p^3*q^4*log(c)*log(d) + b^5*f*p^3*q^3*log(c)^2 + 2*a*b^4*f*p^3*q^4
*log(d) + 2*a*b^4*f*p^3*q^3*log(c) + a^2*b^3*f*p^3*q^3)*c^(1/(p*q))*d^(1/p)
) + 1/2*b^2*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b
*p*q))*log(c)^2/((b^5*f*p^5*q^5*log(f*x + e)^2 + 2*b^5*f*p^4*q^5*log(f*x +
e)*log(d) + 2*b^5*f*p^4*q^4*log(f*x + e)*log(c) + b^5*f*p^3*q^5*log(d)^2 +
2*a*b^4*f*p^4*q^4*log(f*x + e) + 2*b^5*f*p^3*q^4*log(c)*log(d) + b^5*f*p^3*
q^3*log(c)^2 + 2*a*b^4*f*p^3*q^4*log(d) + 2*a*b^4*f*p^3*q^3*log(c) + a^2*b^
3*f*p^3*q^3)*c^(1/(p*q))*d^(1/p)) + a*b*q*Ei(log(d)/p + log(c)/(p*q) + a/(b
*p*q) + log(f*x + e))*e^(-a/(b*p*q))*log(d)/((b^5*f*p^5*q^5*log(f*x + e)^2
+ 2*b^5*f*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f*p^4*q^4*log(f*x + e)*log(c)
 + b^5*f*p^3*q^5*log(d)^2 + 2*a*b^4*f*p^4*q^4*log(f*x + e) + 2*b^5*f*p^3*q^
4*log(c)*log(d) + b^5*f*p^3*q^3*log(c)^2 + 2*a*b^4*f*p^3*q^4*log(d) + 2*a*b
^4*f*p^3*q^3*log(c) + a^2*b^3*f*p^3*q^3)*c^(1/(p*q))*d^(1/p)) + a*b*Ei(log(
d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q))*log(c)/((b^5
*f*p^5*q^5*log(f*x + e)^2 + 2*b^5*f*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f*p
^4*q^4*log(f*x + e)*log(c) + b^5*f*p^3*q^5*log(d)^2 + 2*a*b^4*f*p^4*q^4*log
(f*x + e) + 2*b^5*f*p^3*q^4*log(c)*log(d) + b^5*f*p^3*q^3*log(c)^2 + 2*a*b^
4*f*p^3*q^4*log(d) + 2*a*b^4*f*p^3*q^3*log(c) + a^2*b^3*f*p^3*q^3)*c^(1/(p*
q))*d^(1/p)) + 1/2*a^2*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e
))*e^(-a/(b*p*q))/((b^5*f*p^5*q^5*log(f*x + e)^2 + 2*b^5*f*p^4*q^5*log(f*x
+ e)*log(d) + 2*b^5*f*p^4*q^4*log(f*x + e)*log(c) + b^5*f*p^3*q^5*log(d)^2
+ 2*a*b^4*f*p^4*q^4*log(f*x + e) + 2*b^5*f*p^3*q^4*log(c)*log(d) + b^5*f*p^
3*q^3*log(c)^2 + 2*a*b^4*f*p^3*q^4*log(d) + 2*a*b^4*f*p^3*q^3*log(c) + a^2*
b^3*f*p^3*q^3)*c^(1/(p*q))*d^(1/p))
```

maple [F] time = 0.08, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(b \ln \left(c \left(d \left(f x + e\right)^{p}\right)^{q}\right) + a\right)^{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*ln(c*(d*(f*x+e)^p)^q)+a)^3,x)
```

```
[Out] int(1/(b*ln(c*(d*(f*x+e)^p)^q)+a)^3,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{\left(epq + eq\log(d) + e\log(c)\right)b + ae + \left(\left(fpq + fq\log(d) + f\right.\right.}{2\left(b^4fp^2q^2\log\left(\left(\left(fx+e\right)^p\right)^q\right)^2 + a^2b^2fp^2q^2 + 2\left(fp^2q^3\log(d) + fp^2q^2\log(c)\right)ab^3 + \left(fp^2q^4\log(d)^2 + 2\,fp^2q^3\log\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="maxima")
```

```
[Out] -1/2*((e*p*q + e*q*log(d) + e*log(c))*b + a*e + ((f*p*q + f*q*log(d) + f*lo
g(c))*b + a*f)*x + (b*f*x + b*e)*log(((f*x + e)^p)^q))/(b^4*f*p^2*q^2*log((
(f*x + e)^p)^q)^2 + a^2*b^2*f*p^2*q^2 + 2*(f*p^2*q^3*log(d) + f*p^2*q^2*log
(c))*a*b^3 + (f*p^2*q^4*log(d)^2 + 2*f*p^2*q^3*log(c)*log(d) + f*p^2*q^2*lo
g(c)^2)*b^4 + 2*(a*b^3*f*p^2*q^2 + (f*p^2*q^3*log(d) + f*p^2*q^2*log(c))*b^
4)*log(((f*x + e)^p)^q)) + integrate(1/2/(b^3*p^2*q^2*log(((f*x + e)^p)^q)
+ a*b^2*p^2*q^2 + (p^2*q^3*log(d) + p^2*q^2*log(c))*b^3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{\left(a+b\,\ln\left(c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right)\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*log(c*(d*(e + f*x)^p)^q))^3,x)
```

```
[Out] int(1/(a + b*log(c*(d*(e + f*x)^p)^q))^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a + b\log\left(c\left(d\left(e+fx\right)^p\right)^q\right)\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(d*(f*x+e)**p)**q))**3,x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**(-3), x)
```

3.458 $\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3},x\right)$$

```
[Out] Unintegrable(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q))^3,x)
```

Rubi [A] time = 0.07, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3),x]
[Out] Defer[Int][1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3), x]
```

Rubi steps

$$\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}\,dx=\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}\,dx$$

Mathematica [A] time = 1.64, size = 0, normalized size = 0.00

$$\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3),x]
[Out] Integrate[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3), x]
```

fricas [A] time = 0.50, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{1}{a^3hx+a^3g+\left(b^3hx+b^3g\right)\log\left(\left(\left(fx+e\right)^pd\right)^qc\right)^3+3\left(ab^2hx+ab^2g\right)\log\left(\left(\left(fx+e\right)^pd\right)^qc\right)^2+3\left(a^2\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="fricas")
[Out] integral(1/(a^3*h*x + a^3*g + (b^3*h*x + b^3*g)*log(((f*x + e)^p*d)^q*c)^3
+ 3*(a*b^2*h*x + a*b^2*g)*log(((f*x + e)^p*d)^q*c)^2 + 3*(a^2*b*h*x + a^2*b
*g)*log(((f*x + e)^p*d)^q*c)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(hx+g)\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="giac")
[Out] integrate(1/((h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a)^3), x)
```

maple [A] time = 0.35, size = 0, normalized size = 0.00

$$\int \frac{1}{(hx+g)\left(b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)+a\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(h*x+g)/(b*ln(c*(d*(f*x+e)^p)^q)+a)^3,x)
[Out] int(1/(h*x+g)/(b*ln(c*(d*(f*x+e)^p)^q)+a)^3,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="maxima")
[Out] -1/2*(b*f^2*h*p*q*x^2 + (e*f*g - e^2*h)*a + (e*f*g*p*q + (e*f*g - e^2*h)*lo
g(c) + (e*f*g*q - e^2*h*q)*log(d))*b + ((f^2*g - e*f*h)*a + (f^2*g*p*q + e*
f*h*p*q + (f^2*g - e*f*h)*log(c) + (f^2*g*q - e*f*h*q)*log(d))*b)*x + ((f^2
*g - e*f*h)*b*x + (e*f*g - e^2*h)*b)*log(((f*x + e)^p)^q))/(a^2*b^2*f^2*g^2
*p^2*q^2 + 2*(f^2*g^2*p^2*q^3*log(d) + f^2*g^2*p^2*q^2*log(c))*a*b^3 + (f^2
*g^2*p^2*q^4*log(d)^2 + 2*f^2*g^2*p^2*q^3*log(c)*log(d) + f^2*g^2*p^2*q^2*l
og(c)^2)*b^4 + (a^2*b^2*f^2*h^2*p^2*q^2 + 2*(f^2*h^2*p^2*q^3*log(d) + f^2*h
^2*p^2*q^2*log(c))*a*b^3 + (f^2*h^2*p^2*q^4*log(d)^2 + 2*f^2*h^2*p^2*q^3*lo
g(c)*log(d) + f^2*h^2*p^2*q^2*log(c)^2)*b^4)*x^2 + (b^4*f^2*h^2*p^2*q^2*x^2
 + 2*b^4*f^2*g*h*p^2*q^2*x + b^4*f^2*g^2*p^2*q^2)*log(((f*x + e)^p)^q)^2 +
2*(a^2*b^2*f^2*g*h*p^2*q^2 + 2*(f^2*g*h*p^2*q^3*log(d) + f^2*g*h*p^2*q^2*lo
g(c))*a*b^3 + (f^2*g*h*p^2*q^4*log(d)^2 + 2*f^2*g*h*p^2*q^3*log(c)*log(d) +
 f^2*g*h*p^2*q^2*log(c)^2)*b^4)*x + 2*(a*b^3*f^2*g^2*p^2*q^2 + (f^2*g^2*p^2
*q^3*log(d) + f^2*g^2*p^2*q^2*log(c))*b^4 + (a*b^3*f^2*h^2*p^2*q^2 + (f^2*h
^2*p^2*q^3*log(d) + f^2*h^2*p^2*q^2*log(c))*b^4)*x^2 + 2*(a*b^3*f^2*g*h*p^2
*q^2 + (f^2*g*h*p^2*q^3*log(d) + f^2*g*h*p^2*q^2*log(c))*b^4)*x)*log(((f*x
+ e)^p)^q)) + integrate(1/2*(f^2*g^2 - 3*e*f*g*h + 2*e^2*h^2 - (f^2*g*h - e
*f*h^2)*x)/(a*b^2*f^2*g^3*p^2*q^2 + (f^2*g^3*p^2*q^3*log(d) + f^2*g^3*p^2*q
^2*log(c))*b^3 + (a*b^2*f^2*h^3*p^2*q^2 + (f^2*h^3*p^2*q^3*log(d) + f^2*h^3
*p^2*q^2*log(c))*b^3)*x^3 + 3*(a*b^2*f^2*g*h^2*p^2*q^2 + (f^2*g*h^2*p^2*q^3
*log(d) + f^2*g*h^2*p^2*q^2*log(c))*b^3)*x^2 + 3*(a*b^2*f^2*g^2*h*p^2*q^2 +
 (f^2*g^2*h*p^2*q^3*log(d) + f^2*g^2*h*p^2*q^2*log(c))*b^3)*x + (b^3*f^2*h^
3*p^2*q^2*x^3 + 3*b^3*f^2*g*h^2*p^2*q^2*x^2 + 3*b^3*f^2*g^2*h*p^2*q^2*x + b
^3*f^2*g^3*p^2*q^2)*log(((f*x + e)^p)^q)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{(g+h\,x)\,\left(a+b\,\ln\left(c\,\left(d\,\left(e+f\,x\right)^{p}\right)^{q}\right)\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((g + h*x)*(a + b*log(c*(d*(e + f*x)^p)^q))^3),x)
```

```
[Out] int(1/((g + h*x)*(a + b*log(c*(d*(e + f*x)^p)^q))^3), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a + b \log \left(c \left(d \left(e + f x\right)^{p}\right)^{q}\right)\right)^{3} \left(g + h x\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)**p)**q))**3,x)
```

```
[Out] Integral(1/((a + b*log(c*(d*(e + f*x)**p)**q))**3*(g + h*x)), x)
```

3.459 $\int \frac{1}{(g+hx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{1}{(g+hx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3},x\right)$$

```
[Out] Unintegrable(1/(h*x+g)^2/(a+b*ln(c*(d*(f*x+e)^p)^q))^3,x)
```

Rubi [A] time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(g+hx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^3),x]
[Out] Defer[Int][1/((g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^3), x]
```

Rubi steps

$$\int \frac{1}{(g+hx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}\,dx = \int \frac{1}{(g+hx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}\,dx$$

Mathematica [A] time = 39.71, size = 0, normalized size = 0.00

$$\int \frac{1}{(g+hx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^3),x]
[Out] Integrate[1/((g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^3), x]
```

fricas [A] time = 0.50, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{1}{a^3h^2x^2+2a^3ghx+a^3g^2+\left(b^3h^2x^2+2b^3ghx+b^3g^2\right)\log\left(\left(\left(fx+e\right)^pd\right)^qc\right)^3+3\left(ab^2h^2x^2+2ab^2ghx+\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="fricas")
[Out] integral(1/(a^3*h^2*x^2 + 2*a^3*g*h*x + a^3*g^2 + (b^3*h^2*x^2 + 2*b^3*g*h*
x + b^3*g^2)*log(((f*x + e)^p*d)^q*c)^3 + 3*(a*b^2*h^2*x^2 + 2*a*b^2*g*h*x
```

+ a*b^2*g^2)*log(((f*x + e)^p*d)^q*c)^2 + 3*(a^2*b*h^2*x^2 + 2*a^2*b*g*h*x + a^2*b*g^2)*log(((f*x + e)^p*d)^q*c)), x)

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(hx+g)^2\left(b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(1/(h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="giac")

[Out] integrate(1/((h*x + g)^2*(b*log(((f*x + e)^p*d)^q*c) + a)^3), x)

maple [A] time = 0.35, size = 0, normalized size = 0.00

$$\int \frac{1}{(hx+g)^2\left(b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)+a\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(1/(h*x+g)^2/(b*ln(c*(d*(f*x+e)^p)^q)+a)^3,x)

[Out] int(1/(h*x+g)^2/(b*ln(c*(d*(f*x+e)^p)^q)+a)^3,x)

maxima [A] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(1/(h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="maxima")

[Out] 1/2*((a*f^2*h - (f^2*h*p*q - f^2*h*q*log(d) - f^2*h*log(c))*b)*x^2 - (e*f*g - 2*e^2*h)*a - (e*f*g*p*q + (e*f*g - 2*e^2*h)*log(c) + (e*f*g*q - 2*e^2*h*q)*log(d))*b - ((f^2*g - 3*e*f*h)*a + (f^2*g*p*q + e*f*h*p*q + (f^2*g - 3*e*f*h)*log(c) + (f^2*g*q - 3*e*f*h*q)*log(d))*b)*x + (b*f^2*h*x^2 - (f^2*g - 3*e*f*h)*b*x - (e*f*g - 2*e^2*h)*b)*log(((f*x + e)^p)^q))/(a^2*b^2*f^2*g^3*p^2*q^2 + 2*(f^2*g^3*p^2*q^3*log(d) + f^2*g^3*p^2*q^2*log(c))*a*b^3 + (f^2*g^3*p^2*q^4*log(d)^2 + 2*f^2*g^3*p^2*q^3*log(c)*log(d) + f^2*g^3*p^2*q^2*log(c)^2)*b^4 + (a^2*b^2*f^2*h^3*p^2*q^2 + 2*(f^2*h^3*p^2*q^3*log(d) + f^2*h^3*p^2*q^2*log(c))*a*b^3 + (f^2*h^3*p^2*q^4*log(d)^2 + 2*f^2*h^3*p^2*q^3*log(c)*log(d) + f^2*h^3*p^2*q^2*log(c)^2)*b^4)*x^3 + 3*(a^2*b^2*f^2*g*h^2*p^2*q^2 + 2*(f^2*g*h^2*p^2*q^3*log(d) + f^2*g*h^2*p^2*q^2*log(c))*a*b^3 + (f^2*g*h^2*p^2*q^4*log(d)^2 + 2*f^2*g*h^2*p^2*q^3*log(c)*log(d) + f^2*g*h^2*p^2*q^2*log(c)^2)*b^4)*x^2 + (b^4*f^2*h^3*p^2*q^2*x^3 + 3*b^4*f^2*g*h^2*p^2*q^2*x^2 + 3*b^4*f^2*g^2*h*p^2*q^2*x + b^4*f^2*g^3*p^2*q^2)*log(((f*x + e)^p)^q)^2 + 3*(a^2*b^2*f^2*g^2*h*p^2*q^2 + 2*(f^2*g^2*h*p^2*q^3*log(d) + f^2*g^2*h*p^2*q^2*log(c))*a*b^3 + (f^2*g^2*h*p^2*q^4*log(d)^2 + 2*f^2*g^2*h*p^2*q^3*log(c)*log(d) + f^2*g^2*h*p^2*q^2*log(c)^2)*b^4)*x + 2*(a*b^3*f^2*g^3*p^2*q^2 + (f^2*g^3*p^2*q^3*log(d) + f^2*g^3*p^2*q^2*log(c))*b^4 + (a*b^3*f^2*h^3*p^2*q^2 + (f^2*h^3*p^2*q^3*log(d) + f^2*h^3*p^2*q^2*log(c))*b^4)*x^3 + 3*(a*b^3*f^2*g*h^2*p^2*q^2 + (f^2*g*h^2*p^2*q^3*log(d) + f^2*g*h^2*p^2*q^2*log(c))*b^4)*x^2 + 3*(a*b^3*f^2*g^2*h*p^2*q^2 + (f^2*g^2*h*p^2*q^3*log(d) + f^2*g^2*h*p^2*q^2*log(c))*b^4)*x)*log(((f*x + e)^p)^q)) + integrate(1/2*(f^2*h^2*x^2 + f^2*g^2 - 6*e*f*g*h + 6*e^2*h^2 - 2*(2*f^2*g*h - 3*e*f*h^2)*x)/(a*b^2*f^2*g^4*p^2*q^2 + (a*b^2*f^2*h^4*p^2*q^2 + (f^2*h^4*p^2*q^3*log(d) + f^2*h^4*p^2*q^2*log(c))*b^3)*x^4 + (f^2*g^4*p^2*q^3*log(d) + f^2*g^4*p^2*q^2*log(c))*b^3 + 4*(a*b^2*f^2*g*h^3*p^2*q^2 + (f^2*g*h^3*p^2*q^3*log(d) + f

```
^2*g*h^3*p^2*q^2*log(c))*b^3)*x^3 + 6*(a*b^2*f^2*g^2*h^2*p^2*q^2 + (f^2*g^2
*h^2*p^2*q^3*log(d) + f^2*g^2*h^2*p^2*q^2*log(c))*b^3)*x^2 + 4*(a*b^2*f^2*g
^3*h*p^2*q^2 + (f^2*g^3*h*p^2*q^3*log(d) + f^2*g^3*h*p^2*q^2*log(c))*b^3)*x
 + (b^3*f^2*h^4*p^2*q^2*x^4 + 4*b^3*f^2*g*h^3*p^2*q^2*x^3 + 6*b^3*f^2*g^2*h
^2*p^2*q^2*x^2 + 4*b^3*f^2*g^3*h*p^2*q^2*x + b^3*f^2*g^4*p^2*q^2)*log(((f*x
 + e)^p)^q)), x)
```

mupad [**A**] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{{\left(g+h\,x\right)}^2\,{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((g + h*x)^2*(a + b*log(c*(d*(e + f*x)^p)^q))^3),x)
```

```
[Out] int(1/((g + h*x)^2*(a + b*log(c*(d*(e + f*x)^p)^q))^3), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)**2/(a+b*ln(c*(d*(f*x+e)**p)**q))**3,x)
```

```
[Out] Timed out
```

3.460 $\int (g+hx)^2\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$

Optimal. Leaf size=488

$$-\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}\,h\sqrt{p}\,\sqrt{q}\,(e+fx)^2e^{-\frac{2a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\text{erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{2f^3}-\sqrt{\pi}\sqrt{b}\sqrt{p}\sqrt{q}\,(e\cdots$$

```
[Out] -1/18*h^2*(f*x+e)^3*erfi(3^(1/2)*(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/b^(1/2)/
p^(1/2)/q^(1/2))*b^(1/2)*p^(1/2)*3^(1/2)*Pi^(1/2)*q^(1/2)/exp(3*a/b/p/q)/f^
3/((c*(d*(f*x+e)^p)^q)^(3/p/q))-1/4*h*(-e*h+f*g)*(f*x+e)^2*erfi(2^(1/2)*(a+
b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/b^(1/2)/p^(1/2)/q^(1/2))*b^(1/2)*p^(1/2)*2^(
1/2)*Pi^(1/2)*q^(1/2)/exp(2*a/b/p/q)/f^3/((c*(d*(f*x+e)^p)^q)^(2/p/q))-1/2*
(-e*h+f*g)^2*(f*x+e)*erfi((a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/b^(1/2)/p^(1/2)
/q^(1/2))*b^(1/2)*p^(1/2)*Pi^(1/2)*q^(1/2)/exp(a/b/p/q)/f^3/((c*(d*(f*x+e)^
p)^q)^(1/p/q))+(-e*h+f*g)^2*(f*x+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/f^3+h
*(-e*h+f*g)*(f*x+e)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/f^3+1/3*h^2*(f*x+e)
^3*(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/f^3
```

Rubi [A] time = 1.61, antiderivative size = 488, normalized size of antiderivative = 1.00, number of steps used = 18, number of rules used = 10, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.333$, Rules used = {2401, 2389, 2296, 2300, 2180, 2204, 2390, 2305, 2310, 2445}

$$-\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}\,h\sqrt{p}\,\sqrt{q}\,(e+fx)^2e^{-\frac{2a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\text{Erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{2f^3}-\sqrt{\pi}\sqrt{b}\sqrt{p}\sqrt{q}\,(e\cdots$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)^2*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]],x]
```

```
[Out] -(Sqrt[b]*(f*g - e*h)^2*Sqrt[p]*Sqrt[Pi]*Sqrt[q]*(e + f*x)*Erfi[Sqrt[a + b*
Log[c*(d*(e + f*x)^p)^q]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(2*E^(a/(b*p*q))*f^3*
(c*(d*(e + f*x)^p)^q)^(1/(p*q))) - (Sqrt[b]*h*(f*g - e*h)*Sqrt[p]*Sqrt[Pi/2
]*Sqrt[q]*(e + f*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(
Sqrt[b]*Sqrt[p]*Sqrt[q])])/(2*E^((2*a)/(b*p*q))*f^3*(c*(d*(e + f*x)^p)^q)^(
2/(p*q))) - (Sqrt[b]*h^2*Sqrt[p]*Sqrt[Pi/3]*Sqrt[q]*(e + f*x)^3*Erfi[(Sqrt[
3]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(6*E^(
(3*a)/(b*p*q))*f^3*(c*(d*(e + f*x)^p)^q)^(3/(p*q))) + ((f*g - e*h)^2*(e + f
*x)*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/f^3 + (h*(f*g - e*h)*(e + f*x)^2*
Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/f^3 + (h^2*(e + f*x)^3*Sqrt[a + b*Log
[c*(d*(e + f*x)^p)^q]])/(3*f^3)
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int (g+hx)^2\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx = \text{Subst}\left(\int (g+hx)^2\sqrt{a+b\log\left(cd^q(e+fx)^{pq}\right)}\,dx, cd^q(e+fx)^{p}\right.$$

$$= \text{Subst}\left(\int\left(\frac{(fg-eh)^2\sqrt{a+b\log\left(cd^q(e+fx)^{pq}\right)}}{f^2} + \frac{2h(fg-eh}{}\right.\right.$$

$$= \text{Subst}\left(\frac{h^2\int (e+fx)^2\sqrt{a+b\log\left(cd^q(e+fx)^{pq}\right)}\,dx}{f^2}, cd^q(e+fx\right.$$

$$= \text{Subst}\left(\frac{h^2\,\text{Subst}\left(\int x^2\sqrt{a+b\log\left(cd^qx^{pq}\right)}\,dx, x, e+fx\right)}{f^3}, cd^q(e\right.$$

$$= \frac{(fg-eh)^2(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{f^3} + \frac{h(fg-eh)(e}{}$$

$$= \frac{(fg-eh)^2(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{f^3} + \frac{h(fg-eh)(e}{}$$

$$= \frac{(fg-eh)^2(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{f^3} + \frac{h(fg-eh)(e}{}$$

$$= -\frac{\sqrt{b}\,e^{-\frac{a}{bpq}}(fg-eh)^2\sqrt{p}\,\sqrt{\pi}\,\sqrt{q}\,(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{erf}}{2f^3}$$

Mathematica [A] time = 0.69, size = 458, normalized size = 0.94

$$\frac{(e+fx)\left(9\sqrt{2\pi}\,\sqrt{b}\,h\sqrt{p}\,\sqrt{q}\,(e+fx)e^{-\frac{2a}{bpq}}(eh-fg)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\text{erfi}\left(\frac{\sqrt{2}\,\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\right)-18\sqrt{\pi}\,\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)^2*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]],x]
```

```
[Out] ((e + f*x)*((-18*Sqrt[b]*(f*g - e*h)^2*Sqrt[p]*Sqrt[Pi]*Sqrt[q]*Erfi[Sqrt[a
 + b*Log[c*(d*(e + f*x)^p)^q]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(E^(a/(b*p*q))*(
c*(d*(e + f*x)^p)^q)^(1/(p*q))) + (9*Sqrt[b]*h*(-(f*g) + e*h)*Sqrt[p]*Sqrt[
2*Pi]*Sqrt[q]*(e + f*x)*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])
/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(E^((2*a)/(b*p*q))*(c*(d*(e + f*x)^p)^q)^(2/(p
*q))) - (2*Sqrt[b]*h^2*Sqrt[p]*Sqrt[3*Pi]*Sqrt[q]*(e + f*x)^2*Erfi[(Sqrt[3]
*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(E^((3*a
)/(b*p*q))*(c*(d*(e + f*x)^p)^q)^(3/(p*q))) + 36*(f*g - e*h)^2*Sqrt[a + b*L
og[c*(d*(e + f*x)^p)^q]] + 36*h*(f*g - e*h)*(e + f*x)*Sqrt[a + b*Log[c*(d*(
e + f*x)^p)^q]] + 12*h^2*(e + f*x)^2*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]))
/(36*f^3)
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="fricas
")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (hx+g)^2\sqrt{b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="giac")
```

```
[Out] integrate((h*x + g)^2*sqrt(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

maple [F] time = 0.34, size = 0, normalized size = 0.00

$$\int (hx+g)^2\sqrt{b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)+a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^2*(b*ln(c*(d*(f*x+e)^p)^q)+a)^(1/2),x)
```

```
[Out] int((h*x+g)^2*(b*ln(c*(d*(f*x+e)^p)^q)+a)^(1/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (hx+g)^2\sqrt{b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="maxima
")
```

```
[Out] integrate((h*x + g)^2*sqrt(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (g+h\,x)^2\,\sqrt{a+b\,\ln\left(c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)^2*(a + b*log(c*(d*(e + f*x)^p)^q))^(1/2),x)
```

```
[Out] int((g + h*x)^2*(a + b*log(c*(d*(e + f*x)^p)^q))^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{a+b\log\left(c\left(d\left(e+fx\right)^p\right)^q\right)}\,\left(g+hx\right)^2\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**2*(a+b*ln(c*(d*(f*x+e)**p)**q))**(1/2),x)
[Out] Integral(sqrt(a + b*log(c*(d*(e + f*x)**p)**q))*(g + h*x)**2, x)
```

3.461 $\int (g+hx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$

Optimal. Leaf size=311

$$-\frac{\sqrt{\pi}\sqrt{b}\sqrt{p}\sqrt{q}(e+fx)e^{-\frac{a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{2f^2}-\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}h\sqrt{p}\sqrt{q}(e+fx)^2e}{}$$

```
[Out] -1/8*h*(f*x+e)^2*erfi(2^(1/2)*(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/b^(1/2)/p^(
1/2)/q^(1/2))*b^(1/2)*p^(1/2)*2^(1/2)*Pi^(1/2)*q^(1/2)/exp(2*a/b/p/q)/f^2/(
(c*(d*(f*x+e)^p)^q)^(2/p/q))-1/2*(-e*h+f*g)*(f*x+e)*erfi((a+b*ln(c*(d*(f*x+
e)^p)^q))^(1/2)/b^(1/2)/p^(1/2)/q^(1/2))*b^(1/2)*p^(1/2)*Pi^(1/2)*q^(1/2)/e
xp(a/b/p/q)/f^2/((c*(d*(f*x+e)^p)^q)^(1/p/q))+(-e*h+f*g)*(f*x+e)*(a+b*ln(c*
(d*(f*x+e)^p)^q))^(1/2)/f^2+1/2*h*(f*x+e)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/
2)/f^2
```

Rubi [A] time = 0.81, antiderivative size = 311, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 10, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.357, Rules used = {2401, 2389, 2296, 2300, 2180, 2204, 2390, 2305, 2310, 2445}

$$-\frac{\sqrt{\pi}\sqrt{b}\sqrt{p}\sqrt{q}(e+fx)e^{-\frac{a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{2f^2}-\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}h\sqrt{p}\sqrt{q}(e+fx)^2e}{}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]],x]
```

```
[Out] -(Sqrt[b]*(f*g - e*h)*Sqrt[p]*Sqrt[Pi]*Sqrt[q]*(e + f*x)*Erfi[Sqrt[a + b*Lo
g[c*(d*(e + f*x)^p)^q]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(2*E^(a/(b*p*q))*f^2*(c
*(d*(e + f*x)^p)^q)^(1/(p*q))) - (Sqrt[b]*h*Sqrt[p]*Sqrt[Pi/2]*Sqrt[q]*(e +
 f*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p
]*Sqrt[q])])/(4*E^((2*a)/(b*p*q))*f^2*(c*(d*(e + f*x)^p)^q)^(2/(p*q))) + ((
f*g - e*h)*(e + f*x)*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/f^2 + (h*(e + f*
x)^2*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(2*f^2)
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] && !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int (g+hx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx = \text{Subst}\left(\int (g+hx)\sqrt{a+b\log\left(cd^q(e+fx)^{pq}\right)}\,dx, cd^q(e+fx)^{pq}, c\left(d\right.\right.$$

$$= \text{Subst}\left(\int \left(\frac{(fg-eh)\sqrt{a+b\log\left(cd^q(e+fx)^{pq}\right)}}{f} + \frac{h(e+fx)\sqrt{a+\right.}}{}\right.\right.$$

$$= \text{Subst}\left(\frac{h\int (e+fx)\sqrt{a+b\log\left(cd^q(e+fx)^{pq}\right)}\,dx}{f}, cd^q(e+fx)^{pq}, c\left(\right.\right.$$

$$= \text{Subst}\left(\frac{h\,\text{Subst}\left(\int x\sqrt{a+b\log\left(cd^qx^{pq}\right)}\,dx, x, e+fx\right)}{f^2}, cd^q(e+fx)^{p}\right.$$

$$= \frac{(fg-eh)(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{f^2} + \frac{h(e+fx)^2\sqrt{a+\right.}}{}$$

$$= \frac{(fg-eh)(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{f^2} + \frac{h(e+fx)^2\sqrt{a+\right.}}{}$$

$$= \frac{(fg-eh)(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{f^2} + \frac{h(e+fx)^2\sqrt{a+\right.}}{}$$

$$= -\frac{\sqrt{b}\,e^{-\frac{a}{bpq}}(fg-eh)\sqrt{p}\sqrt{\pi}\sqrt{q}\,(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{erfi}\left(\frac{\sqrt{a}}{}\right.}{2f^2}$$

Mathematica [A] time = 0.39, size = 298, normalized size = 0.96

$$-\frac{(e+fx)e^{-\frac{2a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\left(4\sqrt{\pi}\sqrt{b}\sqrt{p}\sqrt{q}\,e^{\frac{a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{\frac{1}{pq}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)+\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]],x]
```

```
[Out] -1/8*((e + f*x)*(4*Sqrt[b]*E^(a/(b*p*q))*(f*g - e*h)*Sqrt[p]*Sqrt[Pi]*Sqrt[
q]*(c*(d*(e + f*x)^p)^q)^(1/(p*q))*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]
]/(Sqrt[b]*Sqrt[p]*Sqrt[q])] + Sqrt[b]*h*Sqrt[p]*Sqrt[2*Pi]*Sqrt[q]*(e + f*
x)*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqr
t[q])] - 4*E^((2*a)/(b*p*q))*(c*(d*(e + f*x)^p)^q)^(2/(p*q))*(2*f*g - e*h +
 f*h*x)*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]))/(E^((2*a)/(b*p*q))*f^2*(c*(d
*(e + f*x)^p)^q)^(2/(p*q)))
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (hx+g)\sqrt{b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="giac")
```

```
[Out] integrate((h*x + g)*sqrt(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

maple [F] time = 0.09, size = 0, normalized size = 0.00

$$\int \left(hx+g\right)\sqrt{b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)*(b*ln(c*(d*(f*x+e)^p)^q)+a)^(1/2),x)
```

```
[Out] int((h*x+g)*(b*ln(c*(d*(f*x+e)^p)^q)+a)^(1/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (hx+g)\sqrt{b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((h*x + g)*sqrt(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \left(g+h\,x\right)\,\sqrt{a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)*(a + b*log(c*(d*(e + f*x)^p)^q))^(1/2),x)
```

```
[Out] int((g + h*x)*(a + b*log(c*(d*(e + f*x)^p)^q))^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{a+b\log\left(c\left(d\left(e+fx\right)^p\right)^q\right)}\left(g+hx\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*ln(c*(d*(f*x+e)**p)**q))**(1/2),x)
```

```
[Out] Integral(sqrt(a + b*log(c*(d*(e + f*x)**p)**q))*(g + h*x), x)
```

3.462 $\int \sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$

Optimal. Leaf size=139

$$\frac{(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{f}-\frac{\sqrt{\pi}\sqrt{b}\sqrt{p}\sqrt{q}\,(e+fx)e^{-\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\operatorname{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{2f}$$

```
[Out] -1/2*(f*x+e)*erfi((a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/b^(1/2)/p^(1/2)/q^(1/2)
)*b^(1/2)*p^(1/2)*Pi^(1/2)*q^(1/2)/exp(a/b/p/q)/f/((c*(d*(f*x+e)^p)^q)^(1/p
/q))+(f*x+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/f
```

Rubi [A] time = 0.22, antiderivative size = 139, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.273$, Rules used = {2389, 2296, 2300, 2180, 2204, 2445}

$$\frac{(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{f}-\frac{\sqrt{\pi}\sqrt{b}\sqrt{p}\sqrt{q}\,(e+fx)e^{-\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{2f}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]],x]
```

```
[Out] -(Sqrt[b]*Sqrt[p]*Sqrt[Pi]*Sqrt[q]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e +
f*x)^p)^q]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(2*E^(a/(b*p*q))*f*(c*(d*(e + f*x)^
p)^q)^(1/(p*q))) + ((e + f*x)*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/f
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
```

```
, b, c, d, e, n, p}, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] && !IntegerQ[n] && !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx = \text{Subst}\left(\int \sqrt{a+b\log\left(cd^q(e+fx)^{pq}\right)}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \sqrt{a+b\log\left(cd^qx^{pq}\right)}\,dx, x, e+fx\right)}{f}, cd^q(e+fx)^{pq}, c\left(d(e\right.\right.$$

$$= \frac{(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{f} - \text{Subst}\left(\frac{(bpq)\,\text{Subst}\left(\int \frac{1}{\sqrt{a+b\log(\cdot}}\right.}{2f}\right.$$

$$= \frac{(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{f} - \text{Subst}\left(\frac{\left(b(e+fx)\left(cd^q(e+fx)^{p}\right.\right.}{}\right.$$

$$= \frac{(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{f} - \text{Subst}\left(\frac{\left((e+fx)\left(cd^q(e+fx)^{pq}\right.\right.}{}\right.$$

$$= -\frac{\sqrt{b}\,e^{-\frac{a}{bpq}}\sqrt{p}\sqrt{\pi}\sqrt{q}\,(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^{p}\right.\right.}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right.}{2f}$$

Mathematica [A] time = 0.07, size = 134, normalized size = 0.96

$$\frac{(e+fx)\left(2\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)} - \sqrt{\pi}\sqrt{b}\sqrt{p}\sqrt{q}\,e^{-\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)\right)}{2f}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]],x]
```

```
[Out] ((e + f*x)*(-((Sqrt[b]*Sqrt[p]*Sqrt[Pi]*Sqrt[q]*Erfi[Sqrt[a + b*Log[c*(d*(e
 + f*x)^p)^q]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])]])/(E^(a/(b*p*q))*(c*(d*(e + f*x)^p
)^q)^(1/(p*q)))) + 2*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]))/(2*f)
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{b \log\left(\left(\left(fx+e\right)^{p} d\right)^{q} c\right) + a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

maple **[F]** time = 0.09, size = 0, normalized size = 0.00

$$\int \sqrt{b \ln\left(c \left(d \left(fx+e\right)^{p}\right)^{q}\right) + a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^(1/2),x)
```

```
[Out] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^(1/2),x)
```

maxima **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{b \log\left(\left(\left(fx+e\right)^{p} d\right)^{q} c\right) + a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.01

$$\int \sqrt{a + b\, \ln\left(c \left(d \left(e + f\, x\right)^{p}\right)^{q}\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^(1/2),x)
```

```
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))^(1/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{a + b \log\left(c \left(d \left(e + fx\right)^{p}\right)^{q}\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**(1/2),x)
```

```
[Out] Integral(sqrt(a + b*log(c*(d*(e + f*x)**p)**q)), x)
```

3.463 $\int \frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{g+hx}\,dx$

Optimal. Leaf size=33

$$\operatorname{Int}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{g+hx},x\right)$$

```
[Out] Unintegrable((a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/(h*x+g),x)
```

Rubi [A] time = 0.10, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{g+hx}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(g + h*x),x]
[Out] Defer[Int][Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(g + h*x), x]
```

Rubi steps

$$\int \frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{g+hx}\,dx=\int \frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{g+hx}\,dx$$

Mathematica [A] time = 1.25, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{g+hx}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(g + h*x),x]
[Out] Integrate[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(g + h*x), x]
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(1/2)/(h*x+g),x, algorithm="fricas")
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{b\log\left(\left((fx+e)^p d\right)^q c\right)+a}}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(1/2)/(h*x+g),x, algorithm="giac")
[Out] integrate(sqrt(b*log(((f*x + e)^p*d)^q*c) + a)/(h*x + g), x)
```

maple [A] time = 0.37, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{b \ln \left(c \left(d \left(f x+e\right)^{p}\right)^{q}\right)+a}}{h x+g}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^(1/2)/(h*x+g),x)
[Out] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^(1/2)/(h*x+g),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{b \log \left(\left(\left(f x+e\right)^{p} d\right)^{q} c\right)+a}}{h x+g}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(1/2)/(h*x+g),x, algorithm="maxima")
[Out] integrate(sqrt(b*log(((f*x + e)^p*d)^q*c) + a)/(h*x + g), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\sqrt{a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)}}{g+h\,x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^(1/2)/(g + h*x),x)
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))^(1/2)/(g + h*x), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{a+b \log \left(c \left(d \left(e+f x\right)^{p}\right)^{q}\right)}}{g+h x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**(1/2)/(h*x+g),x)
[Out] Integral(sqrt(a + b*log(c*(d*(e + f*x)**p)**q))/(g + h*x), x)
```

3.464 $\int \frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{(g+hx)^2}\,dx$

Optimal. Leaf size=33

$$\operatorname{Int}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{(g+hx)^2},x\right)$$

```
[Out] Unintegrable((a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/(h*x+g)^2,x)
```

Rubi [A] time = 0.15, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{(g+hx)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(g + h*x)^2,x]
```

```
[Out] Defer[Int][Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(g + h*x)^2, x]
```

Rubi steps

$$\int \frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{(g+hx)^2}\,dx=\int \frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{(g+hx)^2}\,dx$$

Mathematica [A] time = 0.39, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{(g+hx)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(g + h*x)^2,x]
```

```
[Out] Integrate[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(g + h*x)^2, x]
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(1/2)/(h*x+g)^2,x, algorithm="fricas
")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}}{\left(hx+g\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(1/2)/(h*x+g)^2,x, algorithm="giac")
[Out] integrate(sqrt(b*log(((f*x + e)^p*d)^q*c) + a)/(h*x + g)^2, x)
```

maple [A] time = 0.35, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)+a}}{\left(hx+g\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^(1/2)/(h*x+g)^2,x)
[Out] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^(1/2)/(h*x+g)^2,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}}{\left(hx+g\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(1/2)/(h*x+g)^2,x, algorithm="maxima
")
[Out] integrate(sqrt(b*log(((f*x + e)^p*d)^q*c) + a)/(h*x + g)^2, x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\sqrt{a+b\,\ln\left(c\left(d\left(e+f\,x\right)^{p}\right)^{q}\right)}}{\left(g+h\,x\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^(1/2)/(g + h*x)^2,x)
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))^(1/2)/(g + h*x)^2, x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)}}{\left(g+hx\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**(1/2)/(h*x+g)**2,x)
[Out] Integral(sqrt(a + b*log(c*(d*(e + f*x)**p)**q))/(g + h*x)**2, x)
```

3.465 $\int (g+hx)^2 \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}\,dx$

Optimal. Leaf size=625

$$\frac{3\sqrt{\frac{\pi}{2}}\,b^{3/2}hp^{3/2}q^{3/2}(e+fx)^2e^{-\frac{2a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\operatorname{erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{8f^3}+\frac{3\sqrt{\pi}\,b^{3/2}p^{3/2}q^{3/2}(\ldots}{}$$

```
[Out] (-e*h+f*g)^2*(f*x+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2)/f^3+h*(-e*h+f*g)*(f*
x+e)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2)/f^3+1/3*h^2*(f*x+e)^3*(a+b*ln(c*(d
*(f*x+e)^p)^q))^(3/2)/f^3+1/36*b^(3/2)*h^2*p^(3/2)*q^(3/2)*(f*x+e)^3*erfi(3
^(1/2)*(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/b^(1/2)/p^(1/2)/q^(1/2))*3^(1/2)*P
i^(1/2)/exp(3*a/b/p/q)/f^3/((c*(d*(f*x+e)^p)^q)^(3/p/q))+3/16*b^(3/2)*h*(-e
*h+f*g)*p^(3/2)*q^(3/2)*(f*x+e)^2*erfi(2^(1/2)*(a+b*ln(c*(d*(f*x+e)^p)^q))^
(1/2)/b^(1/2)/p^(1/2)/q^(1/2))*2^(1/2)*Pi^(1/2)/exp(2*a/b/p/q)/f^3/((c*(d*(
f*x+e)^p)^q)^(2/p/q))+3/4*b^(3/2)*(-e*h+f*g)^2*p^(3/2)*q^(3/2)*(f*x+e)*erfi
((a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/b^(1/2)/p^(1/2)/q^(1/2))*Pi^(1/2)/exp(a/
b/p/q)/f^3/((c*(d*(f*x+e)^p)^q)^(1/p/q))-3/2*b*(-e*h+f*g)^2*p*q*(f*x+e)*(a+
b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/f^3-3/4*b*h*(-e*h+f*g)*p*q*(f*x+e)^2*(a+b*ln
(c*(d*(f*x+e)^p)^q))^(1/2)/f^3-1/6*b*h^2*p*q*(f*x+e)^3*(a+b*ln(c*(d*(f*x+e)
^p)^q))^(1/2)/f^3
```

Rubi [A] time = 1.92, antiderivative size = 625, normalized size of antiderivative = 1.00, number of steps used = 21, number of rules used = 10, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {2401, 2389, 2296, 2300, 2180, 2204, 2390, 2305, 2310, 2445}

$$\frac{3\sqrt{\frac{\pi}{2}}\,b^{3/2}hp^{3/2}q^{3/2}(e+fx)^2e^{-\frac{2a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{8f^3}+\frac{3\sqrt{\pi}\,b^{3/2}p^{3/2}q^{3/2}(\ldots}{}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2),x]
```

```
[Out] (3*b^(3/2)*(f*g - e*h)^2*p^(3/2)*Sqrt[Pi]*q^(3/2)*(e + f*x)*Erfi[Sqrt[a + b
*Log[c*(d*(e + f*x)^p)^q]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(4*E^(a/(b*p*q))*f^3
*(c*(d*(e + f*x)^p)^q)^(1/(p*q))) + (3*b^(3/2)*h*(f*g - e*h)*p^(3/2)*Sqrt[P
i/2]*q^(3/2)*(e + f*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]
)/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(8*E^((2*a)/(b*p*q))*f^3*(c*(d*(e + f*x)^p)^q
)^(2/(p*q))) + (b^(3/2)*h^2*p^(3/2)*Sqrt[Pi/3]*q^(3/2)*(e + f*x)^3*Erfi[(Sq
rt[3]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(12
*E^((3*a)/(b*p*q))*f^3*(c*(d*(e + f*x)^p)^q)^(3/(p*q))) - (3*b*(f*g - e*h)^
2*p*q*(e + f*x)*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(2*f^3) - (3*b*h*(f*g
 - e*h)*p*q*(e + f*x)^2*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(4*f^3) - (b*
h^2*p*q*(e + f*x)^3*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(6*f^3) + ((f*g -
 e*h)^2*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2))/f^3 + (h*(f*g - e
*h)*(e + f*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2))/f^3 + (h^2*(e + f*x
)^3*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2))/(3*f^3)
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int (g+hx)^2 \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2} dx = \text{Subst}\left(\int (g+hx)^2 \left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^{3/2} dx, cd^q(e+\right.$$

$$= \text{Subst}\left(\int\left(\frac{(fg-eh)^2\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^{3/2}}{f^2}+\frac{2h(fg\right.\right.$$

$$= \text{Subst}\left(\frac{h^2\int(e+fx)^2\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^{3/2}dx}{f^2}, cd^q(e\right.$$

$$= \text{Subst}\left(\frac{h^2\,\text{Subst}\left(\int x^2\left(a+b\log\left(cd^qx^{pq}\right)\right)^{3/2}dx, x, e+fx\right)}{f^3},\right.$$

$$= \frac{(fg-eh)^2(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}{f^3}+\frac{h(fg-}{}$$

$$= -\frac{3b(fg-eh)^2pq(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{2f^3}-\frac{3bh}{}$$

$$= -\frac{3b(fg-eh)^2pq(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{2f^3}-\frac{3bh}{}$$

$$= -\frac{3b(fg-eh)^2pq(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{2f^3}-\frac{3bh}{}$$

$$= \frac{3b^{3/2}e^{-\frac{a}{bpq}}(fg-eh)^2p^{3/2}\sqrt{\pi}\,q^{3/2}(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}}{4f^3}$$

Mathematica [A] time = 1.41, size = 545, normalized size = 0.87

$$\frac{(e+fx)\left(108bpq(fg-eh)^2\left(\sqrt{\pi}\sqrt{b}\sqrt{p}\sqrt{q}\,e^{-\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)-2\sqrt{a+b\log}\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2),x]
```

```
[Out] ((e + f*x)*(144*(f*g - e*h)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2) + 144*
h*(f*g - e*h)*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2) + 48*h^2*(e
+ f*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2) + 4*b*h^2*p*q*(e + f*x)^2*(
(Sqrt[b]*Sqrt[p]*Sqrt[3*Pi]*Sqrt[q]*Erfi[(Sqrt[3]*Sqrt[a + b*Log[c*(d*(e +
f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(E^((3*a)/(b*p*q))*(c*(d*(e + f*x)
^p)^q)^(3/(p*q))) - 6*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]) + 27*b*h*(f*g -
 e*h)*p*q*(e + f*x)*((Sqrt[b]*Sqrt[p]*Sqrt[2*Pi]*Sqrt[q]*Erfi[(Sqrt[2]*Sqrt
```

```
[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(E^((2*a)/(b*
p*q))*(c*(d*(e + f*x)^p)^q)^(2/(p*q))) - 4*Sqrt[a + b*Log[c*(d*(e + f*x)^p)
^q]]) + 108*b*(f*g - e*h)^2*p*q*((Sqrt[b]*Sqrt[p]*Sqrt[Pi]*Sqrt[q]*Erfi[Sqr
t[a + b*Log[c*(d*(e + f*x)^p)^q]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(E^(a/(b*p*q)
)*(c*(d*(e + f*x)^p)^q)^(1/(p*q))) - 2*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]
)))/(144*f^3)
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="fricas
")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(hx+g\right)^{2}\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((h*x + g)^2*(b*log(((f*x + e)^p*d)^q*c) + a)^(3/2), x)
```

maple [F] time = 0.32, size = 0, normalized size = 0.00

$$\int \left(hx+g\right)^{2}\left(b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)+a\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^2*(b*ln(c*(d*(f*x+e)^p)^q)+a)^(3/2),x)
```

```
[Out] int((h*x+g)^2*(b*ln(c*(d*(f*x+e)^p)^q)+a)^(3/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(hx+g\right)^{2}\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="maxima
")
```

```
[Out] integrate((h*x + g)^2*(b*log(((f*x + e)^p*d)^q*c) + a)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int {\left(g+h\,x\right)}^2\,{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)^2*(a + b*log(c*(d*(e + f*x)^p)^q))^(3/2),x)
```

```
[Out] int((g + h*x)^2*(a + b*log(c*(d*(e + f*x)^p)^q))^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(a + b\log \left(c\left(d\left(e + fx\right)^{p}\right)^{q}\right)\right)^{\frac{3}{2}} \left(g + hx\right)^{2} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**2*(a+b*ln(c*(d*(f*x+e)**p)**q))**(3/2),x)
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**(3/2)*(g + h*x)**2, x)
```

3.466 $\int (g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}\,dx$

Optimal. Leaf size=396

$$\frac{3\sqrt{\pi}\,b^{3/2}p^{3/2}q^{3/2}(e+fx)e^{-\frac{a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\operatorname{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{4f^2}+\frac{3\sqrt{\frac{\pi}{2}}\,b^{3/2}hp^{3/2}q^{3/2}(e+fx)}{}$$

```
[Out] (-e*h+f*g)*(f*x+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2)/f^2+1/2*h*(f*x+e)^2*(a
+b*ln(c*(d*(f*x+e)^p)^q))^(3/2)/f^2+3/32*b^(3/2)*h*p^(3/2)*q^(3/2)*(f*x+e)^
2*erfi(2^(1/2)*(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/b^(1/2)/p^(1/2)/q^(1/2))*2
^(1/2)*Pi^(1/2)/exp(2*a/b/p/q)/f^2/((c*(d*(f*x+e)^p)^q)^(2/p/q))+3/4*b^(3/2
)*(-e*h+f*g)*p^(3/2)*q^(3/2)*(f*x+e)*erfi((a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)
/b^(1/2)/p^(1/2)/q^(1/2))*Pi^(1/2)/exp(a/b/p/q)/f^2/((c*(d*(f*x+e)^p)^q)^(1
/p/q))-3/2*b*(-e*h+f*g)*p*q*(f*x+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/f^2-3
/8*b*h*p*q*(f*x+e)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/f^2
```

Rubi [A] time = 1.02, antiderivative size = 396, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 10, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.357, Rules used = {2401, 2389, 2296, 2300, 2180, 2204, 2390, 2305, 2310, 2445}

$$\frac{3\sqrt{\pi}\,b^{3/2}p^{3/2}q^{3/2}(e+fx)e^{-\frac{a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{4f^2}+\frac{3\sqrt{\frac{\pi}{2}}\,b^{3/2}hp^{3/2}q^{3/2}(e+fx)}{}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2),x]
```

```
[Out] (3*b^(3/2)*(f*g - e*h)*p^(3/2)*Sqrt[Pi]*q^(3/2)*(e + f*x)*Erfi[Sqrt[a + b*L
og[c*(d*(e + f*x)^p)^q]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(4*E^(a/(b*p*q))*f^2*(
c*(d*(e + f*x)^p)^q)^(1/(p*q))) + (3*b^(3/2)*h*p^(3/2)*Sqrt[Pi/2]*q^(3/2)*(
e + f*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqr
t[p]*Sqrt[q])])/(16*E^((2*a)/(b*p*q))*f^2*(c*(d*(e + f*x)^p)^q)^(2/(p*q)))
- (3*b*(f*g - e*h)*p*q*(e + f*x)*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(2*f
^2) - (3*b*h*p*q*(e + f*x)^2*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(8*f^2)
+ ((f*g - e*h)*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2))/f^2 + (h*(
e + f*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2))/(2*f^2)
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] && !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
```

```
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int (g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}\,dx = \text{Subst}\left(\int (g+hx)\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^{3/2}\,dx, cd^q(e+fx)^{p\cdots}\right.$$

$$= \text{Subst}\left(\int\left(\frac{(fg-eh)\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^{3/2}}{f} + \frac{h(e+fx)\left(\cdots\right.}{\cdots}\right.\right.$$

$$= \text{Subst}\left(\frac{h\int (e+fx)\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^{3/2}\,dx}{f}, cd^q(e+fx)\cdots\right.$$

$$= \text{Subst}\left(\frac{h\,\text{Subst}\left(\int x\left(a+b\log\left(cd^q x^{pq}\right)\right)^{3/2}\,dx, x, e+fx\right)}{f^2}, cd^q(e+\cdots\right.$$

$$= \frac{(fg-eh)(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}{f^2} + \frac{h(e+fx)^2\left(\cdots\right.}{\cdots}$$

$$= -\frac{3b(fg-eh)pq(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{2f^2} - \frac{3bhpq(e\cdots}{\cdots}$$

$$= -\frac{3b(fg-eh)pq(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{2f^2} - \frac{3bhpq(e\cdots}{\cdots}$$

$$= -\frac{3b(fg-eh)pq(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{2f^2} - \frac{3bhpq(e\cdots}{\cdots}$$

$$= \frac{3b^{3/2}e^{-\frac{a}{bpq}}(fg-eh)p^{3/2}\sqrt{\pi}\,q^{3/2}(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{erfi}\left(\cdots\right.}{4f^2}$$

Mathematica [A] time = 0.57, size = 348, normalized size = 0.88

$$\frac{(e+fx)\left(24bpq(fg-eh)\left(\sqrt{\pi}\sqrt{b}\sqrt{p}\sqrt{q}\,e^{-\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)-2\sqrt{a+b\log\left(c\left(\cdots\right.\right.}\right.\right.}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2),x]
```

```
[Out] ((e + f*x)*(32*(f*g - e*h)*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2) + 16*h*(e
 + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2) + 3*b*h*p*q*(e + f*x)*((Sqrt
[b]*Sqrt[p]*Sqrt[2*Pi]*Sqrt[q]*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d*(e + f*x)^
p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])]])/(E^((2*a)/(b*p*q))*(c*(d*(e + f*x)^p)^q
)^(2/(p*q))) - 4*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]) + 24*b*(f*g - e*h)*p
*q*((Sqrt[b]*Sqrt[p]*Sqrt[Pi]*Sqrt[q]*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)
^q]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(E^(a/(b*p*q))*(c*(d*(e + f*x)^p)^q)^(1/(p
*q))) - 2*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])))/(32*f^2)
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (hx+g)\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a)^(3/2), x)
```

maple [F] time = 0.09, size = 0, normalized size = 0.00

$$\int (hx+g)\left(b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)+a\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)*(b*ln(c*(d*(f*x+e)^p)^q)+a)^(3/2),x)
```

```
[Out] int((h*x+g)*(b*ln(c*(d*(f*x+e)^p)^q)+a)^(3/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (hx+g)\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \left(g+h\,x\right)\,{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}^{3/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)*(a + b*log(c*(d*(e + f*x)^p)^q))^(3/2),x)
```

```
[Out] int((g + h*x)*(a + b*log(c*(d*(e + f*x)^p)^q))^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)\right)^{\frac{3}{2}}\left(g+hx\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*ln(c*(d*(f*x+e)**p)**q))**(3/2),x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**(3/2)*(g + h*x), x)
```

3.467 $\int \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}\,dx$

Optimal. Leaf size=176

$$\frac{3\sqrt{\pi}\,b^{3/2}p^{3/2}q^{3/2}(e+fx)e^{-\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\operatorname{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{4f}+\frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right.}{f}$$

```
[Out] (f*x+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2)/f+3/4*b^(3/2)*p^(3/2)*q^(3/2)*(f*
x+e)*erfi((a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/b^(1/2)/p^(1/2)/q^(1/2))*Pi^(1/
2)/exp(a/b/p/q)/f/((c*(d*(f*x+e)^p)^q)^(1/p/q))-3/2*b*p*q*(f*x+e)*(a+b*ln(c
*(d*(f*x+e)^p)^q))^(1/2)/f
```

Rubi [A] time = 0.27, antiderivative size = 176, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273, Rules used = {2389, 2296, 2300, 2180, 2204, 2445}

$$\frac{3\sqrt{\pi}\,b^{3/2}p^{3/2}q^{3/2}(e+fx)e^{-\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{4f}+\frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right.\right.\right.}{f}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2),x]
```

```
[Out] (3*b^(3/2)*p^(3/2)*Sqrt[Pi]*q^(3/2)*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e +
 f*x)^p)^q]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(4*E^(a/(b*p*q))*f*(c*(d*(e + f*x)
^p)^q)^(1/(p*q))) - (3*b*p*q*(e + f*x)*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]
)/(2*f) + ((e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2))/f
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}\,dx = \text{Subst}\left(\int \left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^{3/2}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)\right.\right.$$

$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \left(a+b\log\left(cd^q x^{pq}\right)\right)^{3/2}\,dx, x, e+fx\right)}{f}, cd^q(e+fx)^{pq}, c\right.$$

$$= \frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}{f} - \text{Subst}\left(\frac{(3bpq)\,\text{Subst}\left(\int \sqrt{a}\right.}{}\right.$$

$$= -\frac{3bpq(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{2f} + \frac{(e+fx)\left(a+b\log\left(c\left(\right.\right.\right.}{f}$$

$$= -\frac{3bpq(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{2f} + \frac{(e+fx)\left(a+b\log\left(c\left(\right.\right.\right.}{f}$$

$$= -\frac{3bpq(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{2f} + \frac{(e+fx)\left(a+b\log\left(c\left(\right.\right.\right.}{f}$$

$$= \frac{3b^{3/2}e^{-\frac{a}{bpq}}p^{3/2}\sqrt{\pi}\,q^{3/2}(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+f\right.\right.}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right.}{4f}$$

Mathematica [A] time = 0.21, size = 160, normalized size = 0.91

$$\frac{(e+fx)\left(3\sqrt{\pi}\,b^{3/2}p^{3/2}q^{3/2}e^{-\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)+2\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right.}\right.}{4f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2),x]
```

```
[Out] ((e + f*x)*((3*b^(3/2)*p^(3/2)*Sqrt[Pi]*q^(3/2)*Erfi[Sqrt[a + b*Log[c*(d*(e
 + f*x)^p)^q]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(E^(a/(b*p*q))*(c*(d*(e + f*x)^p
```

```
)^q)^(1/(p*q))) + 2*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]*(2*a - 3*b*p*q + 2
*b*Log[c*(d*(e + f*x)^p)^q])))/(4*f)
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="fricas")
[Out] Exception raised: TypeError >> Error detected within library code: integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b \log\left(\left((fx+e)^p d\right)^q c\right) + a\right)^{\frac{3}{2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="giac")
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^(3/2), x)
```

maple [F] time = 0.08, size = 0, normalized size = 0.00

$$\int \left(b \ln\left(c\left(d\left(fx+e\right)^p\right)^q\right) + a\right)^{\frac{3}{2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^(3/2),x)
[Out] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^(3/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b \log\left(\left((fx+e)^p d\right)^q c\right) + a\right)^{\frac{3}{2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="maxima")
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \left(a + b\,\ln\left(c\left(d\left(e+f\,x\right)^p\right)^q\right)\right)^{3/2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^(3/2),x)
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(a + b \log\left(c\left(d\left(e+fx\right)^p\right)^q\right)\right)^{\frac{3}{2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**(3/2),x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**(3/2), x)
```

3.468 $\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}{g+hx}\,dx$

Optimal. Leaf size=33

$$\mathrm{Int}\left(\frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}{g+hx},x\right)$$

```
[Out] Unintegrable((a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2)/(h*x+g),x)
```

Rubi [A] time = 0.12, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}{g+hx}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2)/(g + h*x),x]
[Out] Defer[Int][(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2)/(g + h*x), x]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}{g+hx}\,dx=\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}{g+hx}\,dx$$

Mathematica [A] time = 2.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}{g+hx}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2)/(g + h*x),x]
[Out] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2)/(g + h*x), x]
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(3/2)/(h*x+g),x, algorithm="fricas")
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a\right)^{\frac{3}{2}}}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(3/2)/(h*x+g),x, algorithm="giac")
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^(3/2)/(h*x + g), x)
```

maple [A] time = 0.38, size = 0, normalized size = 0.00

$$\int \frac{\left(b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)+a\right)^{\frac{3}{2}}}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^(3/2)/(h*x+g),x)
[Out] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^(3/2)/(h*x+g),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)^{\frac{3}{2}}}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(3/2)/(h*x+g),x, algorithm="maxima")
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^(3/2)/(h*x + g), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\left(a+b\,\ln\left(c\,\left(d\,\left(e+f\,x\right)^{p}\right)^{q}\right)\right)^{3/2}}{g+h\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^(3/2)/(g + h*x),x)
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))^(3/2)/(g + h*x), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)\right)^{\frac{3}{2}}}{g+hx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**(3/2)/(h*x+g),x)
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**(3/2)/(g + h*x), x)
```

3.469 $\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}{(g+hx)^2}\,dx$

Optimal. Leaf size=33

$$\text{Int}\left(\frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}{(g+hx)^2},x\right)$$

```
[Out] Unintegrable((a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2)/(h*x+g)^2,x)
```

Rubi [A] time = 0.16, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}{(g+hx)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2)/(g + h*x)^2,x]
[Out] Defer[Int][(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2)/(g + h*x)^2, x]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}{(g+hx)^2}\,dx=\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}{(g+hx)^2}\,dx$$

Mathematica [A] time = 2.25, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}{(g+hx)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2)/(g + h*x)^2,x]
[Out] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2)/(g + h*x)^2, x]
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(3/2)/(h*x+g)^2,x, algorithm="fricas
")
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)^{\frac{3}{2}}}{\left(hx+g\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(3/2)/(h*x+g)^2,x, algorithm="giac")
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^(3/2)/(h*x + g)^2, x)
```

maple [A] time = 0.35, size = 0, normalized size = 0.00

$$\int \frac{\left(b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)+a\right)^{\frac{3}{2}}}{\left(hx+g\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^(3/2)/(h*x+g)^2,x)
[Out] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^(3/2)/(h*x+g)^2,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)^{\frac{3}{2}}}{\left(hx+g\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(3/2)/(h*x+g)^2,x, algorithm="maxima
")
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^(3/2)/(h*x + g)^2, x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\left(a+b\,\ln\left(c\,\left(d\,\left(e+f\,x\right)^{p}\right)^{q}\right)\right)^{3/2}}{\left(g+h\,x\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^(3/2)/(g + h*x)^2,x)
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))^(3/2)/(g + h*x)^2, x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)\right)^{\frac{3}{2}}}{\left(g+hx\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**(3/2)/(h*x+g)**2,x)
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**(3/2)/(g + h*x)**2, x)
```

3.470 $\int \frac{(g+hx)^2}{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$

Optimal. Leaf size=355

$$\frac{\sqrt{2\pi}\,h(e+fx)^2e^{-\frac{2a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\operatorname{erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{\sqrt{b}f^3\sqrt{p}\sqrt{q}}+\frac{\sqrt{\pi}(e+fx)e^{-\frac{a}{bpq}}(fg-eh)^2\left(c\left(\right.\right.}{}$$

```
[Out] 1/3*h^2*(f*x+e)^3*erfi(3^(1/2)*(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/b^(1/2)/p^
(1/2)/q^(1/2))*3^(1/2)*Pi^(1/2)/exp(3*a/b/p/q)/f^3/((c*(d*(f*x+e)^p)^q)^(3/
p/q))/b^(1/2)/p^(1/2)/q^(1/2)+(-e*h+f*g)^2*(f*x+e)*erfi((a+b*ln(c*(d*(f*x+e
)^p)^q))^(1/2)/b^(1/2)/p^(1/2)/q^(1/2))*Pi^(1/2)/exp(a/b/p/q)/f^3/((c*(d*(f
*x+e)^p)^q)^(1/p/q))/b^(1/2)/p^(1/2)/q^(1/2)+h*(-e*h+f*g)*(f*x+e)^2*erfi(2^
(1/2)*(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/b^(1/2)/p^(1/2)/q^(1/2))*2^(1/2)*Pi
^(1/2)/exp(2*a/b/p/q)/f^3/((c*(d*(f*x+e)^p)^q)^(2/p/q))/b^(1/2)/p^(1/2)/q^(
1/2)
```

Rubi [A] time = 1.31, antiderivative size = 355, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 8, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.267, Rules used = {2401, 2389, 2300, 2180, 2204, 2390, 2310, 2445}

$$\frac{\sqrt{2\pi}\,h(e+fx)^2e^{-\frac{2a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{\sqrt{b}f^3\sqrt{p}\sqrt{q}}+\frac{\sqrt{\pi}(e+fx)e^{-\frac{a}{bpq}}(fg-eh)^2\left(c\left(\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)^2/Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]],x]
```

```
[Out] ((f*g - e*h)^2*Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]
/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(Sqrt[b]*E^(a/(b*p*q))*f^3*Sqrt[p]*Sqrt[q]*(c*
(d*(e + f*x)^p)^q)^(1/(p*q))) + (h*(f*g - e*h)*Sqrt[2*Pi]*(e + f*x)^2*Erfi[
(Sqrt[2]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/
(Sqrt[b]*E^((2*a)/(b*p*q))*f^3*Sqrt[p]*Sqrt[q]*(c*(d*(e + f*x)^p)^q)^(2/(p*
q))) + (h^2*Sqrt[Pi/3]*(e + f*x)^3*Erfi[(Sqrt[3]*Sqrt[a + b*Log[c*(d*(e + f
*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(Sqrt[b]*E^((3*a)/(b*p*q))*f^3*Sqrt
[p]*Sqrt[q]*(c*(d*(e + f*x)^p)^q)^(3/(p*q)))
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] && !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
```

```
{a, b, c, n, p}, x]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{(g+hx)^2}{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx = \text{Subst}\left(\int \frac{(g+hx)^2}{\sqrt{a+b\log\left(cd^q(e+fx)^{pq}\right)}}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \text{Subst}\left(\int \left(\frac{(fg-eh)^2}{f^2\sqrt{a+b\log\left(cd^q(e+fx)^{pq}\right)}} + \frac{2h(fg-eh)(e+fx)}{f^2\sqrt{a+b\log\left(cd^q(e+fx)^{pq}\right)}}\right.\right.$$

$$= \text{Subst}\left(\frac{h^2\int \frac{(e+fx)^2}{\sqrt{a+b\log\left(cd^q(e+fx)^{pq}\right)}}\,dx}{f^2}, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right) + \text{Subst}$$

$$= \text{Subst}\left(\frac{h^2\,\text{Subst}\left(\int \frac{x^2}{\sqrt{a+b\log(cd^qx^{pq})}}\,dx, x, e+fx\right)}{f^3}, cd^q(e+fx)^{pq}, c\left(d(e+fx\right.\right.$$

$$= \text{Subst}\left(\frac{\left(h^2(e+fx)^3\left(cd^q(e+fx)^{pq}\right)^{-\frac{3}{pq}}\right)\text{Subst}\left(\int \frac{e^{\frac{3x}{pq}}}{\sqrt{a+bx}}\,dx, x, \log\left(cd^q(e+\right.\right.}{f^3pq}\right.$$

$$= \text{Subst}\left(\frac{\left(2h^2(e+fx)^3\left(cd^q(e+fx)^{pq}\right)^{-\frac{3}{pq}}\right)\text{Subst}\left(\int e^{-\frac{3a}{bpq}+\frac{3x^2}{bpq}}\,dx, x, \sqrt{a+b\right.}{bf^3pq}\right.$$

$$= \frac{e^{-\frac{a}{bpq}}(fg-eh)^2\sqrt{\pi}\,(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{\sqrt{b}f^3\sqrt{p}\sqrt{q}}$$

Mathematica [A] time = 0.35, size = 315, normalized size = 0.89

$$\frac{\sqrt{\pi}\,(e+fx)e^{-\frac{3a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{3}{pq}}\left(3\sqrt{2}\,h(e+fx)e^{\frac{a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{\frac{1}{pq}}\text{erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right.\right.}{3\sqrt{b}f^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)^2/Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]],x]
```

```
[Out] (Sqrt[Pi]*(e + f*x)*(3*E^((2*a)/(b*p*q))*(f*g - e*h)^2*(c*(d*(e + f*x)^p)^q
)^(2/(p*q))*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(Sqrt[b]*Sqrt[p]*Sqrt
[q])] + 3*Sqrt[2]*E^(a/(b*p*q))*h*(f*g - e*h)*(e + f*x)*(c*(d*(e + f*x)^p)^
q)^(1/(p*q))*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*S
qrt[p]*Sqrt[q])] + Sqrt[3]*h^2*(e + f*x)^2*Erfi[(Sqrt[3]*Sqrt[a + b*Log[c*(
d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])]))/(3*Sqrt[b]*E^((3*a)/(b*p*q
))*f^3*Sqrt[p]*Sqrt[q]*(c*(d*(e + f*x)^p)^q)^(3/(p*q)))
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="fricas
")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(hx+g\right)^{2}}{\sqrt{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="giac")
```

```
[Out] integrate((h*x + g)^2/sqrt(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

maple [F] time = 0.33, size = 0, normalized size = 0.00

$$\int \frac{\left(hx+g\right)^{2}}{\sqrt{b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^2/(b*ln(c*(d*(f*x+e)^p)^q)+a)^(1/2),x)
```

```
[Out] int((h*x+g)^2/(b*ln(c*(d*(f*x+e)^p)^q)+a)^(1/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(hx+g\right)^{2}}{\sqrt{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="maxima
")
```

```
[Out] integrate((h*x + g)^2/sqrt(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(g+h\,x\right)}^2}{\sqrt{a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)^2/(a + b*log(c*(d*(e + f*x)^p)^q))^(1/2),x)
```

```
[Out] int((g + h*x)^2/(a + b*log(c*(d*(e + f*x)^p)^q))^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(g+hx\right)^{2}}{\sqrt{a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**2/(a+b*ln(c*(d*(f*x+e)**p)**q))**(1/2),x)
```

```
[Out] Integral((g + h*x)**2/sqrt(a + b*log(c*(d*(e + f*x)**p)**q)), x)
```

3.471 $\int \frac{g+hx}{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$

Optimal. Leaf size=229

$$\frac{\sqrt{\pi}\,(e+fx)e^{-\frac{a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\operatorname{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{\sqrt{b}f^2\sqrt{p}\sqrt{q}}+\frac{\sqrt{\frac{\pi}{2}}h(e+fx)^2e^{-\frac{2a}{bpq}}\left(c\left(d(e+fx)^p\right)\right.}{\sqrt{b}f^2}$$

[Out] 1/2*h*(f*x+e)^2*erfi(2^(1/2)*(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/b^(1/2)/p^(1/2)/q^(1/2))*2^(1/2)*Pi^(1/2)/exp(2*a/b/p/q)/f^2/((c*(d*(f*x+e)^p)^q)^(2/p/q))/b^(1/2)/p^(1/2)/q^(1/2)+(-e*h+f*g)*(f*x+e)*erfi((a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/b^(1/2)/p^(1/2)/q^(1/2))*Pi^(1/2)/exp(a/b/p/q)/f^2/((c*(d*(f*x+e)^p)^q)^(1/p/q))/b^(1/2)/p^(1/2)/q^(1/2)

Rubi [A] time = 0.67, antiderivative size = 229, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 8, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {2401, 2389, 2300, 2180, 2204, 2390, 2310, 2445}

$$\frac{\sqrt{\pi}\,(e+fx)e^{-\frac{a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{\sqrt{b}f^2\sqrt{p}\sqrt{q}}+\frac{\sqrt{\frac{\pi}{2}}h(e+fx)^2e^{-\frac{2a}{bpq}}\left(c\left(d(e+fx)^p\right.\right.}{\sqrt{b}f^2}$$

Antiderivative was successfully verified.

[In] Int[(g + h*x)/Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]],x]

[Out] ((f*g - e*h)*Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(Sqrt[b]*E^(a/(b*p*q))*f^2*Sqrt[p]*Sqrt[q]*(c*(d*(e + f*x)^p)^q)^(1/(p*q))) + (h*Sqrt[Pi/2]*(e + f*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(Sqrt[b]*E^((2*a)/(b*p*q))*f^2*Sqrt[p]*Sqrt[q]*(c*(d*(e + f*x)^p)^q)^(2/(p*q)))

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*x]], x] /; FreeQ[{F, c, d, e, f, g}, x] && !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqrt[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{F, a, b, c, d}, x] && PosQ[b]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p}, x]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{g+hx}{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx = \text{Subst}\left(\int \frac{g+hx}{\sqrt{a+b\log\left(cd^q(e+fx)^{pq}\right)}}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right.$$

$$= \text{Subst}\left(\int\left(\frac{fg-eh}{f\sqrt{a+b\log\left(cd^q(e+fx)^{pq}\right)}} + \frac{h(e+fx)}{f\sqrt{a+b\log\left(cd^q(e+fx)^{pq}\right)}}\right.\right.$$

$$= \text{Subst}\left(\frac{h\int \frac{e+fx}{\sqrt{a+b\log\left(cd^q(e+fx)^{pq}\right)}}\,dx}{f}, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right) + \text{Sub}$$

$$= \text{Subst}\left(\frac{h\,\text{Subst}\left(\int \frac{x}{\sqrt{a+b\log(cd^q x^{pq})}}\,dx, x, e+fx\right)}{f^2}, cd^q(e+fx)^{pq}, c\left(d(e+\right.\right.$$

$$= \text{Subst}\left(\frac{\left(h(e+fx)^2\left(cd^q(e+fx)^{pq}\right)^{-\frac{2}{pq}}\right)\text{Subst}\left(\int \frac{e^{\frac{2x}{pq}}}{\sqrt{a+bx}}\,dx, x, \log\left(cd^q(e\right.\right.}{f^2pq}\right.$$

$$= \text{Subst}\left(\frac{\left(2h(e+fx)^2\left(cd^q(e+fx)^{pq}\right)^{-\frac{2}{pq}}\right)\text{Subst}\left(\int e^{-\frac{2a}{bpq}+\frac{2x^2}{bpq}}\,dx, x, \sqrt{a+\right.}{bf^2pq}\right.$$

$$= \frac{e^{-\frac{a}{bpq}}(fg-eh)\sqrt{\pi}\,(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right.}{\sqrt{b}f^2\sqrt{p}\sqrt{q}}$$

Mathematica [A] time = 0.19, size = 208, normalized size = 0.91

$$\frac{\sqrt{\pi}\,(e+fx)e^{-\frac{2a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\left(2e^{\frac{a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{\frac{1}{pq}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right) + \sqrt{2}\,h(e+\right.}{2\sqrt{b}f^2\sqrt{p}\sqrt{q}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)/Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]],x]
```

```
[Out] (Sqrt[Pi]*(e + f*x)*(2*E^(a/(b*p*q))*(f*g - e*h)*(c*(d*(e + f*x)^p)^q)^(1/(
p*q))*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])]
+ Sqrt[2]*h*(e + f*x)*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(
Sqrt[b]*Sqrt[p]*Sqrt[q])]))/(2*Sqrt[b]*E^((2*a)/(b*p*q))*f^2*Sqrt[p]*Sqrt[q
]*(c*(d*(e + f*x)^p)^q)^(2/(p*q)))
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{hx+g}{\sqrt{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="giac")
[Out] integrate((h*x + g)/sqrt(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

maple [F] time = 0.08, size = 0, normalized size = 0.00

$$\int \frac{hx+g}{\sqrt{b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)/(b*ln(c*(d*(f*x+e)^p)^q)+a)^(1/2),x)
[Out] int((h*x+g)/(b*ln(c*(d*(f*x+e)^p)^q)+a)^(1/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{hx+g}{\sqrt{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="maxima")
[Out] integrate((h*x + g)/sqrt(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{g+h\,x}{\sqrt{a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)/(a + b*log(c*(d*(e + f*x)^p)^q))^(1/2),x)
[Out] int((g + h*x)/(a + b*log(c*(d*(e + f*x)^p)^q))^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{g+hx}{\sqrt{a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*ln(c*(d*(f*x+e)**p)**q))**(1/2),x)
[Out] Integral((g + h*x)/sqrt(a + b*log(c*(d*(e + f*x)**p)**q)), x)
```

3.472 $\int \frac{1}{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$

Optimal. Leaf size=104

$$\frac{\sqrt{\pi}\,(e+fx)e^{-\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\operatorname{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{\sqrt{b}\,f\sqrt{p}\sqrt{q}}$$

```
[Out] (f*x+e)*erfi((a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/b^(1/2)/p^(1/2)/q^(1/2))*Pi^
(1/2)/exp(a/b/p/q)/f/((c*(d*(f*x+e)^p)^q)^(1/p/q))/b^(1/2)/p^(1/2)/q^(1/2)
```

Rubi [A] time = 0.18, antiderivative size = 104, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = {2389, 2300, 2180, 2204, 2445}

$$\frac{\sqrt{\pi}\,(e+fx)e^{-\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{\sqrt{b}\,f\sqrt{p}\sqrt{q}}$$

Antiderivative was successfully verified.

```
[In] Int[1/Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]],x]
```

```
[Out] (Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(Sqrt[b]*Sqrt
[p]*Sqrt[q])])/(Sqrt[b]*E^(a/(b*p*q))*f*Sqrt[p]*Sqrt[q]*(c*(d*(e + f*x)^p)^
q)^(1/(p*q)))
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
```

```
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{1}{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx = \text{Subst}\left(\int \frac{1}{\sqrt{a+b\log\left(cd^q(e+fx)^{pq}\right)}}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \frac{1}{\sqrt{a+b\log(cd^qx^{pq})}}\,dx, x, e+fx\right)}{f}, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)\right.$$

$$= \text{Subst}\left(\frac{\left((e+fx)\left(cd^q(e+fx)^{pq}\right)^{-\frac{1}{pq}}\right)\text{Subst}\left(\int \frac{e^{\frac{x}{pq}}}{\sqrt{a+bx}}\,dx, x, \log\left(cd^q(e+fx\right.\right.}{fpq}\right.$$

$$= \text{Subst}\left(\frac{\left(2(e+fx)\left(cd^q(e+fx)^{pq}\right)^{-\frac{1}{pq}}\right)\text{Subst}\left(\int e^{-\frac{a}{bpq}+\frac{x^2}{bpq}}\,dx, x, \sqrt{a+b\log}\right.}{bfpq}\right.$$

$$= \frac{e^{-\frac{a}{bpq}}\sqrt{\pi}(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{\sqrt{b}f\sqrt{p}\sqrt{q}}$$

Mathematica [A] time = 0.02, size = 104, normalized size = 1.00

$$\frac{\sqrt{\pi}(e+fx)e^{-\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{\sqrt{b}f\sqrt{p}\sqrt{q}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]],x]
```

```
[Out] (Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(Sqrt[b]*Sqrt
[p]*Sqrt[q])])/(Sqrt[b]*E^(a/(b*p*q))*f*Sqrt[p]*Sqrt[q]*(c*(d*(e + f*x)^p)^
q)^(1/(p*q)))
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{b \log\left(\left(\left(fx+e\right)^{p} d\right)^{q} c\right)+a}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="giac")
[Out] integrate(1/sqrt(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

maple [F] time = 0.08, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{b \ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)+a}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*ln(c*(d*(f*x+e)^p)^q)+a)^(1/2),x)
[Out] int(1/(b*ln(c*(d*(f*x+e)^p)^q)+a)^(1/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{b \log\left(\left(\left(fx+e\right)^{p} d\right)^{q} c\right)+a}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="maxima")
[Out] integrate(1/sqrt(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{\sqrt{a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*log(c*(d*(e + f*x)^p)^q))^(1/2),x)
[Out] int(1/(a + b*log(c*(d*(e + f*x)^p)^q))^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{a + b \log{\left(c \left(d \left(e + f x\right)^{p}\right)^{q} \right)}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(d*(f*x+e)**p)**q))**(1/2),x)
[Out] Integral(1/sqrt(a + b*log(c*(d*(e + f*x)**p)**q)), x)
```

3.473 $\int \frac{1}{(g+hx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$

Optimal. Leaf size=33

$$\operatorname{Int}\left(\frac{1}{(g+hx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}},x\right)$$

```
[Out] Unintegrable(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

Rubi [A] time = 0.10, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(g+hx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((g + h*x)*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]),x]
```

```
[Out] Defer[Int][1/((g + h*x)*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]), x]
```

Rubi steps

$$\int \frac{1}{(g+hx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx=\int \frac{1}{(g+hx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$$

Mathematica [A] time = 0.12, size = 0, normalized size = 0.00

$$\int \frac{1}{(g+hx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((g + h*x)*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]),x]
```

```
[Out] Integrate[1/((g + h*x)*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]), x]
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="fricas
")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(hx+g)\sqrt{b\log\left(\left((fx+e)^{p}d\right)^{q}c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="giac")
[Out] integrate(1/((h*x + g)*sqrt(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

maple [A] time = 0.37, size = 0, normalized size = 0.00

$$\int \frac{1}{(hx+g)\sqrt{b\ln\left(c\left(d\,(fx+e)^{p}\right)^{q}\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(h*x+g)/(b*ln(c*(d*(f*x+e)^p)^q)+a)^(1/2),x)
[Out] int(1/(h*x+g)/(b*ln(c*(d*(f*x+e)^p)^q)+a)^(1/2),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(hx+g)\sqrt{b\log\left(\left((fx+e)^{p}d\right)^{q}c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="maxima
")
[Out] integrate(1/((h*x + g)*sqrt(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{(g+h\,x)\,\sqrt{a+b\,\ln\left(c\,\left(d\,(e+f\,x)^{p}\right)^{q}\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((g + h*x)*(a + b*log(c*(d*(e + f*x)^p)^q))^(1/2)),x)
[Out] int(1/((g + h*x)*(a + b*log(c*(d*(e + f*x)^p)^q))^(1/2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{a+b\log\left(c\left(d\,(e+fx)^{p}\right)^{q}\right)}\,(g+hx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)**p)**q))**(1/2),x)
[Out] Integral(1/(sqrt(a + b*log(c*(d*(e + f*x)**p)**q))*(g + h*x)), x)
```

3.474 $\int \frac{(g+hx)^2}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}\,dx$

Optimal. Leaf size=404

$$\frac{4\sqrt{2\pi}\,h(e+fx)^2e^{-\frac{2a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\operatorname{erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{b^{3/2}f^3p^{3/2}q^{3/2}}+\frac{2\sqrt{\pi}\,(e+fx)e^{-\frac{a}{bpq}}(fg-eh)^2\left(\right.}{}$$

```
[Out] 2*(-e*h+f*g)^2*(f*x+e)*erfi((a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/b^(1/2)/p^(1/
2)/q^(1/2))*Pi^(1/2)/b^(3/2)/exp(a/b/p/q)/f^3/p^(3/2)/q^(3/2)/((c*(d*(f*x+e
)^p)^q)^(1/p/q))+4*h*(-e*h+f*g)*(f*x+e)^2*erfi(2^(1/2)*(a+b*ln(c*(d*(f*x+e)
^p)^q))^(1/2)/b^(1/2)/p^(1/2)/q^(1/2))*2^(1/2)*Pi^(1/2)/b^(3/2)/exp(2*a/b/p
/q)/f^3/p^(3/2)/q^(3/2)/((c*(d*(f*x+e)^p)^q)^(2/p/q))+2*h^2*(f*x+e)^3*erfi(
3^(1/2)*(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/b^(1/2)/p^(1/2)/q^(1/2))*3^(1/2)*
Pi^(1/2)/b^(3/2)/exp(3*a/b/p/q)/f^3/p^(3/2)/q^(3/2)/((c*(d*(f*x+e)^p)^q)^(3
/p/q))-2*(f*x+e)*(h*x+g)^2/b/f/p/q/(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)
```

Rubi [A] time = 2.25, antiderivative size = 404, normalized size of antiderivative = 1.00, number of steps used = 26, number of rules used = 9, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.300, Rules used = {2400, 2401, 2389, 2300, 2180, 2204, 2390, 2310, 2445}

$$\frac{4\sqrt{2\pi}\,h(e+fx)^2e^{-\frac{2a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{b^{3/2}f^3p^{3/2}q^{3/2}}+\frac{2\sqrt{\pi}\,(e+fx)e^{-\frac{a}{bpq}}(fg-eh)^2\left(\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)^2/(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2),x]
```

```
[Out] (2*(f*g - e*h)^2*Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q
]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(b^(3/2)*E^(a/(b*p*q))*f^3*p^(3/2)*q^(3/2)*(
c*(d*(e + f*x)^p)^q)^(1/(p*q))) + (4*h*(f*g - e*h)*Sqrt[2*Pi]*(e + f*x)^2*E
rfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q]
)])/(b^(3/2)*E^((2*a)/(b*p*q))*f^3*p^(3/2)*q^(3/2)*(c*(d*(e + f*x)^p)^q)^(2
/(p*q))) + (2*h^2*Sqrt[3*Pi]*(e + f*x)^3*Erfi[(Sqrt[3]*Sqrt[a + b*Log[c*(d*
(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(b^(3/2)*E^((3*a)/(b*p*q))*f^
3*p^(3/2)*q^(3/2)*(c*(d*(e + f*x)^p)^q)^(3/(p*q))) - (2*(e + f*x)*(g + h*x)
^2)/(b*f*p*q*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2400

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((d + e*x)*(f + g*x)^q*(a + b*Log[c*(d + e
*x)^n])^(p + 1))/(b*e*n*(p + 1)), x] + (-Dist[(q + 1)/(b*n*(p + 1)), Int[(f
 + g*x)^q*(a + b*Log[c*(d + e*x)^n])^(p + 1), x], x] + Dist[(q*(e*f - d*g))
/(b*e*n*(p + 1)), Int[(f + g*x)^(q - 1)*(a + b*Log[c*(d + e*x)^n])^(p + 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] && LtQ[
p, -1] && GtQ[q, 0]
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{(g+hx)^2}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}\,dx = \text{Subst}\left(\int \frac{(g+hx)^2}{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^{3/2}}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right.$$

$$= -\frac{2(e+fx)(g+hx)^2}{bfpq\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}} + \text{Subst}\left(\frac{6\int \frac{(g+hx)^2}{\sqrt{a+b\log\left(cd^q(e+fx)^{pq}\right)}}\,dx}{bpq}\right.$$

$$= -\frac{2(e+fx)(g+hx)^2}{bfpq\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}} + \text{Subst}\left(\frac{6\int\left(\frac{(fg-eh)^2}{f^2\sqrt{a+b\log\left(cd^q(e+fx)^{pq}\right)}}\right.}{}\right.$$

$$= -\frac{2(e+fx)(g+hx)^2}{bfpq\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}} + \text{Subst}\left(\frac{\left(6h^2\right)\int \frac{(e+fx)^2}{\sqrt{a+b\log\left(cd^q(e+fx)^{pq}\right)}}}{bf^2pq}\right.$$

$$= -\frac{2(e+fx)(g+hx)^2}{bfpq\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}} + \text{Subst}\left(\frac{\left(6h^2\right)\text{Subst}\left(\int \frac{x^2}{\sqrt{a+b\log(cd^q}}\right.}{bf^3pq}\right.$$

$$= -\frac{2(e+fx)(g+hx)^2}{bfpq\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}} + \text{Subst}\left(\frac{\left(6h^2(e+fx)^3\left(cd^q(e+fx\right.\right.}{}\right.$$

$$= -\frac{2(e+fx)(g+hx)^2}{bfpq\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}} + \text{Subst}\left(\frac{\left(12h^2(e+fx)^3\left(cd^q(e+f\right.\right.}{}\right.$$

$$= \frac{2e^{-\frac{a}{bpq}}(fg-eh)^2\sqrt{\pi}\,(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right.}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right.}{b^{3/2}f^3p^{3/2}q^{3/2}}$$

Mathematica [B] time = 2.57, size = 1040, normalized size = 2.57

$$\frac{2\left(e^{-\frac{3a}{bpq}}h^2\sqrt{3\pi}\,(e+fx)^3\text{erfi}\left(\frac{\sqrt{3}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{3}{pq}} - 2ee^{-\frac{2a}{bpq}}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)^2/(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2),x]
```

```
[Out] (2*(-(Sqrt[b]*e*f^2*g^2*Sqrt[p]*Sqrt[q]) - Sqrt[b]*f^3*g^2*Sqrt[p]*Sqrt[q]*
x - 2*Sqrt[b]*e*f^2*g*h*Sqrt[p]*Sqrt[q]*x - 2*Sqrt[b]*f^3*g*h*Sqrt[p]*Sqrt[
q]*x^2 - Sqrt[b]*e*f^2*h^2*Sqrt[p]*Sqrt[q]*x^2 - Sqrt[b]*f^3*h^2*Sqrt[p]*Sq
```

```
rt[q]*x^3 - (4*e*f*g*h*Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x
)^p)^q]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(
E^(a/(b*p*q))*(c*(d*(e + f*x)^p)^q)^(1/(p*q))) + (e^2*h^2*Sqrt[Pi]*(e + f*x
)*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])]*Sqrt
[a + b*Log[c*(d*(e + f*x)^p)^q]])/(E^(a/(b*p*q))*(c*(d*(e + f*x)^p)^q)^(1/(
p*q))) + (2*f*g*h*Sqrt[2*Pi]*(e + f*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d*
(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])]*Sqrt[a + b*Log[c*(d*(e + f*x)^
p)^q]])/(E^((2*a)/(b*p*q))*(c*(d*(e + f*x)^p)^q)^(2/(p*q))) - (2*e*h^2*Sqrt
[2*Pi]*(e + f*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqr
t[b]*Sqrt[p]*Sqrt[q])]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(E^((2*a)/(b*p
*q))*(c*(d*(e + f*x)^p)^q)^(2/(p*q))) + (h^2*Sqrt[3*Pi]*(e + f*x)^3*Erfi[(S
qrt[3]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])]*Sqr
t[a + b*Log[c*(d*(e + f*x)^p)^q]])/(E^((3*a)/(b*p*q))*(c*(d*(e + f*x)^p)^q)
^(3/(p*q))) + (Sqrt[b]*f^2*g^2*Sqrt[p]*Sqrt[q]*(e + f*x)*Gamma[1/2, -((a +
b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q))]*Sqrt[-((a + b*Log[c*(d*(e + f*x)^p)^q
])/(b*p*q))])/(E^(a/(b*p*q))*(c*(d*(e + f*x)^p)^q)^(1/(p*q))) + (2*Sqrt[b]*
e*f*g*h*Sqrt[p]*Sqrt[q]*(e + f*x)*Gamma[1/2, -((a + b*Log[c*(d*(e + f*x)^p)
^q])/(b*p*q))]*Sqrt[-((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q))])/(E^(a/(b*
p*q))*(c*(d*(e + f*x)^p)^q)^(1/(p*q)))))/(b^(3/2)*f^3*p^(3/2)*q^(3/2)*Sqrt[
a + b*Log[c*(d*(e + f*x)^p)^q]])
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="fricas
")
```

```
[Out] Exception raised: TypeError >> Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(hx+g)^2}{\left(b\log\left(\left((fx+e)^p d\right)^q c\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((h*x + g)^2/(b*log(((f*x + e)^p*d)^q*c) + a)^(3/2), x)
```

maple [F] time = 0.33, size = 0, normalized size = 0.00

$$\int \frac{(hx+g)^2}{\left(b\ln\left(c\left(d\,(fx+e)^p\right)^q\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^2/(b*ln(c*(d*(f*x+e)^p)^q)+a)^(3/2),x)
```

```
[Out] int((h*x+g)^2/(b*ln(c*(d*(f*x+e)^p)^q)+a)^(3/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(hx+g)^2}{\left(b\log\left(\left((fx+e)^p d\right)^q c\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="maxima
")
```

```
[Out] integrate((h*x + g)^2/(b*log(((f*x + e)^p*d)^q*c) + a)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(g+h\,x\right)^2}{{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)^2/(a + b*log(c*(d*(e + f*x)^p)^q))^(3/2),x)
```

```
[Out] int((g + h*x)^2/(a + b*log(c*(d*(e + f*x)^p)^q))^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(g + hx\right)^{2}}{\left(a + b \log{\left(c \left(d \left(e + fx\right)^{p}\right)^{q} \right)}\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**2/(a+b*ln(c*(d*(f*x+e)**p)**q))**(3/2),x)
```

```
[Out] Integral((g + h*x)**2/(a + b*log(c*(d*(e + f*x)**p)**q))**(3/2), x)
```

3.475 $\int \frac{g+hx}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}\,dx$

Optimal. Leaf size=275

$$\frac{2\sqrt{\pi}\,(e+fx)e^{-\frac{a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\operatorname{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{b^{3/2}f^2p^{3/2}q^{3/2}}+\frac{2\sqrt{2\pi}\,h(e+fx)^2e^{-\frac{2a}{bpq}}\left(c\left(d(e+f\right.\right.}{b^{3/2}f}$$

```
[Out] 2*(-e*h+f*g)*(f*x+e)*erfi((a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/b^(1/2)/p^(1/2)
/q^(1/2))*Pi^(1/2)/b^(3/2)/exp(a/b/p/q)/f^2/p^(3/2)/q^(3/2)/((c*(d*(f*x+e)^
p)^q)^(1/p/q))+2*h*(f*x+e)^2*erfi(2^(1/2)*(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)
/b^(1/2)/p^(1/2)/q^(1/2))*2^(1/2)*Pi^(1/2)/b^(3/2)/exp(2*a/b/p/q)/f^2/p^(3/
2)/q^(3/2)/((c*(d*(f*x+e)^p)^q)^(2/p/q))-2*(f*x+e)*(h*x+g)/b/f/p/q/(a+b*ln(
c*(d*(f*x+e)^p)^q))^(1/2)
```

Rubi [A] time = 1.01, antiderivative size = 275, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 9, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.321, Rules used = {2400, 2401, 2389, 2300, 2180, 2204, 2390, 2310, 2445}

$$\frac{2\sqrt{\pi}\,(e+fx)e^{-\frac{a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{b^{3/2}f^2p^{3/2}q^{3/2}}+\frac{2\sqrt{2\pi}\,h(e+fx)^2e^{-\frac{2a}{bpq}}\left(c\left(d(e+f\right.\right.}{b^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)/(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2),x]
```

```
[Out] (2*(f*g - e*h)*Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]
/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(b^(3/2)*E^(a/(b*p*q))*f^2*p^(3/2)*q^(3/2)*(c*
(d*(e + f*x)^p)^q)^(1/(p*q))) + (2*h*Sqrt[2*Pi]*(e + f*x)^2*Erfi[(Sqrt[2]*S
qrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(b^(3/2)*E
^((2*a)/(b*p*q))*f^2*p^(3/2)*q^(3/2)*(c*(d*(e + f*x)^p)^q)^(2/(p*q))) - (2*
(e + f*x)*(g + h*x))/(b*f*p*q*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2400

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((d + e*x)*(f + g*x)^q*(a + b*Log[c*(d + e
*x)^n])^(p + 1))/(b*e*n*(p + 1)), x] + (-Dist[(q + 1)/(b*n*(p + 1)), Int[(f
 + g*x)^q*(a + b*Log[c*(d + e*x)^n])^(p + 1), x], x] + Dist[(q*(e*f - d*g))
/(b*e*n*(p + 1)), Int[(f + g*x)^(q - 1)*(a + b*Log[c*(d + e*x)^n])^(p + 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] && LtQ[
p, -1] && GtQ[q, 0]
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{g+hx}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}\,dx = \text{Subst}\left(\int \frac{g+hx}{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^{3/2}}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx\right.\right.$$

$$= -\frac{2(e+fx)(g+hx)}{bfpq\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}} + \text{Subst}\left(\frac{4\int \frac{g+hx}{\sqrt{a+b\log\left(cd^q(e+fx)^{pq}\right)}}}{bpq}\right.$$

$$= -\frac{2(e+fx)(g+hx)}{bfpq\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}} + \text{Subst}\left(\frac{4\int\left(\frac{fg-eh}{f\sqrt{a+b\log\left(cd^q(e+fx)^{p}\right.}}\right.}{}\right.$$

$$= -\frac{2(e+fx)(g+hx)}{bfpq\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}} + \text{Subst}\left(\frac{(4h)\int \frac{e+fx}{\sqrt{a+b\log\left(cd^q(e+fx)\right.}}}{bfpq}\right.$$

$$= -\frac{2(e+fx)(g+hx)}{bfpq\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}} + \text{Subst}\left(\frac{(4h)\,\text{Subst}\left(\int \frac{x}{\sqrt{a+b\log(}}\right.}{bf^2p}\right.$$

$$= -\frac{2e^{-\frac{a}{bpq}}(fg-eh)\sqrt{\pi}(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+f\right.\right.}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right.}{b^{3/2}f^2p^{3/2}q^{3/2}}$$

$$= -\frac{2e^{-\frac{a}{bpq}}(fg-eh)\sqrt{\pi}(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+f\right.\right.}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right.}{b^{3/2}f^2p^{3/2}q^{3/2}}$$

$$= \frac{2e^{-\frac{a}{bpq}}(fg-eh)\sqrt{\pi}(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)\right.\right.}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right.}{b^{3/2}f^2p^{3/2}q^{3/2}}$$

Mathematica [A] time = 1.34, size = 435, normalized size = 1.58

$$\frac{2(e+fx)e^{-\frac{2a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\left(-2\sqrt{\pi}\,ehe^{\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{\frac{1}{pq}}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,\text{erfi}\left(\frac{\sqrt{a+b\log}}{}\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)/(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2),x]
```

```
[Out] (2*(e + f*x)*(-2*e*E^(a/(b*p*q))*h*Sqrt[Pi]*(c*(d*(e + f*x)^p)^q)^(1/(p*q))
*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])]*Sqrt[
a + b*Log[c*(d*(e + f*x)^p)^q]] + h*Sqrt[2*Pi]*(e + f*x)*Erfi[(Sqrt[2]*Sqrt
[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])]*Sqrt[a + b*Log
[c*(d*(e + f*x)^p)^q]] + Sqrt[b]*E^(a/(b*p*q))*Sqrt[p]*Sqrt[q]*(c*(d*(e + f
*x)^p)^q)^(1/(p*q))*(-(E^(a/(b*p*q))*f*(c*(d*(e + f*x)^p)^q)^(1/(p*q))*(g +
 h*x)) + (f*g + e*h)*Gamma[1/2, -((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q))
]*Sqrt[-((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q))])))/(b^(3/2)*E^((2*a)/(b
*p*q))*f^2*p^(3/2)*q^(3/2)*(c*(d*(e + f*x)^p)^q)^(2/(p*q))*Sqrt[a + b*Log[c
*(d*(e + f*x)^p)^q]])
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{hx+g}{\left(b\log\left(\left((fx+e)^{p}d\right)^{q}c\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((h*x + g)/(b*log(((f*x + e)^p*d)^q*c) + a)^(3/2), x)
```

maple [F] time = 0.08, size = 0, normalized size = 0.00

$$\int \frac{hx+g}{\left(b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)/(b*ln(c*(d*(f*x+e)^p)^q)+a)^(3/2),x)
```

```
[Out] int((h*x+g)/(b*ln(c*(d*(f*x+e)^p)^q)+a)^(3/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{hx+g}{\left(b\log\left(\left((fx+e)^{p}d\right)^{q}c\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((h*x + g)/(b*log(((f*x + e)^p*d)^q*c) + a)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{g+h\,x}{{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)/(a + b*log(c*(d*(e + f*x)^p)^q))^(3/2),x)
```

```
[Out] int((g + h*x)/(a + b*log(c*(d*(e + f*x)^p)^q))^(3/2), x)
```

sympy [F]   time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{g + hx}{\left(a + b\log\left(c\left(d\left(e + fx\right)^{p}\right)^{q}\right)\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*ln(c*(d*(f*x+e)**p)**q))**(3/2),x)
```

```
[Out] Integral((g + h*x)/(a + b*log(c*(d*(e + f*x)**p)**q))**(3/2), x)
```

3.476 $\int \frac{1}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}\,dx$

Optimal. Leaf size=147

$$\frac{2\sqrt{\pi}\,(e+fx)e^{-\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\operatorname{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{b^{3/2}fp^{3/2}q^{3/2}}-\frac{2(e+fx)}{bfpq\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}$$

```
[Out] 2*(f*x+e)*erfi((a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/b^(1/2)/p^(1/2)/q^(1/2))*P
i^(1/2)/b^(3/2)/exp(a/b/p/q)/f/p^(3/2)/q^(3/2)/((c*(d*(f*x+e)^p)^q)^(1/p/q)
)-2*(f*x+e)/b/f/p/q/(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)
```

Rubi [A] time = 0.25, antiderivative size = 147, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273, Rules used = {2389, 2297, 2300, 2180, 2204, 2445}

$$\frac{2\sqrt{\pi}\,(e+fx)e^{-\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{b^{3/2}fp^{3/2}q^{3/2}}-\frac{2(e+fx)}{bfpq\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^(-3/2),x]
```

```
[Out] (2*Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(Sqrt[b]*Sq
rt[p]*Sqrt[q])])/(b^(3/2)*E^(a/(b*p*q))*f*p^(3/2)*q^(3/2)*(c*(d*(e + f*x)^p
)^q)^(1/(p*q))) - (2*(e + f*x))/(b*f*p*q*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q
]])
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2297

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[(x*(a + b
*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
gerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{1}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}\,dx = \text{Subst}\left(\int \frac{1}{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^{3/2}}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx\right.\right.$$

$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \frac{1}{\left(a+b\log\left(cd^q x^{pq}\right)\right)^{3/2}}\,dx, x, e+fx\right)}{f}, cd^q(e+fx)^{pq}, c\left(d(e+\right.\right.$$

$$= -\frac{2(e+fx)}{bfpq\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}} + \text{Subst}\left(\frac{2\,\text{Subst}\left(\int \frac{1}{\sqrt{a+b\log(cd^q x}}\right.}{bfpq}\right.$$

$$= -\frac{2(e+fx)}{bfpq\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}} + \text{Subst}\left(\frac{\left(2(e+fx)\left(cd^q(e+fx\right.\right.}{}\right.$$

$$= -\frac{2(e+fx)}{bfpq\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}} + \text{Subst}\left(\frac{\left(4(e+fx)\left(cd^q(e+fx\right.\right.}{}\right.$$

$$= \frac{2e^{-\frac{a}{bpq}}\sqrt{\pi}\,(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{b^{3/2}fp^{3/2}q^{3/2}} - \frac{}{b\ldots}$$

Mathematica [A] time = 0.19, size = 181, normalized size = 1.23

$$-\frac{2(e+fx)e^{-\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\left(e^{\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{\frac{1}{pq}} - \sqrt{-\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}}\,\Gamma\left(\frac{1}{2}, -\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right.\right.}{bfpq\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^(-3/2),x]
```

```
[Out] (-2*(e + f*x)*(E^(a/(b*p*q))*(c*(d*(e + f*x)^p)^q)^(1/(p*q)) - Gamma[1/2, -
((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q))]*Sqrt[-((a + b*Log[c*(d*(e + f*x
)^p)^q])/(b*p*q))]))/(b*E^(a/(b*p*q))*f*p*q*(c*(d*(e + f*x)^p)^q)^(1/(p*q))
*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(b \log\left(\left(\left(fx+e\right)^{p} d\right)^{q} c\right) + a\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^(-3/2), x)
```

maple [F] time = 0.08, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(b \ln\left(c \left(d \left(fx+e\right)^{p}\right)^{q}\right) + a\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*ln(c*(d*(f*x+e)^p)^q)+a)^(3/2),x)
```

```
[Out] int(1/(b*ln(c*(d*(f*x+e)^p)^q)+a)^(3/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(b \log\left(\left(\left(fx+e\right)^{p} d\right)^{q} c\right) + a\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^(-3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}^{3/2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*log(c*(d*(e + f*x)^p)^q))^(3/2),x)
```

```
[Out] int(1/(a + b*log(c*(d*(e + f*x)^p)^q))^(3/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a + b\log\left(c\left(d\left(e + fx\right)^{p}\right)^{q}\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(d*(f*x+e)**p)**q))**(3/2),x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**(-3/2), x)
```

3.477 $\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}\,dx$

Optimal. Leaf size=33

$$\text{Int}\left(\frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}},x\right)$$

```
[Out] Unintegrable(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2),x)
```

Rubi [A] time = 0.12, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2)),x]
```

```
[Out] Defer[Int][1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2)), x]
```

Rubi steps

$$\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}\,dx=\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}\,dx$$

Mathematica [A] time = 0.48, size = 0, normalized size = 0.00

$$\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2)),x]
```

```
[Out] Integrate[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2)), x]
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="fricas
")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(hx+g)\left(b\log\left(\left((fx+e)^p d\right)^q c\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="giac")
[Out] integrate(1/((h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a)^(3/2)), x)
```

maple [A] time = 0.38, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(hx+g\right)\left(b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(h*x+g)/(b*ln(c*(d*(f*x+e)^p)^q)+a)^(3/2),x)
[Out] int(1/(h*x+g)/(b*ln(c*(d*(f*x+e)^p)^q)+a)^(3/2),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(hx+g\right)\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="maxima
")
[Out] integrate(1/((h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a)^(3/2)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{\left(g+h\,x\right)\,{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((g + h*x)*(a + b*log(c*(d*(e + f*x)^p)^q))^(3/2)),x)
[Out] int(1/((g + h*x)*(a + b*log(c*(d*(e + f*x)^p)^q))^(3/2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)\right)^{\frac{3}{2}}\left(g+hx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)**p)**q))**(3/2),x)
[Out] Integral(1/((a + b*log(c*(d*(e + f*x)**p)**q))**(3/2)*(g + h*x)), x)
```

3.478 $\int \frac{(g+hx)^2}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{5/2}}\,dx$

Optimal. Leaf size=514

$$\frac{16\sqrt{2\pi}\,h(e+fx)^2e^{-\frac{2a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\operatorname{erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{3b^{5/2}f^3p^{5/2}q^{5/2}}+\frac{4\sqrt{\pi}\,(e+fx)e^{-\frac{a}{bpq}}(fg-eh)^2}{}$$

```
[Out] -2/3*(f*x+e)*(h*x+g)^2/b/f/p/q/(a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2)+4/3*(-e*h+
f*g)^2*(f*x+e)*erfi((a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/b^(1/2)/p^(1/2)/q^(1/
2))*Pi^(1/2)/b^(5/2)/exp(a/b/p/q)/f^3/p^(5/2)/q^(5/2)/((c*(d*(f*x+e)^p)^q)^
(1/p/q))+16/3*h*(-e*h+f*g)*(f*x+e)^2*erfi(2^(1/2)*(a+b*ln(c*(d*(f*x+e)^p)^q
))^(1/2)/b^(1/2)/p^(1/2)/q^(1/2))*2^(1/2)*Pi^(1/2)/b^(5/2)/exp(2*a/b/p/q)/f
^3/p^(5/2)/q^(5/2)/((c*(d*(f*x+e)^p)^q)^(2/p/q))+4*h^2*(f*x+e)^3*erfi(3^(1/
2)*(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/b^(1/2)/p^(1/2)/q^(1/2))*3^(1/2)*Pi^(1
/2)/b^(5/2)/exp(3*a/b/p/q)/f^3/p^(5/2)/q^(5/2)/((c*(d*(f*x+e)^p)^q)^(3/p/q)
)+8/3*(-e*h+f*g)*(f*x+e)*(h*x+g)/b^2/f^2/p^2/q^2/(a+b*ln(c*(d*(f*x+e)^p)^q)
)^(1/2)-4*(f*x+e)*(h*x+g)^2/b^2/f/p^2/q^2/(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)
```

Rubi [A] time = 3.86, antiderivative size = 514, normalized size of antiderivative = 1.00, number of steps used = 42, number of rules used = 9, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.300, Rules used = {2400, 2401, 2389, 2300, 2180, 2204, 2390, 2310, 2445}

$$\frac{16\sqrt{2\pi}\,h(e+fx)^2e^{-\frac{2a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{3b^{5/2}f^3p^{5/2}q^{5/2}}+\frac{4\sqrt{\pi}\,(e+fx)e^{-\frac{a}{bpq}}(fg-eh)^2}{}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)^2/(a + b*Log[c*(d*(e + f*x)^p)^q])^(5/2),x]
```

```
[Out] (4*(f*g - e*h)^2*Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q
]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(3*b^(5/2)*E^(a/(b*p*q))*f^3*p^(5/2)*q^(5/2)
*(c*(d*(e + f*x)^p)^q)^(1/(p*q))) + (16*h*(f*g - e*h)*Sqrt[2*Pi]*(e + f*x)^
2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt
[q])])/(3*b^(5/2)*E^((2*a)/(b*p*q))*f^3*p^(5/2)*q^(5/2)*(c*(d*(e + f*x)^p)^
q)^(2/(p*q))) + (4*h^2*Sqrt[3*Pi]*(e + f*x)^3*Erfi[(Sqrt[3]*Sqrt[a + b*Log[
c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(b^(5/2)*E^((3*a)/(b*p*q
))*f^3*p^(5/2)*q^(5/2)*(c*(d*(e + f*x)^p)^q)^(3/(p*q))) - (2*(e + f*x)*(g +
 h*x)^2)/(3*b*f*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2)) + (8*(f*g - e*h
)*(e + f*x)*(g + h*x))/(3*b^2*f^2*p^2*q^2*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^
q]]) - (4*(e + f*x)*(g + h*x)^2)/(b^2*f*p^2*q^2*Sqrt[a + b*Log[c*(d*(e + f*
x)^p)^q]])
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
```

```
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2400

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((d + e*x)*(f + g*x)^q*(a + b*Log[c*(d + e
*x)^n])^(p + 1))/(b*e*n*(p + 1)), x] + (-Dist[(q + 1)/(b*n*(p + 1)), Int[(f
 + g*x)^q*(a + b*Log[c*(d + e*x)^n])^(p + 1), x], x] + Dist[(q*(e*f - d*g))
/(b*e*n*(p + 1)), Int[(f + g*x)^(q - 1)*(a + b*Log[c*(d + e*x)^n])^(p + 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] && LtQ[
p, -1] && GtQ[q, 0]
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{(g+hx)^2}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{5/2}}\,dx = \text{Subst}\left(\int \frac{(g+hx)^2}{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^{5/2}}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q$$

$$= -\frac{2(e+fx)(g+hx)^2}{3bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}} + \text{Subst}\left(\frac{2\int \frac{(g+hx)^2}{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^{3}}}{bpq}\right.$$

$$= -\frac{2(e+fx)(g+hx)^2}{3bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}} + \frac{8(fg-eh)(e+fx)(g+}{3b^2f^2p^2q^2\sqrt{a+b\log\left(c\left(d(e\right.\right.}}$$

$$= -\frac{2(e+fx)(g+hx)^2}{3bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}} + \frac{8(fg-eh)(e+fx)(g+}{3b^2f^2p^2q^2\sqrt{a+b\log\left(c\left(d(e\right.\right.}}$$

$$= -\frac{2(e+fx)(g+hx)^2}{3bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}} + \frac{8(fg-eh)(e+fx)(g+}{3b^2f^2p^2q^2\sqrt{a+b\log\left(c\left(d(e\right.\right.}}$$

$$= -\frac{2(e+fx)(g+hx)^2}{3bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}} + \frac{8(fg-eh)(e+fx)(g+}{3b^2f^2p^2q^2\sqrt{a+b\log\left(c\left(d(e\right.\right.}}$$

$$= \frac{8e^{-\frac{a}{bpq}}(fg-eh)^2\sqrt{\pi}\,(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right.}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right.}{3b^{5/2}f^3p^{5/2}q^{5/2}}$$

$$= \frac{8e^{-\frac{a}{bpq}}(fg-eh)^2\sqrt{\pi}\,(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right.}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right.}{3b^{5/2}f^3p^{5/2}q^{5/2}}$$

$$= \frac{4e^{-\frac{a}{bpq}}(fg-eh)^2\sqrt{\pi}\,(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right.}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right.}{3b^{5/2}f^3p^{5/2}q^{5/2}}$$

Mathematica [A] time = 6.93, size = 652, normalized size = 1.27

$$-\frac{2(e+fx)e^{-\frac{3a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{3}{pq}}\left(\sqrt{b}\sqrt{p}\sqrt{q}\,e^{\frac{2a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{\frac{2}{pq}}\left(2bpq\left(2e^2h^2+6efgh+f^2g^2\right)\left(-\frac{a+b\log\left(c\right.}{b}\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)^2/(a + b*Log[c*(d*(e + f*x)^p)^q])^(5/2),x]
```

```
[Out] (-2*(e + f*x)*(2*e*E^((2*a)/(b*p*q))*h*(8*f*g + e*h)*Sqrt[Pi]*(c*(d*(e + f*
x)^p)^q)^(2/(p*q))*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(Sqrt[b]*Sqrt[
p]*Sqrt[q])]*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2) + 8*E^(a/(b*p*q))*h*(-(
f*g) + e*h)*Sqrt[2*Pi]*(e + f*x)*(c*(d*(e + f*x)^p)^q)^(1/(p*q))*Erfi[(Sqrt
[2]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])]*(a + b
*Log[c*(d*(e + f*x)^p)^q])^(3/2) - 6*h^2*Sqrt[3*Pi]*(e + f*x)^2*Erfi[(Sqrt[
3]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])]*(a + b*
Log[c*(d*(e + f*x)^p)^q])^(3/2) + Sqrt[b]*E^((2*a)/(b*p*q))*Sqrt[p]*Sqrt[q]
*(c*(d*(e + f*x)^p)^q)^(2/(p*q))*(2*b*(f^2*g^2 + 6*e*f*g*h + 2*e^2*h^2)*p*q
*Gamma[1/2, -((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q))]*(-((a + b*Log[c*(d
*(e + f*x)^p)^q])/(b*p*q)))^(3/2) + E^(a/(b*p*q))*f*(c*(d*(e + f*x)^p)^q)^(
1/(p*q))*(g + h*x)*(b*f*p*q*(g + h*x) + 2*a*(f*g + 2*e*h + 3*f*h*x) + 2*b*(
2*e*h + f*(g + 3*h*x))*Log[c*(d*(e + f*x)^p)^q]))))/(3*b^(5/2)*E^((3*a)/(b*
p*q))*f^3*p^(5/2)*q^(5/2)*(c*(d*(e + f*x)^p)^q)^(3/(p*q))*(a + b*Log[c*(d*(
e + f*x)^p)^q])^(3/2))
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^(5/2),x, algorithm="fricas
")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(hx+g\right)^{2}}{\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((h*x + g)^2/(b*log(((f*x + e)^p*d)^q*c) + a)^(5/2), x)
```

maple [F] time = 0.32, size = 0, normalized size = 0.00

$$\int \frac{\left(hx+g\right)^{2}}{\left(b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^2/(b*ln(c*(d*(f*x+e)^p)^q)+a)^(5/2),x)
```

```
[Out] int((h*x+g)^2/(b*ln(c*(d*(f*x+e)^p)^q)+a)^(5/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(hx+g\right)^{2}}{\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^(5/2),x, algorithm="maxima
")
```

```
[Out] integrate((h*x + g)^2/(b*log(((f*x + e)^p*d)^q*c) + a)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(g+h\,x\right)^2}{{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)^2/(a + b*log(c*(d*(e + f*x)^p)^q))^(5/2),x)
```

```
[Out] int((g + h*x)^2/(a + b*log(c*(d*(e + f*x)^p)^q))^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(g + hx\right)^{2}}{\left(a + b \log{\left(c \left(d \left(e + fx\right)^{p}\right)^{q} \right)}\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**2/(a+b*ln(c*(d*(f*x+e)**p)**q))**(5/2),x)
```

```
[Out] Integral((g + h*x)**2/(a + b*log(c*(d*(e + f*x)**p)**q))**(5/2), x)
```

3.479 $\int \frac{g+hx}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{5/2}}\,dx$

Optimal. Leaf size=380

$$\frac{4\sqrt{\pi}(e+fx)e^{-\frac{a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{3b^{5/2}f^2p^{5/2}q^{5/2}}+\frac{8\sqrt{2\pi}h(e+fx)^2e^{-\frac{2a}{bpq}}\left(c\left(d(e+f\right.\right.}{3b^{5/2}}$$

```
[Out] -2/3*(f*x+e)*(h*x+g)/b/f/p/q/(a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2)+4/3*(-e*h+f*
g)*(f*x+e)*erfi((a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/b^(1/2)/p^(1/2)/q^(1/2))*
Pi^(1/2)/b^(5/2)/exp(a/b/p/q)/f^2/p^(5/2)/q^(5/2)/((c*(d*(f*x+e)^p)^q)^(1/p
/q))+8/3*h*(f*x+e)^2*erfi(2^(1/2)*(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/b^(1/2)
/p^(1/2)/q^(1/2))*2^(1/2)*Pi^(1/2)/b^(5/2)/exp(2*a/b/p/q)/f^2/p^(5/2)/q^(5/
2)/((c*(d*(f*x+e)^p)^q)^(2/p/q))+4/3*(-e*h+f*g)*(f*x+e)/b^2/f^2/p^2/q^2/(a+
b*ln(c*(d*(f*x+e)^p)^q))^(1/2)-8/3*(f*x+e)*(h*x+g)/b^2/f/p^2/q^2/(a+b*ln(c*
(d*(f*x+e)^p)^q))^(1/2)
```

Rubi [A] time = 1.60, antiderivative size = 380, normalized size of antiderivative = 1.00, number of steps used = 22, number of rules used = 10, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.357, Rules used = {2400, 2401, 2389, 2300, 2180, 2204, 2390, 2310, 2297, 2445}

$$\frac{4\sqrt{\pi}(e+fx)e^{-\frac{a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{3b^{5/2}f^2p^{5/2}q^{5/2}}+\frac{8\sqrt{2\pi}h(e+fx)^2e^{-\frac{2a}{bpq}}\left(c\left(d(e+f\right.\right.}{3b^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)/(a + b*Log[c*(d*(e + f*x)^p)^q])^(5/2),x]
```

```
[Out] (4*(f*g - e*h)*Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]
/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(3*b^(5/2)*E^(a/(b*p*q))*f^2*p^(5/2)*q^(5/2)*(
c*(d*(e + f*x)^p)^q)^(1/(p*q))) + (8*h*Sqrt[2*Pi]*(e + f*x)^2*Erfi[(Sqrt[2]
*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(3*b^(5/
2)*E^((2*a)/(b*p*q))*f^2*p^(5/2)*q^(5/2)*(c*(d*(e + f*x)^p)^q)^(2/(p*q))) -
 (2*(e + f*x)*(g + h*x))/(3*b*f*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2))
 + (4*(f*g - e*h)*(e + f*x))/(3*b^2*f^2*p^2*q^2*Sqrt[a + b*Log[c*(d*(e + f*
x)^p)^q]]) - (8*(e + f*x)*(g + h*x))/(3*b^2*f*p^2*q^2*Sqrt[a + b*Log[c*(d*(
e + f*x)^p)^q]])
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2297

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[(x*(a + b
*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
gerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2400

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((d + e*x)*(f + g*x)^q*(a + b*Log[c*(d + e
*x)^n])^(p + 1))/(b*e*n*(p + 1)), x] + (-Dist[(q + 1)/(b*n*(p + 1)), Int[(f
 + g*x)^q*(a + b*Log[c*(d + e*x)^n])^(p + 1), x], x] + Dist[(q*(e*f - d*g))
/(b*e*n*(p + 1)), Int[(f + g*x)^(q - 1)*(a + b*Log[c*(d + e*x)^n])^(p + 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] && LtQ[
p, -1] && GtQ[q, 0]
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{g+hx}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{5/2}}\,dx = \text{Subst}\left(\int \frac{g+hx}{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^{5/2}}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)\right.\right.$$

$$= -\frac{2(e+fx)(g+hx)}{3bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}} + \text{Subst}\left(\frac{4\int \frac{g+hx}{\left(a+b\log\left(cd^q(e+fx)^p\right.\right.}}{3bpq}\right.$$

$$= -\frac{2(e+fx)(g+hx)}{3bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}} - \frac{8(e+fx)(g+hx}{3b^2fp^2q^2\sqrt{a+b\log\left(c\left(d(\right.\right.}}$$

$$= -\frac{2(e+fx)(g+hx)}{3bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}} + \frac{4(fg-eh)(e+f}{3b^2f^2p^2q^2\sqrt{a+b\log\left(c\left(d\right.\right.}}$$

$$= -\frac{2(e+fx)(g+hx)}{3bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}} + \frac{4(fg-eh)(e+f}{3b^2f^2p^2q^2\sqrt{a+b\log\left(c\left(d\right.\right.}}$$

$$= -\frac{2(e+fx)(g+hx)}{3bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}} + \frac{4(fg-eh)(e+f}{3b^2f^2p^2q^2\sqrt{a+b\log\left(c\left(d\right.\right.}}$$

$$= -\frac{4e^{-\frac{a}{bpq}}(fg-eh)\sqrt{\pi}(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+f\right.\right.}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right.}{b^{5/2}f^2p^{5/2}q^{5/2}}$$

$$= -\frac{4e^{-\frac{a}{bpq}}(fg-eh)\sqrt{\pi}(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+f\right.\right.}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right.}{b^{5/2}f^2p^{5/2}q^{5/2}}$$

$$= \frac{4e^{-\frac{a}{bpq}}(fg-eh)\sqrt{\pi}(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)\right.\right.}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right.}{3b^{5/2}f^2p^{5/2}q^{5/2}}$$

Mathematica [A] time = 2.31, size = 491, normalized size = 1.29

$$-\frac{2(e+fx)e^{-\frac{2a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\left(8\sqrt{\pi}\,ehe^{\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{\frac{1}{pq}}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}\text{erfi}\left(\sqrt{a+b\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)/(a + b*Log[c*(d*(e + f*x)^p)^q])^(5/2),x]
```

```
[Out] (-2*(e + f*x)*(8*e*E^(a/(b*p*q))*h*Sqrt[Pi]*(c*(d*(e + f*x)^p)^q)^(1/(p*q))
*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])]*(a +
b*Log[c*(d*(e + f*x)^p)^q])^(3/2) - 4*h*Sqrt[2*Pi]*(e + f*x)*Erfi[(Sqrt[2]*
Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])]*(a + b*Log
[c*(d*(e + f*x)^p)^q])^(3/2) + Sqrt[b]*E^(a/(b*p*q))*Sqrt[p]*Sqrt[q]*(c*(d*
(e + f*x)^p)^q)^(1/(p*q))*(2*b*(f*g + 3*e*h)*p*q*Gamma[1/2, -((a + b*Log[c*
(d*(e + f*x)^p)^q])/(b*p*q))]*(-((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)))
^(3/2) + E^(a/(b*p*q))*(c*(d*(e + f*x)^p)^q)^(1/(p*q))*(b*f*p*q*(g + h*x) +
 2*a*(f*g + e*h + 2*f*h*x) + 2*b*(e*h + f*(g + 2*h*x))*Log[c*(d*(e + f*x)^p
)^q]))))/(3*b^(5/2)*E^((2*a)/(b*p*q))*f^2*p^(5/2)*q^(5/2)*(c*(d*(e + f*x)^p
)^q)^(2/(p*q))*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2))
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{hx+g}{\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((h*x + g)/(b*log(((f*x + e)^p*d)^q*c) + a)^(5/2), x)
```

maple [F] time = 0.08, size = 0, normalized size = 0.00

$$\int \frac{hx+g}{\left(b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)/(b*ln(c*(d*(f*x+e)^p)^q)+a)^(5/2),x)
```

```
[Out] int((h*x+g)/(b*ln(c*(d*(f*x+e)^p)^q)+a)^(5/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{hx+g}{\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((h*x + g)/(b*log(((f*x + e)^p*d)^q*c) + a)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{g+hx}{\left(a+b\ln\left(c\left(d\left(e+fx\right)^p\right)^q\right)\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)/(a + b*log(c*(d*(e + f*x)^p)^q))^(5/2),x)
[Out] int((g + h*x)/(a + b*log(c*(d*(e + f*x)^p)^q))^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*ln(c*(d*(f*x+e)**p)**q))**(5/2),x)
[Out] Timed out
```

3.480 $\int \frac{1}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{5/2}}\,dx$

Optimal. Leaf size=194

$$\frac{4\sqrt{\pi}\,(e+fx)e^{-\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\operatorname{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{3b^{5/2}fp^{5/2}q^{5/2}}-\frac{4(e+fx)}{3b^2fp^2q^2\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}-\frac{}{3bfp}$$

```
[Out] -2/3*(f*x+e)/b/f/p/q/(a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2)+4/3*(f*x+e)*erfi((a+
b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/b^(1/2)/p^(1/2)/q^(1/2))*Pi^(1/2)/b^(5/2)/ex
p(a/b/p/q)/f/p^(5/2)/q^(5/2)/((c*(d*(f*x+e)^p)^q)^(1/p/q))-4/3*(f*x+e)/b^2/
f/p^2/q^2/(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)
```

Rubi [A] time = 0.34, antiderivative size = 194, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.273$, Rules used = {2389, 2297, 2300, 2180, 2204, 2445}

$$\frac{4\sqrt{\pi}\,(e+fx)e^{-\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{3b^{5/2}fp^{5/2}q^{5/2}}-\frac{4(e+fx)}{3b^2fp^2q^2\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}-\frac{}{3bfp}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^(-5/2),x]
```

```
[Out] (4*Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(Sqrt[b]*Sq
rt[p]*Sqrt[q])])/(3*b^(5/2)*E^(a/(b*p*q))*f*p^(5/2)*q^(5/2)*(c*(d*(e + f*x)
^p)^q)^(1/(p*q))) - (2*(e + f*x))/(3*b*f*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q
])^(3/2)) - (4*(e + f*x))/(3*b^2*f*p^2*q^2*Sqrt[a + b*Log[c*(d*(e + f*x)^p)
^q]])
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2297

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[(x*(a + b
*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
gerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
```

```
{a, b, c, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{1}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{5/2}}\,dx = \text{Subst}\left(\int \frac{1}{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^{5/2}}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)\right.\right.$$

$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \frac{1}{\left(a+b\log\left(cd^q x^{pq}\right)\right)^{5/2}}\,dx, x, e+fx\right)}{f}, cd^q(e+fx)^{pq}, c\left(d(e+\right.\right.$$

$$= -\frac{2(e+fx)}{3bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}} + \text{Subst}\left(\frac{2\,\text{Subst}\left(\int \frac{1}{\left(a+b\log(c\right.}\right.}{3b}\right.$$

$$= -\frac{2(e+fx)}{3bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}} - \frac{4(e+fx)}{3b^2fp^2q^2\sqrt{a+b\log\left(c\left(d(\right.\right.}}$$

$$= -\frac{2(e+fx)}{3bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}} - \frac{4(e+fx)}{3b^2fp^2q^2\sqrt{a+b\log\left(c\left(d(\right.\right.}}$$

$$= -\frac{2(e+fx)}{3bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}} - \frac{4(e+fx)}{3b^2fp^2q^2\sqrt{a+b\log\left(c\left(d(\right.\right.}}$$

$$= \frac{4e^{-\frac{a}{bpq}}\sqrt{\pi}\,(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{3b^{5/2}fp^{5/2}q^{5/2}} - \frac{}{3}$$

Mathematica [A] time = 0.36, size = 211, normalized size = 1.09

$$-\frac{2(e+fx)e^{-\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\left(e^{\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{\frac{1}{pq}}\left(2a+2b\log\left(c\left(d(e+fx)^p\right)^q\right)+bpq\right)+2bpq\left(-\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)^{3/2}\Gamma\left(\frac{1}{2},-\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)\right)}{3b^2fp^2q^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^(-5/2),x]
```

```
[Out] (-2*(e + f*x)*(2*b*p*q*Gamma[1/2, -((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q
))]*(-((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)))^(3/2) + E^(a/(b*p*q))*(c*
(d*(e + f*x)^p)^q)^(1/(p*q))*(2*a + b*p*q + 2*b*Log[c*(d*(e + f*x)^p)^q])))
/(3*b^2*E^(a/(b*p*q))*f*p^2*q^2*(c*(d*(e + f*x)^p)^q)^(1/(p*q))*(a + b*Log[
c*(d*(e + f*x)^p)^q])^(3/2))
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^(-5/2), x)
```

maple [F] time = 0.08, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*ln(c*(d*(f*x+e)^p)^q)+a)^(5/2),x)
```

```
[Out] int(1/(b*ln(c*(d*(f*x+e)^p)^q)+a)^(5/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^(-5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{\left(a+b\,\ln\left(c\left(d\left(e+f\,x\right)^p\right)^q\right)\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*log(c*(d*(e + f*x)^p)^q))^(5/2),x)
```

```
[Out] int(1/(a + b*log(c*(d*(e + f*x)^p)^q))^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\log\left(c\left(d\left(e+fx\right)^p\right)^q\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(d*(f*x+e)**p)**q))**(5/2),x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**(-5/2), x)
```

3.481 $\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{5/2}}\,dx$

Optimal. Leaf size=33

$$\text{Int}\left(\frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{5/2}},x\right)$$

```
[Out] Unintegrable(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q))^(5/2),x)
```

Rubi [A] time = 0.13, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{5/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^(5/2)),x]
```

```
[Out] Defer[Int][1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^(5/2)), x]
```

Rubi steps

$$\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{5/2}}\,dx=\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{5/2}}\,dx$$

Mathematica [A] time = 0.85, size = 0, normalized size = 0.00

$$\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{5/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^(5/2)),x]
```

```
[Out] Integrate[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^(5/2)), x]
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^(5/2),x, algorithm="fricas
")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(hx+g)\left(b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^(5/2),x, algorithm="giac")
[Out] integrate(1/((h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a)^(5/2)), x)
```

maple [A] time = 0.37, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(hx+g\right)\left(b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)+a\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(h*x+g)/(b*ln(c*(d*(f*x+e)^p)^q)+a)^(5/2),x)
[Out] int(1/(h*x+g)/(b*ln(c*(d*(f*x+e)^p)^q)+a)^(5/2),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(hx+g\right)\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^(5/2),x, algorithm="maxima
")
[Out] integrate(1/((h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a)^(5/2)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{\left(g+h\,x\right)\,{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((g + h*x)*(a + b*log(c*(d*(e + f*x)^p)^q))^(5/2)),x)
[Out] int(1/((g + h*x)*(a + b*log(c*(d*(e + f*x)^p)^q))^(5/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)**p)**q))**(5/2),x)
[Out] Timed out
```

3.482 $\int (g+hx)^{3/2}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)dx$

Optimal. Leaf size=171

$$\frac{2(g+hx)^{5/2}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{5h}+\frac{4bpq(fg-eh)^{5/2}\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{5f^{5/2}h}-\frac{4bpq\sqrt{g+hx}\,(fg-eh)^2}{5f^2h}-\frac{4bpq(g}{}$$

```
[Out] -4/15*b*(-e*h+f*g)*p*q*(h*x+g)^(3/2)/f/h-4/25*b*p*q*(h*x+g)^(5/2)/h+4/5*b*(
-e*h+f*g)^(5/2)*p*q*arctanh(f^(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2))/f^(5/2)
/h+2/5*(h*x+g)^(5/2)*(a+b*ln(c*(d*(f*x+e)^p)^q))/h-4/5*b*(-e*h+f*g)^2*p*q*(
h*x+g)^(1/2)/f^2/h
```

Rubi [A] time = 0.33, antiderivative size = 171, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {2395, 50, 63, 208, 2445}

$$\frac{2(g+hx)^{5/2}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{5h}-\frac{4bpq\sqrt{g+hx}\,(fg-eh)^2}{5f^2h}+\frac{4bpq(fg-eh)^{5/2}\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{5f^{5/2}h}-\frac{4bpq(g}{}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)^(3/2)*(a + b*Log[c*(d*(e + f*x)^p)^q]),x]
```

```
[Out] (-4*b*(f*g - e*h)^2*p*q*Sqrt[g + h*x])/(5*f^2*h) - (4*b*(f*g - e*h)*p*q*(g
+ h*x)^(3/2))/(15*f*h) - (4*b*p*q*(g + h*x)^(5/2))/(25*h) + (4*b*(f*g - e*h
)^(5/2)*p*q*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]])/(5*f^(5/2)*h)
 + (2*(g + h*x)^(5/2)*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(5*h)
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] && !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) && !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int (g+hx)^{3/2}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)dx = \text{Subst}\left(\int (g+hx)^{3/2}\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)dx, cd^q(e+f$$

$$= \frac{2(g+hx)^{5/2}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{5h} - \text{Subst}\left(\frac{(2bfpq)\int}{5}\right.$$

$$= -\frac{4bpq(g+hx)^{5/2}}{25h} + \frac{2(g+hx)^{5/2}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{5h}$$

$$= -\frac{4b(fg-eh)pq(g+hx)^{3/2}}{15fh} - \frac{4bpq(g+hx)^{5/2}}{25h} + \frac{2(g+hx)^{5/2}\left(\right.}{}$$

$$= -\frac{4b(fg-eh)^2pq\sqrt{g+hx}}{5f^2h} - \frac{4b(fg-eh)pq(g+hx)^{3/2}}{15fh} - \frac{4bpq}{}$$

$$= -\frac{4b(fg-eh)^2pq\sqrt{g+hx}}{5f^2h} - \frac{4b(fg-eh)pq(g+hx)^{3/2}}{15fh} - \frac{4bpq}{}$$

$$= -\frac{4b(fg-eh)^2pq\sqrt{g+hx}}{5f^2h} - \frac{4b(fg-eh)pq(g+hx)^{3/2}}{15fh} - \frac{4bpq}{}$$

Mathematica [A] time = 0.39, size = 153, normalized size = 0.89

$$\frac{2\left(\frac{1}{5}a(g+hx)^{5/2}+\frac{1}{5}b(g+hx)^{5/2}\log\left(c\left(d(e+fx)^p\right)^q\right)-\frac{2}{75}bpq\left(\frac{5(fg-eh)\left(\sqrt{f}\sqrt{g+hx}(-3eh+4fg+fhx)-3(fg-eh)^{3/2}\tanh^{-1}\left(\right.\right.}{f^{5/2}}\right.\right.}{h}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)^(3/2)*(a + b*Log[c*(d*(e + f*x)^p)^q]),x]
```

```
[Out] (2*((a*(g + h*x)^(5/2))/5 - (2*b*p*q*(3*(g + h*x)^(5/2) + (5*(f*g - e*h)*(S
qrt[f]*Sqrt[g + h*x]*(4*f*g - 3*e*h + f*h*x) - 3*(f*g - e*h)^(3/2)*ArcTanh[
(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]))/f^(5/2)))/75 + (b*(g + h*x)^(5/2
)*Log[c*(d*(e + f*x)^p)^q])/5))/h
```

fricas [B] time = 0.52, size = 624, normalized size = 3.65

$$\left[\frac{2\left(15\left(bf^2g^2-2\,befgh+be^2h^2\right)pq\sqrt{\frac{fg-eh}{f}}\log\left(\frac{fhx+2\,fg-eh+2\,\sqrt{hx+g}\,f\sqrt{\frac{fg-eh}{f}}}{fx+e}\right)+\left(15\,af^2g^2-2\left(23\,bf^2g^2-35\,befg\right.\right.\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(3/2)*(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="fricas")
```

```
[Out] [2/75*(15*(b*f^2*g^2 - 2*b*e*f*g*h + b*e^2*h^2)*p*q*sqrt((f*g - e*h)/f)*log
((f*h*x + 2*f*g - e*h + 2*sqrt(h*x + g)*f*sqrt((f*g - e*h)/f))/(f*x + e)) +
 (15*a*f^2*g^2 - 2*(23*b*f^2*g^2 - 35*b*e*f*g*h + 15*b*e^2*h^2)*p*q - 3*(2*
b*f^2*h^2*p*q - 5*a*f^2*h^2)*x^2 + 2*(15*a*f^2*g*h - (11*b*f^2*g*h - 5*b*e*
f*h^2)*p*q)*x + 15*(b*f^2*h^2*p*q*x^2 + 2*b*f^2*g*h*p*q*x + b*f^2*g^2*p*q)*
log(f*x + e) + 15*(b*f^2*h^2*x^2 + 2*b*f^2*g*h*x + b*f^2*g^2)*log(c) + 15*(
b*f^2*h^2*q*x^2 + 2*b*f^2*g*h*q*x + b*f^2*g^2*q)*log(d))*sqrt(h*x + g))/(f^
2*h), 2/75*(30*(b*f^2*g^2 - 2*b*e*f*g*h + b*e^2*h^2)*p*q*sqrt(-(f*g - e*h)/
f)*arctan(-sqrt(h*x + g)*f*sqrt(-(f*g - e*h)/f)/(f*g - e*h)) + (15*a*f^2*g^
2 - 2*(23*b*f^2*g^2 - 35*b*e*f*g*h + 15*b*e^2*h^2)*p*q - 3*(2*b*f^2*h^2*p*q
 - 5*a*f^2*h^2)*x^2 + 2*(15*a*f^2*g*h - (11*b*f^2*g*h - 5*b*e*f*h^2)*p*q)*x
 + 15*(b*f^2*h^2*p*q*x^2 + 2*b*f^2*g*h*p*q*x + b*f^2*g^2*p*q)*log(f*x + e)
+ 15*(b*f^2*h^2*x^2 + 2*b*f^2*g*h*x + b*f^2*g^2)*log(c) + 15*(b*f^2*h^2*q*x
^2 + 2*b*f^2*g*h*q*x + b*f^2*g^2*q)*log(d))*sqrt(h*x + g))/(f^2*h)]
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(hx+g\right)^{\frac{3}{2}}\left(b\log\left(\left(\left(fx+e\right)^pd\right)^qc\right)+a\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(3/2)*(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="giac")
```

```
[Out] integrate((h*x + g)^(3/2)*(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

maple [F] time = 0.50, size = 0, normalized size = 0.00

$$\int\left(hx+g\right)^{\frac{3}{2}}\left(b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)+a\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^(3/2)*(b*ln(c*(d*(f*x+e)^p)^q)+a),x)
```

```
[Out] int((h*x+g)^(3/2)*(b*ln(c*(d*(f*x+e)^p)^q)+a),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(3/2)*(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(e*h-f*g>0)', see `assume?` for more
 details)Is e*h-f*g positive or negative?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int (g+h\,x)^{3/2}\,\left(a+b\,\ln\left(c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)^(3/2)*(a + b*log(c*(d*(e + f*x)^p)^q)),x)
```

```
[Out] int((g + h*x)^(3/2)*(a + b*log(c*(d*(e + f*x)^p)^q)), x)
```

sympy [A] time = 98.68, size = 484, normalized size = 2.83

$$ag\left(\begin{cases}\sqrt{g}\,x & \text{for}\ h=0\\ \frac{2(g+hx)^{\frac{3}{2}}}{3h} & \text{otherwise}\end{cases}\right)+\frac{2a\left(-\frac{g(g+hx)^{\frac{3}{2}}}{3}+\frac{(g+hx)^{\frac{5}{2}}}{5}\right)}{h}+\frac{2bg\left(-\frac{2fpq\left(\frac{h(g+hx)^{\frac{3}{2}}}{3f}+\frac{\sqrt{g+hx}\left(-eh^2+fgh\right)}{f^2}+\frac{h(eh-fg)^2\operatorname{atan}\left(\frac{\sqrt{g+hx}}{\sqrt{\frac{eh-fg}{f}}}\right)}{f^3\sqrt{\frac{eh-fg}{f}}}\right)}{3h}\right.}{h}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**(3/2)*(a+b*ln(c*(d*(f*x+e)**p)**q)),x)
```

```
[Out] a*g*Piecewise((sqrt(g)*x, Eq(h, 0)), (2*(g + h*x)**(3/2)/(3*h), True)) + 2*
a*(-g*(g + h*x)**(3/2)/3 + (g + h*x)**(5/2)/5)/h + 2*b*g*(-2*f*p*q*(h*(g +
h*x)**(3/2)/(3*f) + sqrt(g + h*x)*(-e*h**2 + f*g*h)/f**2 + h*(e*h - f*g)**2
*atan(sqrt(g + h*x)/sqrt((e*h - f*g)/f))/(f**3*sqrt((e*h - f*g)/f)))/(3*h)
+ (g + h*x)**(3/2)*log(c*(d*(e - f*g/h + f*(g + h*x)/h)**p)**q)/3)/h + 2*b*
(-2*f*p*q*(h*(g + h*x)**(5/2)/(5*f) + (g + h*x)**(3/2)*(-e*h**2 + f*g*h)/(3
*f**2) + sqrt(g + h*x)*(e**2*h**3 - 2*e*f*g*h**2 + f**2*g**2*h)/f**3 - h*(e
*h - f*g)**3*atan(sqrt(g + h*x)/sqrt((e*h - f*g)/f))/(f**4*sqrt((e*h - f*g)
/f)))/(5*h) - g*(-2*f*p*q*(h*(g + h*x)**(3/2)/(3*f) + sqrt(g + h*x)*(-e*h**
2 + f*g*h)/f**2 + h*(e*h - f*g)**2*atan(sqrt(g + h*x)/sqrt((e*h - f*g)/f))/
(f**3*sqrt((e*h - f*g)/f)))/(3*h) + (g + h*x)**(3/2)*log(c*(d*(e - f*g/h +
f*(g + h*x)/h)**p)**q)/3) + (g + h*x)**(5/2)*log(c*(d*(e - f*g/h + f*(g + h
*x)/h)**p)**q)/5)/h
```

3.483 $\int \sqrt{g+hx}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\,dx$

Optimal. Leaf size=139

$$\frac{2(g+hx)^{3/2}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{3h}+\frac{4bpq(fg-eh)^{3/2}\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{3f^{3/2}h}-\frac{4bpq\sqrt{g+hx}\,(fg-eh)}{3fh}-\frac{4bpq(g$$

```
[Out] -4/9*b*p*q*(h*x+g)^(3/2)/h+4/3*b*(-e*h+f*g)^(3/2)*p*q*arctanh(f^(1/2)*(h*x+
g)^(1/2)/(-e*h+f*g)^(1/2))/f^(3/2)/h+2/3*(h*x+g)^(3/2)*(a+b*ln(c*(d*(f*x+e)
^p)^q))/h-4/3*b*(-e*h+f*g)*p*q*(h*x+g)^(1/2)/f/h
```

Rubi [A] time = 0.18, antiderivative size = 139, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {2395, 50, 63, 208, 2445}

$$\frac{2(g+hx)^{3/2}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{3h}+\frac{4bpq(fg-eh)^{3/2}\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{3f^{3/2}h}-\frac{4bpq\sqrt{g+hx}\,(fg-eh)}{3fh}-\frac{4bpq(g$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[g + h*x]*(a + b*Log[c*(d*(e + f*x)^p)^q]),x]
```

```
[Out] (-4*b*(f*g - e*h)*p*q*Sqrt[g + h*x])/(3*f*h) - (4*b*p*q*(g + h*x)^(3/2))/(9
*h) + (4*b*(f*g - e*h)^(3/2)*p*q*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g -
 e*h]])/(3*f^(3/2)*h) + (2*(g + h*x)^(3/2)*(a + b*Log[c*(d*(e + f*x)^p)^q])
)/(3*h)
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] && !IntegerQ[n] && !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \sqrt{g+hx}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)dx = \text{Subst}\left(\int \sqrt{g+hx}\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)dx, cd^q(e+fx)^p\right.$$

$$= \frac{2(g+hx)^{3/2}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{3h} - \text{Subst}\left(\frac{(2bfpq)\int}{3h}\right.$$

$$= -\frac{4bpq(g+hx)^{3/2}}{9h} + \frac{2(g+hx)^{3/2}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{3h} -$$

$$= -\frac{4b(fg-eh)pq\sqrt{g+hx}}{3fh} - \frac{4bpq(g+hx)^{3/2}}{9h} + \frac{2(g+hx)^{3/2}\left(a+\right.}{}$$

$$= -\frac{4b(fg-eh)pq\sqrt{g+hx}}{3fh} - \frac{4bpq(g+hx)^{3/2}}{9h} + \frac{2(g+hx)^{3/2}\left(a+\right.}{}$$

$$= -\frac{4b(fg-eh)pq\sqrt{g+hx}}{3fh} - \frac{4bpq(g+hx)^{3/2}}{9h} + \frac{4b(fg-eh)^{3/2}pq}{3}$$

Mathematica [A] time = 0.19, size = 124, normalized size = 0.89

$$\frac{2\left(\sqrt{f}\sqrt{g+hx}\left(3af(g+hx)+3bf(g+hx)\log\left(c\left(d(e+fx)^p\right)^q\right)-2bpq(-3eh+4fg+fhx)\right)+6bpq(fg-eh)\right.}{9f^{3/2}h}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[g + h*x]*(a + b*Log[c*(d*(e + f*x)^p)^q]),x]
```

```
[Out] (2*(6*b*(f*g - e*h)^(3/2)*p*q*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*
h]] + Sqrt[f]*Sqrt[g + h*x]*(3*a*f*(g + h*x) - 2*b*p*q*(4*f*g - 3*e*h + f*h
*x) + 3*b*f*(g + h*x)*Log[c*(d*(e + f*x)^p)^q])))/(9*f^(3/2)*h)
```

fricas [A] time = 0.52, size = 353, normalized size = 2.54

$$\left[-\frac{2\left(3\left(bfg-beh\right)pq\sqrt{\frac{fg-eh}{f}}\log\left(\frac{fhx+2fg-eh-2\sqrt{hx+g}\,f\sqrt{\frac{fg-eh}{f}}}{fx+e}\right)-\left(3afg-2\left(4bfg-3beh\right)pq-\left(2bfhpq-3a\right.\right.\right.}{9fh}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(1/2)*(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="fricas")
```

```
[Out] [-2/9*(3*(b*f*g - b*e*h)*p*q*sqrt((f*g - e*h)/f)*log((f*h*x + 2*f*g - e*h -
 2*sqrt(h*x + g)*f*sqrt((f*g - e*h)/f))/(f*x + e)) - (3*a*f*g - 2*(4*b*f*g
- 3*b*e*h)*p*q - (2*b*f*h*p*q - 3*a*f*h)*x + 3*(b*f*h*p*q*x + b*f*g*p*q)*lo
g(f*x + e) + 3*(b*f*h*x + b*f*g)*log(c) + 3*(b*f*h*q*x + b*f*g*q)*log(d))*s
qrt(h*x + g))/(f*h), 2/9*(6*(b*f*g - b*e*h)*p*q*sqrt(-(f*g - e*h)/f)*arctan
(-sqrt(h*x + g)*f*sqrt(-(f*g - e*h)/f)/(f*g - e*h)) + (3*a*f*g - 2*(4*b*f*g
 - 3*b*e*h)*p*q - (2*b*f*h*p*q - 3*a*f*h)*x + 3*(b*f*h*p*q*x + b*f*g*p*q)*l
og(f*x + e) + 3*(b*f*h*x + b*f*g)*log(c) + 3*(b*f*h*q*x + b*f*g*q)*log(d))*
sqrt(h*x + g))/(f*h)]
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{hx+g}\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(1/2)*(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="giac")
```

```
[Out] integrate(sqrt(h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

maple [F] time = 0.35, size = 0, normalized size = 0.00

$$\int \sqrt{hx+g}\,\left(b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)+a\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^(1/2)*(b*ln(c*(d*(f*x+e)^p)^q)+a),x)
```

```
[Out] int((h*x+g)^(1/2)*(b*ln(c*(d*(f*x+e)^p)^q)+a),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(1/2)*(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(e*h-f*g>0)', see `assume?` for more
 details)Is e*h-f*g positive or negative?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \sqrt{g+h\,x}\,\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^{p}\right)}^{q}\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)^(1/2)*(a + b*log(c*(d*(e + f*x)^p)^q)),x)
```

```
[Out] int((g + h*x)^(1/2)*(a + b*log(c*(d*(e + f*x)^p)^q)), x)
```

sympy [A] time = 5.69, size = 144, normalized size = 1.04

$$\frac{2\left(\frac{a(g+hx)^{\frac{3}{2}}}{3}+b\left(-\frac{2fpq\left(\frac{h(g+hx)^{\frac{3}{2}}}{3f}+\frac{\sqrt{g+hx}\,(-eh^2+fgh)}{f^2}+\frac{h(eh-fg)^2\operatorname{atan}\left(\frac{\sqrt{g+hx}}{\sqrt{\frac{eh-fg}{f}}}\right)}{f^3\sqrt{\frac{eh-fg}{f}}}\right)}{3h}+\frac{(g+hx)^{\frac{3}{2}}\log\left(c\left(d\left(e-\frac{fg}{h}+\frac{f(g+hx)}{h}\right)^p\right)^q\right)}{3}\right)\right)}{h}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**(1/2)*(a+b*ln(c*(d*(f*x+e)**p)**q)),x)
```

```
[Out] 2*(a*(g + h*x)**(3/2)/3 + b*(-2*f*p*q*(h*(g + h*x)**(3/2)/(3*f) + sqrt(g +
h*x)*(-e*h**2 + f*g*h)/f**2 + h*(e*h - f*g)**2*atan(sqrt(g + h*x)/sqrt((e*h
 - f*g)/f))/(f**3*sqrt((e*h - f*g)/f)))/(3*h) + (g + h*x)**(3/2)*log(c*(d*(
e - f*g/h + f*(g + h*x)/h)**p)**q)/3))/h
```

3.484 $\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{\sqrt{g+hx}}\,dx$

Optimal. Leaf size=103

$$\frac{2\sqrt{g+hx}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h}+\frac{4bpq\sqrt{fg-eh}\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{\sqrt{f}\,h}-\frac{4bpq\sqrt{g+hx}}{h}$$

```
[Out] 4*b*p*q*arctanh(f^(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2))*(-e*h+f*g)^(1/2)/h/
f^(1/2)-4*b*p*q*(h*x+g)^(1/2)/h+2*(a+b*ln(c*(d*(f*x+e)^p)^q))*(h*x+g)^(1/2)
/h
```

Rubi [A] time = 0.14, antiderivative size = 103, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {2395, 50, 63, 208, 2445}

$$\frac{2\sqrt{g+hx}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h}+\frac{4bpq\sqrt{fg-eh}\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{\sqrt{f}\,h}-\frac{4bpq\sqrt{g+hx}}{h}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])/Sqrt[g + h*x],x]
```

```
[Out] (-4*b*p*q*Sqrt[g + h*x])/h + (4*b*Sqrt[f*g - e*h]*p*q*ArcTanh[(Sqrt[f]*Sqrt
[g + h*x])/Sqrt[f*g - e*h]])/(Sqrt[f]*h) + (2*Sqrt[g + h*x]*(a + b*Log[c*(d
*(e + f*x)^p)^q]))/h
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] && !IntegerQ[n] && !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{\sqrt{g+hx}}\,dx = \text{Subst}\left(\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{\sqrt{g+hx}}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \frac{2\sqrt{g+hx}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h} - \text{Subst}\left(\frac{(2bfpq)\int\frac{\sqrt{g+hx}}{e+fx}\,dx}{h}, cd^q\right.$$

$$= -\frac{4bpq\sqrt{g+hx}}{h} + \frac{2\sqrt{g+hx}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h} - \text{Subst}\left(\frac{(2b(fg\right.$$

$$= -\frac{4bpq\sqrt{g+hx}}{h} + \frac{2\sqrt{g+hx}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h} - \text{Subst}\left(\frac{(4b(fg\right.$$

$$= -\frac{4bpq\sqrt{g+hx}}{h} + \frac{4b\sqrt{fg-eh}\,pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{\sqrt{f}\,h} + \frac{2\sqrt{g+hx}\left(a+b\log\right.}{}$$

Mathematica [A] time = 0.30, size = 89, normalized size = 0.86

$$\frac{2\left(\sqrt{g+hx}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)-2bpq\right)+\frac{2bpq\sqrt{fg-eh}\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{\sqrt{f}}\right)}{h}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])/Sqrt[g + h*x],x]
```

```
[Out] (2*((2*b*Sqrt[f*g - e*h]*p*q*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h
]])/Sqrt[f] + Sqrt[g + h*x]*(a - 2*b*p*q + b*Log[c*(d*(e + f*x)^p)^q])))/h
```

fricas [A] time = 0.51, size = 201, normalized size = 1.95

$$\left[\frac{2\left(bpq\sqrt{\frac{fg-eh}{f}}\log\left(\frac{fhx+2fg-eh+2\sqrt{hx+g}f\sqrt{\frac{fg-eh}{f}}}{fx+e}\right)+\left(bpq\log\left(fx+e\right)-2bpq+bq\log(d)+b\log(c)+a\right)\sqrt{hx+\right.}{h}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^(1/2),x, algorithm="fricas")
```

```
[Out] [2*(b*p*q*sqrt((f*g - e*h)/f)*log((f*h*x + 2*f*g - e*h + 2*sqrt(h*x + g)*f*
sqrt((f*g - e*h)/f))/(f*x + e)) + (b*p*q*log(f*x + e) - 2*b*p*q + b*q*log(d
) + b*log(c) + a)*sqrt(h*x + g))/h, 2*(2*b*p*q*sqrt(-(f*g - e*h)/f)*arctan(
-sqrt(h*x + g)*f*sqrt(-(f*g - e*h)/f)/(f*g - e*h)) + (b*p*q*log(f*x + e) -
2*b*p*q + b*q*log(d) + b*log(c) + a)*sqrt(h*x + g))/h]
```

giac [A] time = 0.19, size = 128, normalized size = 1.24

$$-\frac{2\left(\left(2f\left(\frac{(fg-he)\arctan\left(\frac{\sqrt{hx+g}\,f}{\sqrt{-f^2g+fhe}}\right)}{\sqrt{-f^2g+fhe}\,f}+\frac{\sqrt{hx+g}}{f}\right)-\sqrt{hx+g}\,\log\left(fx+e\right)\right)bpq-\sqrt{hx+g}\,bq\log(d)-\sqrt{hx+g}\,b\log(c)-\right.}{h}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^(1/2),x, algorithm="giac")
```

```
[Out] -2*((2*f*((f*g - h*e)*arctan(sqrt(h*x + g)*f/sqrt(-f^2*g + f*h*e))/(sqrt(-f
^2*g + f*h*e)*f) + sqrt(h*x + g)/f) - sqrt(h*x + g)*log(f*x + e))*b*p*q - s
qrt(h*x + g)*b*q*log(d) - sqrt(h*x + g)*b*log(c) - sqrt(h*x + g)*a)/h
```

maple [A] time = 0.08, size = 155, normalized size = 1.50

$$\frac{4bepq\arctan\left(\frac{\sqrt{hx+g}\,f}{\sqrt{(eh-fg)f}}\right)}{\sqrt{(eh-fg)\,f}}-\frac{4bfgpq\arctan\left(\frac{\sqrt{hx+g}\,f}{\sqrt{(eh-fg)f}}\right)}{\sqrt{(eh-fg)\,f}\;h}-\frac{4\sqrt{hx+g}\;bpq}{h}+\frac{2\sqrt{hx+g}\;b\ln\left(c\left(d\left(\frac{eh-fg+(hx+g)f}{h}\right)^{p}\right)^{q}\right)}{h}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(d*(f*x+e)^p)^q)+a)/(h*x+g)^(1/2),x)
```

```
[Out] 2/h*(h*x+g)^(1/2)*a+2/h*b*(h*x+g)^(1/2)*ln(c*(d*((f*(h*x+g)+e*h-f*g)/h)^p)^
q)-4*b*p*q*(h*x+g)^(1/2)/h+4*b*q*p/((e*h-f*g)*f)^(1/2)*arctan((h*x+g)^(1/2)
*f/((e*h-f*g)*f)^(1/2))*e-4/h*b*q*p*f/((e*h-f*g)*f)^(1/2)*arctan((h*x+g)^(1
/2)*f/((e*h-f*g)*f)^(1/2))*g
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(e*h-f*g>0)', see `assume?` for more
 details)Is e*h-f*g positive or negative?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)}{\sqrt{g+h\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))/(g + h*x)^(1/2),x)
```

```
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))/(g + h*x)^(1/2), x)
```

sympy [A] time = 42.59, size = 347, normalized size = 3.37

$$\begin{cases} \frac{-\frac{2ag}{\sqrt{g+hx}} - 2a\left(-\frac{g}{\sqrt{g+hx}}-\sqrt{g+hx}\right) - 2bg\left(\frac{2fpq\,\mathrm{atan}\left(\frac{1}{\sqrt{\frac{f}{eh-fg}}\sqrt{g+hx}}\right)}{\sqrt{\frac{f}{eh-fg}}\,(eh-fg)} + \frac{\log\left(c\left(d(e+fx)^p\right)^q\right)}{\sqrt{g+hx}}\right) - 2b\left(-\frac{2fpq\left(-\frac{h\sqrt{g+hx}}{f} - \frac{h\,\mathrm{atan}\left(\frac{1}{\sqrt{\frac{f}{eh-fg}}\sqrt{g+hx}}\right)}{f\sqrt{\frac{f}{eh-fg}}}\right)}{h} - g\left(\frac{2fpq\,\mathrm{atan}\cdots}{\sqrt{e\cdots}}\cdots\right.\right.}{h} & \\ \frac{ax+b\left(-fpq\left(-\frac{e\left(\begin{cases}\frac{x}{e} & \text{for } f=0\\ \frac{\log(e+fx)}{f} & \text{otherwise}\end{cases}\right)}{f}+\frac{x}{f}\right)+x\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{\sqrt{g}} & \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))/(h*x+g)**(1/2),x)
```

```
[Out] Piecewise(((-2*a*g/sqrt(g + h*x) - 2*a*(-g/sqrt(g + h*x) - sqrt(g + h*x)) -
 2*b*g*(2*f*p*q*atan(1/(sqrt(f/(e*h - f*g))*sqrt(g + h*x)))/(sqrt(f/(e*h -
f*g))*(e*h - f*g)) + log(c*(d*(e + f*x)**p)**q)/sqrt(g + h*x)) - 2*b*(-2*f*
p*q*(-h*sqrt(g + h*x)/f - h*atan(1/(sqrt(f/(e*h - f*g))*sqrt(g + h*x)))/(f*
sqrt(f/(e*h - f*g))))/h - g*(2*f*p*q*atan(1/(sqrt(f/(e*h - f*g))*sqrt(g + h
*x)))/(sqrt(f/(e*h - f*g))*(e*h - f*g)) + log(c*(d*(e - f*g/h + f*(g + h*x)
/h)**p)**q)/sqrt(g + h*x)) - sqrt(g + h*x)*log(c*(d*(e - f*g/h + f*(g + h*x
)/h)**p)**q)))/h, Ne(h, 0)), ((a*x + b*(-f*p*q*(-e*Piecewise((x/e, Eq(f, 0)
), (log(e + f*x)/f, True))/f + x/f) + x*log(c*(d*(e + f*x)**p)**q)))/sqrt(g
), True))
```

3.485 $\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{(g+hx)^{3/2}}\,dx$

Optimal. Leaf size=86

$$-\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h\sqrt{g+hx}}-\frac{4b\sqrt{f}\,pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{h\sqrt{fg-eh}}$$

```
[Out] -4*b*p*q*arctanh(f^(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2))*f^(1/2)/h/(-e*h+f*
g)^(1/2)-2*(a+b*ln(c*(d*(f*x+e)^p)^q))/h/(h*x+g)^(1/2)
```

Rubi [A] time = 0.13, antiderivative size = 86, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {2395, 63, 208, 2445}

$$-\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h\sqrt{g+hx}}-\frac{4b\sqrt{f}\,pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{h\sqrt{fg-eh}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x)^(3/2),x]
```

```
[Out] (-4*b*Sqrt[f]*p*q*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]])/(h*Sqrt
[f*g - e*h]) - (2*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(h*Sqrt[g + h*x])
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] && !IntegerQ[n] && !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{(g+hx)^{3/2}}\,dx = \text{Subst}\left(\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{(g+hx)^{3/2}}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= -\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h\sqrt{g+hx}} + \text{Subst}\left(\frac{(2bfpq)\int \frac{1}{(e+fx)\sqrt{g+hx}}\,dx}{h}, cd^q(e\right.$$

$$= -\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h\sqrt{g+hx}} + \text{Subst}\left(\frac{(4bfpq)\,\text{Subst}\left(\int \frac{1}{e-\frac{fg}{h}+\frac{fx^2}{h}}\,dx, x\right.}{h^2}\right.$$

$$= -\frac{4b\sqrt{f}\,pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{h\sqrt{fg-eh}} - \frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h\sqrt{g+hx}}$$

Mathematica [A] time = 0.17, size = 84, normalized size = 0.98

$$\frac{-\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{\sqrt{g+hx}} - \frac{4b\sqrt{f}\,pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{\sqrt{fg-eh}}}{h}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x)^(3/2),x]
```

```
[Out] ((-4*b*Sqrt[f]*p*q*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]])/Sqrt[f
*g - e*h] - (2*(a + b*Log[c*(d*(e + f*x)^p)^q]))/Sqrt[g + h*x])/h
```

fricas [A] time = 0.55, size = 240, normalized size = 2.79

$$\left[\frac{2\left(\left(bhpqx+bgpq\right)\sqrt{\frac{f}{fg-eh}}\,\log\left(\frac{fhx+2\,fg-eh-2\left(fg-eh\right)\sqrt{hx+g}\,\sqrt{\frac{f}{fg-eh}}}{fx+e}\right) - \left(bpq\log\left(fx+e\right)+bq\log(d)+b\log(c)+\right.\right.}{h^2x+gh}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^(3/2),x, algorithm="fricas")
```

```
[Out] [2*((b*h*p*q*x + b*g*p*q)*sqrt(f/(f*g - e*h))*log((f*h*x + 2*f*g - e*h - 2*
(f*g - e*h)*sqrt(h*x + g)*sqrt(f/(f*g - e*h)))/(f*x + e)) - (b*p*q*log(f*x
+ e) + b*q*log(d) + b*log(c) + a)*sqrt(h*x + g))/(h^2*x + g*h), -2*(2*(b*h*
p*q*x + b*g*p*q)*sqrt(-f/(f*g - e*h))*arctan(-(f*g - e*h)*sqrt(h*x + g)*sqr
t(-f/(f*g - e*h))/(f*h*x + f*g)) + (b*p*q*log(f*x + e) + b*q*log(d) + b*log
(c) + a)*sqrt(h*x + g))/(h^2*x + g*h)]
```

giac [A] time = 0.22, size = 99, normalized size = 1.15

$$\frac{4\,bfpq\arctan\left(\frac{\sqrt{hx+g}\,f}{\sqrt{-f^2g+fhe}}\right)}{\sqrt{-f^2g+fhe}\,h} - \frac{2\left(bpq\log\left(\left(hx+g\right)f-fg+he\right)-bpq\log(h)+bq\log(d)+b\log(c)+a\right)}{\sqrt{hx+g}\,h}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^(3/2),x, algorithm="giac")
```

```
[Out] 4*b*f*p*q*arctan(sqrt(h*x + g)*f/sqrt(-f^2*g + f*h*e))/(sqrt(-f^2*g + f*h*e
)*h) - 2*(b*p*q*log((h*x + g)*f - f*g + h*e) - b*p*q*log(h) + b*q*log(d) +
b*log(c) + a)/(sqrt(h*x + g)*h)
```

maple [F] time = 0.35, size = 0, normalized size = 0.00

$$\int \frac{b \ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)+a}{\left(hx+g\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(d*(f*x+e)^p)^q)+a)/(h*x+g)^(3/2),x)
```

```
[Out] int((b*ln(c*(d*(f*x+e)^p)^q)+a)/(h*x+g)^(3/2),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(e*h-f*g>0)', see `assume?` for more
 details)Is e*h-f*g positive or negative?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)}{{\left(g+h\,x\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))/(g + h*x)^(3/2),x)
```

```
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))/(g + h*x)^(3/2), x)
```

sympy [A] time = 21.45, size = 90, normalized size = 1.05

$$\frac{- \frac{2 a}{\sqrt{g + h x}} + 2 b \left(\frac{2 p q \operatorname{atan}{\left(\frac{\sqrt{g + h x}}{\sqrt{\frac{h \left(e - \frac{f g}{h}\right)}{f}}} \right)}}{\sqrt{\frac{h \left(e - \frac{f g}{h}\right)}{f}}} - \frac{\log{\left(c \left(d \left(e - \frac{f g}{h} + \frac{f \left(g + h x\right)}{h}\right)^{p}\right)^{q} \right)}}{\sqrt{g + h x}}\right)}{h}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))/(h*x+g)**(3/2),x)
```

```
[Out] (-2*a/sqrt(g + h*x) + 2*b*(2*p*q*atan(sqrt(g + h*x)/sqrt(h*(e - f*g/h)/f))/
sqrt(h*(e - f*g/h)/f) - log(c*(d*(e - f*g/h + f*(g + h*x)/h)**p)**q)/sqrt(g
 + h*x)))/h
```

3.486 $\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{(g+hx)^{5/2}}\,dx$

Optimal. Leaf size=120

$$-\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{3h(g+hx)^{3/2}}-\frac{4bf^{3/2}pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{3h(fg-eh)^{3/2}}+\frac{4bfpq}{3h\sqrt{g+hx}\,(fg-eh)}$$

```
[Out] -4/3*b*f^(3/2)*p*q*arctanh(f^(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2))/h/(-e*h+
f*g)^(3/2)-2/3*(a+b*ln(c*(d*(f*x+e)^p)^q))/h/(h*x+g)^(3/2)+4/3*b*f*p*q/h/(-
e*h+f*g)/(h*x+g)^(1/2)
```

Rubi [A] time = 0.16, antiderivative size = 120, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {2395, 51, 63, 208, 2445}

$$-\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{3h(g+hx)^{3/2}}-\frac{4bf^{3/2}pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{3h(fg-eh)^{3/2}}+\frac{4bfpq}{3h\sqrt{g+hx}\,(fg-eh)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x)^(5/2),x]
```

```
[Out] (4*b*f*p*q)/(3*h*(f*g - e*h)*Sqrt[g + h*x]) - (4*b*f^(3/2)*p*q*ArcTanh[(Sqr
t[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]])/(3*h*(f*g - e*h)^(3/2)) - (2*(a + b*L
og[c*(d*(e + f*x)^p)^q]))/(3*h*(g + h*x)^(3/2))
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{(g+hx)^{5/2}}\,dx = \text{Subst}\left(\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{(g+hx)^{5/2}}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= -\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{3h(g+hx)^{3/2}} + \text{Subst}\left(\frac{(2bfpq)\int \frac{1}{(e+fx)(g+hx)^{3/2}}\,dx}{3h}, cd^q(e+\right.$$

$$= \frac{4bfpq}{3h(fg-eh)\sqrt{g+hx}} - \frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{3h(g+hx)^{3/2}} + \text{Subst}\left(\frac{\left(2bf^2pq\right)\int}{3h(fg}\right.$$

$$= \frac{4bfpq}{3h(fg-eh)\sqrt{g+hx}} - \frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{3h(g+hx)^{3/2}} + \text{Subst}\left(\frac{\left(4bf^2pq\right)\text{Su}}{}\right.$$

$$= \frac{4bfpq}{3h(fg-eh)\sqrt{g+hx}} - \frac{4bf^{3/2}pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{3h(fg-eh)^{3/2}} - \frac{2\left(a+b\log\left(c\left(d(e+f\right.\right.\right.}{3h(g+hx)^{3/2}}$$

Mathematica [C] time = 0.10, size = 91, normalized size = 0.76

$$\frac{2(fg-eh)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)-4bfpq(g+hx)\,{}_2F_1\left(-\frac{1}{2},1;\frac{1}{2};\frac{f(g+hx)}{fg-eh}\right)}{3h(g+hx)^{3/2}(eh-fg)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x)^(5/2),x]
```

```
[Out] (-4*b*f*p*q*(g + h*x)*Hypergeometric2F1[-1/2, 1, 1/2, (f*(g + h*x))/(f*g -
e*h)] + 2*(f*g - e*h)*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(3*h*(-(f*g) + e*h)
*(g + h*x)^(3/2))
```

fricas [B] time = 0.49, size = 467, normalized size = 3.89

$$\left[-\frac{2\left(\left(bfh^2pqx^2+2\,bfghpqx+bfg^2pq\right)\sqrt{\frac{f}{fg-eh}}\,\log\left(\frac{fhx+2\,fg-eh+2\left(fg-eh\right)\sqrt{hx+g}\,\sqrt{\frac{f}{fg-eh}}}{fx+e}\right)-\left(2\,bfhpqx+2\,bfgpq-\left(\right.\right.\right.}{3\left(fg^3h-eg^2h^2+\left(fgh^3-eh^4\right)x^2+\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^(5/2),x, algorithm="fricas")
```

```
[Out] [-2/3*((b*f*h^2*p*q*x^2 + 2*b*f*g*h*p*q*x + b*f*g^2*p*q)*sqrt(f/(f*g - e*h)
)*log((f*h*x + 2*f*g - e*h + 2*(f*g - e*h)*sqrt(h*x + g)*sqrt(f/(f*g - e*h)
))/(f*x + e)) - (2*b*f*h*p*q*x + 2*b*f*g*p*q - (b*f*g - b*e*h)*p*q*log(f*x
+ e) - a*f*g + a*e*h - (b*f*g - b*e*h)*q*log(d) - (b*f*g - b*e*h)*log(c))*s
qrt(h*x + g))/(f*g^3*h - e*g^2*h^2 + (f*g*h^3 - e*h^4)*x^2 + 2*(f*g^2*h^2 -
 e*g*h^3)*x), -2/3*(2*(b*f*h^2*p*q*x^2 + 2*b*f*g*h*p*q*x + b*f*g^2*p*q)*sqr
t(-f/(f*g - e*h))*arctan(-(f*g - e*h)*sqrt(h*x + g)*sqrt(-f/(f*g - e*h))/(f
*h*x + f*g)) - (2*b*f*h*p*q*x + 2*b*f*g*p*q - (b*f*g - b*e*h)*p*q*log(f*x +
 e) - a*f*g + a*e*h - (b*f*g - b*e*h)*q*log(d) - (b*f*g - b*e*h)*log(c))*sq
rt(h*x + g))/(f*g^3*h - e*g^2*h^2 + (f*g*h^3 - e*h^4)*x^2 + 2*(f*g^2*h^2 -
e*g*h^3)*x)]
```

giac [B] time = 0.28, size = 209, normalized size = 1.74

$$\frac{4\,bf^2pq\arctan\left(\frac{\sqrt{hx+g}\,f}{\sqrt{-f^2g+fhe}}\right)}{3\,\sqrt{-f^2g+fhe}\left(fgh-h^2e\right)}-\frac{2\left(bfgpq\log\left(\left(hx+g\right)f-fg+he\right)-bhpqe\log\left(\left(hx+g\right)f-fg+he\right)-bfgpq\,\mathrm{l}\cdots\right.}{3\left(\cdots\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^(5/2),x, algorithm="giac")
```

```
[Out] 4/3*b*f^2*p*q*arctan(sqrt(h*x + g)*f/sqrt(-f^2*g + f*h*e))/(sqrt(-f^2*g + f
*h*e)*(f*g*h - h^2*e)) - 2/3*(b*f*g*p*q*log((h*x + g)*f - f*g + h*e) - b*h*
p*q*e*log((h*x + g)*f - f*g + h*e) - b*f*g*p*q*log(h) + b*h*p*q*e*log(h) -
2*(h*x + g)*b*f*p*q + b*f*g*q*log(d) - b*h*q*e*log(d) + b*f*g*log(c) - b*h*
e*log(c) + a*f*g - a*h*e)/((h*x + g)^(3/2)*f*g*h - (h*x + g)^(3/2)*h^2*e)
```

maple [F] time = 0.38, size = 0, normalized size = 0.00

$$\int \frac{b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)+a}{\left(hx+g\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(d*(f*x+e)^p)^q)+a)/(h*x+g)^(5/2),x)
```

```
[Out] int((b*ln(c*(d*(f*x+e)^p)^q)+a)/(h*x+g)^(5/2),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(e*h-f*g>0)', see `assume?` for more
 details)Is e*h-f*g positive or negative?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)}{{\left(g+h\,x\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))/(g + h*x)^(5/2),x)
```

```
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))/(g + h*x)^(5/2), x)
```

sympy [A] time = 147.44, size = 122, normalized size = 1.02

$$\frac{-\frac{2a}{3(g+hx)^{\frac{3}{2}}}+2b\left(\frac{2fpq\left(-\frac{h}{\sqrt{g+hx}\,(eh-fg)}-\frac{h\operatorname{atan}\left(\frac{\sqrt{g+hx}}{\sqrt{\frac{eh-fg}{f}}}\right)}{\sqrt{\frac{eh-fg}{f}}\,(eh-fg)}\right)}{3h}-\frac{\log\left(c\left(d\left(e-\frac{fg}{h}+\frac{f(g+hx)}{h}\right)^p\right)^q\right)}{3(g+hx)^{\frac{3}{2}}}\right)}{h}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))/(h*x+g)**(5/2),x)
```

```
[Out] (-2*a/(3*(g + h*x)**(3/2)) + 2*b*(2*f*p*q*(-h/(sqrt(g + h*x)*(e*h - f*g)) -
 h*atan(sqrt(g + h*x)/sqrt((e*h - f*g)/f))/(sqrt((e*h - f*g)/f)*(e*h - f*g)
))/(3*h) - log(c*(d*(e - f*g/h + f*(g + h*x)/h)**p)**q)/(3*(g + h*x)**(3/2)
)))/h
```

3.487 $\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{(g+hx)^{7/2}}\,dx$

Optimal. Leaf size=152

$$-\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{5h(g+hx)^{5/2}}-\frac{4bf^{5/2}pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{5h(fg-eh)^{5/2}}+\frac{4bf^2pq}{5h\sqrt{g+hx}\,(fg-eh)^2}+\frac{4bfpq}{15h(g+hx)^{3/2}(fg-eh)}$$

```
[Out] 4/15*b*f*p*q/h/(-e*h+f*g)/(h*x+g)^(3/2)-4/5*b*f^(5/2)*p*q*arctanh(f^(1/2)*(
h*x+g)^(1/2)/(-e*h+f*g)^(1/2))/h/(-e*h+f*g)^(5/2)-2/5*(a+b*ln(c*(d*(f*x+e)^
p)^q))/h/(h*x+g)^(5/2)+4/5*b*f^2*p*q/h/(-e*h+f*g)^2/(h*x+g)^(1/2)
```

Rubi [A] time = 0.20, antiderivative size = 152, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {2395, 51, 63, 208, 2445}

$$-\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{5h(g+hx)^{5/2}}+\frac{4bf^2pq}{5h\sqrt{g+hx}\,(fg-eh)^2}-\frac{4bf^{5/2}pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{5h(fg-eh)^{5/2}}+\frac{4bfpq}{15h(g+hx)^{3/2}(fg-eh)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x)^(7/2),x]
```

```
[Out] (4*b*f*p*q)/(15*h*(f*g - e*h)*(g + h*x)^(3/2)) + (4*b*f^2*p*q)/(5*h*(f*g -
e*h)^2*Sqrt[g + h*x]) - (4*b*f^(5/2)*p*q*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sq
rt[f*g - e*h]])/(5*h*(f*g - e*h)^(5/2)) - (2*(a + b*Log[c*(d*(e + f*x)^p)^q
]))/(5*h*(g + h*x)^(5/2))
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{(g+hx)^{7/2}}\,dx = \text{Subst}\left(\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{(g+hx)^{7/2}}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= -\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{5h(g+hx)^{5/2}} + \text{Subst}\left(\frac{(2bfpq)\int \frac{1}{(e+fx)(g+hx)^{5/2}}\,dx}{5h}, cd^q(e+\right.$$

$$= \frac{4bfpq}{15h(fg-eh)(g+hx)^{3/2}} - \frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{5h(g+hx)^{5/2}} + \text{Subst}\left(\frac{(2bf^2pq)}{5h}\right.$$

$$= \frac{4bfpq}{15h(fg-eh)(g+hx)^{3/2}} + \frac{4bf^2pq}{5h(fg-eh)^2\sqrt{g+hx}} - \frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right.\right.\right.}{5h(g+hx)^{5/2}}$$

$$= \frac{4bfpq}{15h(fg-eh)(g+hx)^{3/2}} + \frac{4bf^2pq}{5h(fg-eh)^2\sqrt{g+hx}} - \frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right.\right.\right.}{5h(g+hx)^{5/2}}$$

$$= \frac{4bfpq}{15h(fg-eh)(g+hx)^{3/2}} + \frac{4bf^2pq}{5h(fg-eh)^2\sqrt{g+hx}} - \frac{4bf^{5/2}pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right.}{5h(fg-eh)^{5/2}}$$

Mathematica [C] time = 0.09, size = 91, normalized size = 0.60

$$\frac{6(fg-eh)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right) - 4bfpq(g+hx)\,{}_2F_1\left(-\frac{3}{2},1;-\frac{1}{2};\frac{f(g+hx)}{fg-eh}\right)}{15h(g+hx)^{5/2}(eh-fg)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x)^(7/2),x]
```

```
[Out] (-4*b*f*p*q*(g + h*x)*Hypergeometric2F1[-3/2, 1, -1/2, (f*(g + h*x))/(f*g -
 e*h)] + 6*(f*g - e*h)*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(15*h*(-(f*g) + e*
h)*(g + h*x)^(5/2))
```

fricas [B] time = 0.51, size = 863, normalized size = 5.68

$$\left[\frac{2\left(3\left(bf^2h^3pqx^3 + 3\,bf^2gh^2pqx^2 + 3\,bf^2g^2hpqx + bf^2g^3pq\right)\sqrt{\frac{f}{fg-eh}}\,\log\left(\frac{fhx+2\,fg-eh-2\left(fg-eh\right)\sqrt{hx+g}\,\sqrt{\frac{f}{fg-eh}}}{fx+e}\right) + \left(6\,b\right.\right.}{15\left(f^2g^5h\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^(7/2),x, algorithm="fricas")
```

```
[Out] [2/15*(3*(b*f^2*h^3*p*q*x^3 + 3*b*f^2*g*h^2*p*q*x^2 + 3*b*f^2*g^2*h*p*q*x +
 b*f^2*g^3*p*q)*sqrt(f/(f*g - e*h))*log((f*h*x + 2*f*g - e*h - 2*(f*g - e*h
)*sqrt(h*x + g)*sqrt(f/(f*g - e*h)))/(f*x + e)) + (6*b*f^2*h^2*p*q*x^2 - 3*
a*f^2*g^2 + 6*a*e*f*g*h - 3*a*e^2*h^2 + 2*(7*b*f^2*g*h - b*e*f*h^2)*p*q*x -
 3*(b*f^2*g^2 - 2*b*e*f*g*h + b*e^2*h^2)*p*q*log(f*x + e) + 2*(4*b*f^2*g^2
- b*e*f*g*h)*p*q - 3*(b*f^2*g^2 - 2*b*e*f*g*h + b*e^2*h^2)*q*log(d) - 3*(b*
f^2*g^2 - 2*b*e*f*g*h + b*e^2*h^2)*log(c))*sqrt(h*x + g))/(f^2*g^5*h - 2*e*
f*g^4*h^2 + e^2*g^3*h^3 + (f^2*g^2*h^4 - 2*e*f*g*h^5 + e^2*h^6)*x^3 + 3*(f^
2*g^3*h^3 - 2*e*f*g^2*h^4 + e^2*g*h^5)*x^2 + 3*(f^2*g^4*h^2 - 2*e*f*g^3*h^3
 + e^2*g^2*h^4)*x), -2/15*(6*(b*f^2*h^3*p*q*x^3 + 3*b*f^2*g*h^2*p*q*x^2 + 3
*b*f^2*g^2*h*p*q*x + b*f^2*g^3*p*q)*sqrt(-f/(f*g - e*h))*arctan(-(f*g - e*h
)*sqrt(h*x + g)*sqrt(-f/(f*g - e*h))/(f*h*x + f*g)) - (6*b*f^2*h^2*p*q*x^2
- 3*a*f^2*g^2 + 6*a*e*f*g*h - 3*a*e^2*h^2 + 2*(7*b*f^2*g*h - b*e*f*h^2)*p*q
*x - 3*(b*f^2*g^2 - 2*b*e*f*g*h + b*e^2*h^2)*p*q*log(f*x + e) + 2*(4*b*f^2*
g^2 - b*e*f*g*h)*p*q - 3*(b*f^2*g^2 - 2*b*e*f*g*h + b*e^2*h^2)*q*log(d) - 3
*(b*f^2*g^2 - 2*b*e*f*g*h + b*e^2*h^2)*log(c))*sqrt(h*x + g))/(f^2*g^5*h -
2*e*f*g^4*h^2 + e^2*g^3*h^3 + (f^2*g^2*h^4 - 2*e*f*g*h^5 + e^2*h^6)*x^3 + 3
*(f^2*g^3*h^3 - 2*e*f*g^2*h^4 + e^2*g*h^5)*x^2 + 3*(f^2*g^4*h^2 - 2*e*f*g^3
*h^3 + e^2*g^2*h^4)*x)]
```

giac [B] time = 0.36, size = 378, normalized size = 2.49

$$\frac{4\, b f^{3} h p q \arctan\left(\frac{\sqrt{hx+g}\, f}{\sqrt{-f^{2} g+f h e}}\right)}{5\left(f^{2} g^{2} h^{2}-2\, f g h^{3} e+h^{4} e^{2}\right)\sqrt{-f^{2} g+f h e}}-\frac{2\left(3\, b f^{2} g^{2} p q \log\left(\left(hx+g\right) f-f g+h e\right)-6\, b f g h p q e \log\left(\left(hx+g\right)\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^(7/2),x, algorithm="giac")
```

```
[Out] 4/5*b*f^3*h*p*q*arctan(sqrt(h*x + g)*f/sqrt(-f^2*g + f*h*e))/((f^2*g^2*h^2
- 2*f*g*h^3*e + h^4*e^2)*sqrt(-f^2*g + f*h*e)) - 2/15*(3*b*f^2*g^2*p*q*log(
(h*x + g)*f - f*g + h*e) - 6*b*f*g*h*p*q*e*log((h*x + g)*f - f*g + h*e) - 3
*b*f^2*g^2*p*q*log(h) + 6*b*f*g*h*p*q*e*log(h) - 6*(h*x + g)^2*b*f^2*p*q -
2*(h*x + g)*b*f^2*g*p*q + 2*(h*x + g)*b*f*h*p*q*e + 3*b*h^2*p*q*e^2*log((h*
x + g)*f - f*g + h*e) + 3*b*f^2*g^2*q*log(d) - 6*b*f*g*h*q*e*log(d) - 3*b*h
^2*p*q*e^2*log(h) + 3*b*f^2*g^2*log(c) - 6*b*f*g*h*e*log(c) + 3*b*h^2*q*e^2
*log(d) + 3*a*f^2*g^2 - 6*a*f*g*h*e + 3*b*h^2*e^2*log(c) + 3*a*h^2*e^2)/((h
*x + g)^(5/2)*f^2*g^2*h - 2*(h*x + g)^(5/2)*f*g*h^2*e + (h*x + g)^(5/2)*h^3
*e^2)
```

maple [F] time = 0.37, size = 0, normalized size = 0.00

$$\int \frac{b \ln\left(c \left(d \left(f x+e\right)^{p}\right)^{q}\right)+a}{\left(h x+g\right)^{\frac{7}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(d*(f*x+e)^p)^q)+a)/(h*x+g)^(7/2),x)
```

```
[Out] int((b*ln(c*(d*(f*x+e)^p)^q)+a)/(h*x+g)^(7/2),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^(7/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(e*h-f*g>0)', see `assume?` for more
 details)Is e*h-f*g positive or negative?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a+b\ln\left(c\left(d\left(e+fx\right)^p\right)^q\right)}{\left(g+hx\right)^{7/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))/(g + h*x)^(7/2),x)
```

```
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))/(g + h*x)^(7/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))/(h*x+g)**(7/2),x)
```

```
[Out] Timed out
```

3.488 $\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{(g+hx)^{9/2}}\,dx$

Optimal. Leaf size=184

$$-\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{7h(g+hx)^{7/2}}-\frac{4bf^{7/2}pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{7h(fg-eh)^{7/2}}+\frac{4bf^3pq}{7h\sqrt{g+hx}\,(fg-eh)^3}+\frac{4bf^2pq}{21h(g+hx)^{3/2}(fg-eh}$$

```
[Out] 4/35*b*f*p*q/h/(-e*h+f*g)/(h*x+g)^(5/2)+4/21*b*f^2*p*q/h/(-e*h+f*g)^2/(h*x+
g)^(3/2)-4/7*b*f^(7/2)*p*q*arctanh(f^(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2))/
h/(-e*h+f*g)^(7/2)-2/7*(a+b*ln(c*(d*(f*x+e)^p)^q))/h/(h*x+g)^(7/2)+4/7*b*f^
3*p*q/h/(-e*h+f*g)^3/(h*x+g)^(1/2)
```

Rubi [A] time = 0.28, antiderivative size = 184, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {2395, 51, 63, 208, 2445}

$$-\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{7h(g+hx)^{7/2}}+\frac{4bf^3pq}{7h\sqrt{g+hx}\,(fg-eh)^3}+\frac{4bf^2pq}{21h(g+hx)^{3/2}(fg-eh)^2}-\frac{4bf^{7/2}pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{7h(fg-eh)^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x)^(9/2),x]
```

```
[Out] (4*b*f*p*q)/(35*h*(f*g - e*h)*(g + h*x)^(5/2)) + (4*b*f^2*p*q)/(21*h*(f*g -
 e*h)^2*(g + h*x)^(3/2)) + (4*b*f^3*p*q)/(7*h*(f*g - e*h)^3*Sqrt[g + h*x])
- (4*b*f^(7/2)*p*q*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]])/(7*h*(
f*g - e*h)^(7/2)) - (2*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(7*h*(g + h*x)^(7/
2))
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
```

```
eQ[q, -1]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{(g+hx)^{9/2}}\,dx = \text{Subst}\left(\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{(g+hx)^{9/2}}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= -\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{7h(g+hx)^{7/2}} + \text{Subst}\left(\frac{(2bfpq)\int \frac{1}{(e+fx)(g+hx)^{7/2}}\,dx}{7h}, cd^q(e+$$

$$= \frac{4bfpq}{35h(fg-eh)(g+hx)^{5/2}} - \frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{7h(g+hx)^{7/2}} + \text{Subst}\left(\frac{\left(2bf^2pq\right)}{7}\right.$$

$$= \frac{4bfpq}{35h(fg-eh)(g+hx)^{5/2}} + \frac{4bf^2pq}{21h(fg-eh)^2(g+hx)^{3/2}} - \frac{2\left(a+b\log\left(c\left(d(e+f\right.\right.\right.}{7h(g+hx)^{7/2}}$$

$$= \frac{4bfpq}{35h(fg-eh)(g+hx)^{5/2}} + \frac{4bf^2pq}{21h(fg-eh)^2(g+hx)^{3/2}} + \frac{4bf^3pq}{7h(fg-eh)^3\sqrt{g+hx}}$$

$$= \frac{4bfpq}{35h(fg-eh)(g+hx)^{5/2}} + \frac{4bf^2pq}{21h(fg-eh)^2(g+hx)^{3/2}} + \frac{4bf^3pq}{7h(fg-eh)^3\sqrt{g+hx}}$$

$$= \frac{4bfpq}{35h(fg-eh)(g+hx)^{5/2}} + \frac{4bf^2pq}{21h(fg-eh)^2(g+hx)^{3/2}} + \frac{4bf^3pq}{7h(fg-eh)^3\sqrt{g+hx}}$$

Mathematica [C] time = 0.10, size = 91, normalized size = 0.49

$$\frac{10(fg-eh)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right) - 4bfpq(g+hx)\,{}_2F_1\left(-\frac{5}{2},1;-\frac{3}{2};\frac{f(g+hx)}{fg-eh}\right)}{35h(g+hx)^{7/2}(eh-fg)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x)^(9/2),x]
```

```
[Out] (-4*b*f*p*q*(g + h*x)*Hypergeometric2F1[-5/2, 1, -3/2, (f*(g + h*x))/(f*g -
 e*h)] + 10*(f*g - e*h)*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(35*h*(-(f*g) + e
*h)*(g + h*x)^(7/2))
```

fricas [B] time = 0.55, size = 1362, normalized size = 7.40

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^(9/2),x, algorithm="fricas")
```

```
[Out] [-2/105*(15*(b*f^3*h^4*p*q*x^4 + 4*b*f^3*g*h^3*p*q*x^3 + 6*b*f^3*g^2*h^2*p*
q*x^2 + 4*b*f^3*g^3*h*p*q*x + b*f^3*g^4*p*q)*sqrt(f/(f*g - e*h))*log((f*h*x
 + 2*f*g - e*h + 2*(f*g - e*h)*sqrt(h*x + g)*sqrt(f/(f*g - e*h)))/(f*x + e)
) - (30*b*f^3*h^3*p*q*x^3 - 15*a*f^3*g^3 + 45*a*e*f^2*g^2*h - 45*a*e^2*f*g*
h^2 + 15*a*e^3*h^3 + 10*(10*b*f^3*g*h^2 - b*e*f^2*h^3)*p*q*x^2 + 2*(58*b*f^
3*g^2*h - 16*b*e*f^2*g*h^2 + 3*b*e^2*f*h^3)*p*q*x - 15*(b*f^3*g^3 - 3*b*e*f
^2*g^2*h + 3*b*e^2*f*g*h^2 - b*e^3*h^3)*p*q*log(f*x + e) + 2*(23*b*f^3*g^3
- 11*b*e*f^2*g^2*h + 3*b*e^2*f*g*h^2)*p*q - 15*(b*f^3*g^3 - 3*b*e*f^2*g^2*h
 + 3*b*e^2*f*g*h^2 - b*e^3*h^3)*q*log(d) - 15*(b*f^3*g^3 - 3*b*e*f^2*g^2*h
+ 3*b*e^2*f*g*h^2 - b*e^3*h^3)*log(c))*sqrt(h*x + g))/(f^3*g^7*h - 3*e*f^2*
g^6*h^2 + 3*e^2*f*g^5*h^3 - e^3*g^4*h^4 + (f^3*g^3*h^5 - 3*e*f^2*g^2*h^6 +
3*e^2*f*g*h^7 - e^3*h^8)*x^4 + 4*(f^3*g^4*h^4 - 3*e*f^2*g^3*h^5 + 3*e^2*f*g
^2*h^6 - e^3*g*h^7)*x^3 + 6*(f^3*g^5*h^3 - 3*e*f^2*g^4*h^4 + 3*e^2*f*g^3*h^
5 - e^3*g^2*h^6)*x^2 + 4*(f^3*g^6*h^2 - 3*e*f^2*g^5*h^3 + 3*e^2*f*g^4*h^4 -
 e^3*g^3*h^5)*x), -2/105*(30*(b*f^3*h^4*p*q*x^4 + 4*b*f^3*g*h^3*p*q*x^3 + 6
*b*f^3*g^2*h^2*p*q*x^2 + 4*b*f^3*g^3*h*p*q*x + b*f^3*g^4*p*q)*sqrt(-f/(f*g
- e*h))*arctan(-(f*g - e*h)*sqrt(h*x + g)*sqrt(-f/(f*g - e*h))/(f*h*x + f*g
)) - (30*b*f^3*h^3*p*q*x^3 - 15*a*f^3*g^3 + 45*a*e*f^2*g^2*h - 45*a*e^2*f*g
*h^2 + 15*a*e^3*h^3 + 10*(10*b*f^3*g*h^2 - b*e*f^2*h^3)*p*q*x^2 + 2*(58*b*f
^3*g^2*h - 16*b*e*f^2*g*h^2 + 3*b*e^2*f*h^3)*p*q*x - 15*(b*f^3*g^3 - 3*b*e*
f^2*g^2*h + 3*b*e^2*f*g*h^2 - b*e^3*h^3)*p*q*log(f*x + e) + 2*(23*b*f^3*g^3
 - 11*b*e*f^2*g^2*h + 3*b*e^2*f*g*h^2)*p*q - 15*(b*f^3*g^3 - 3*b*e*f^2*g^2*
h + 3*b*e^2*f*g*h^2 - b*e^3*h^3)*q*log(d) - 15*(b*f^3*g^3 - 3*b*e*f^2*g^2*h
 + 3*b*e^2*f*g*h^2 - b*e^3*h^3)*log(c))*sqrt(h*x + g))/(f^3*g^7*h - 3*e*f^2
*g^6*h^2 + 3*e^2*f*g^5*h^3 - e^3*g^4*h^4 + (f^3*g^3*h^5 - 3*e*f^2*g^2*h^6 +
 3*e^2*f*g*h^7 - e^3*h^8)*x^4 + 4*(f^3*g^4*h^4 - 3*e*f^2*g^3*h^5 + 3*e^2*f*
g^2*h^6 - e^3*g*h^7)*x^3 + 6*(f^3*g^5*h^3 - 3*e*f^2*g^4*h^4 + 3*e^2*f*g^3*h
^5 - e^3*g^2*h^6)*x^2 + 4*(f^3*g^6*h^2 - 3*e*f^2*g^5*h^3 + 3*e^2*f*g^4*h^4
- e^3*g^3*h^5)*x)]
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b \log\left(\left(\left(fx+e\right)^{p} d\right)^{q} c\right) + a}{\left(hx+g\right)^{\frac{9}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^(9/2),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)/(h*x + g)^(9/2), x)
```

maple [F] time = 0.35, size = 0, normalized size = 0.00

$$\int \frac{b \ln\left(c \left(d \left(fx+e\right)^{p}\right)^{q}\right) + a}{\left(hx+g\right)^{\frac{9}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(d*(f*x+e)^p)^q)+a)/(h*x+g)^(9/2),x)
```

```
[Out] int((b*ln(c*(d*(f*x+e)^p)^q)+a)/(h*x+g)^(9/2),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^(9/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(e*h-f*g>0)', see `assume?` for more
 details)Is e*h-f*g positive or negative?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)}{{\left(g+h\,x\right)}^{9/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))/(g + h*x)^(9/2),x)
```

```
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))/(g + h*x)^(9/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))/(h*x+g)**(9/2),x)
```

```
[Out] Timed out
```

3.489 $\int (g+hx)^{3/2} \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2 \, dx$

Optimal. Leaf size=635

$$\frac{8bpq(fg-eh)^{5/2}\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{5f^{5/2}h}-\frac{8bpq\sqrt{g+hx}\,(fg-eh)^2\left(a+b\log\left(c\left(d(e+\right.\right.\right.}{5f^2h}$$

```
[Out] 128/225*b^2*(-e*h+f*g)*p^2*q^2*(h*x+g)^(3/2)/f/h+16/125*b^2*p^2*q^2*(h*x+g)
^(5/2)/h-368/75*b^2*(-e*h+f*g)^(5/2)*p^2*q^2*arctanh(f^(1/2)*(h*x+g)^(1/2)/
(-e*h+f*g)^(1/2))/f^(5/2)/h-8/5*b^2*(-e*h+f*g)^(5/2)*p^2*q^2*arctanh(f^(1/2
)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2))^2/f^(5/2)/h-8/15*b*(-e*h+f*g)*p*q*(h*x+g)
^(3/2)*(a+b*ln(c*(d*(f*x+e)^p)^q))/f/h-8/25*b*p*q*(h*x+g)^(5/2)*(a+b*ln(c*(
d*(f*x+e)^p)^q))/h+8/5*b*(-e*h+f*g)^(5/2)*p*q*arctanh(f^(1/2)*(h*x+g)^(1/2)
/(-e*h+f*g)^(1/2))*(a+b*ln(c*(d*(f*x+e)^p)^q))/f^(5/2)/h+2/5*(h*x+g)^(5/2)*
(a+b*ln(c*(d*(f*x+e)^p)^q))^2/h+16/5*b^2*(-e*h+f*g)^(5/2)*p^2*q^2*arctanh(f
^(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2))*ln(2/(1-f^(1/2)*(h*x+g)^(1/2)/(-e*h+
f*g)^(1/2)))/f^(5/2)/h+8/5*b^2*(-e*h+f*g)^(5/2)*p^2*q^2*polylog(2,1-2/(1-f^
(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2)))/f^(5/2)/h+368/75*b^2*(-e*h+f*g)^2*p^
2*q^2*(h*x+g)^(1/2)/f^2/h-8/5*b*(-e*h+f*g)^2*p*q*(a+b*ln(c*(d*(f*x+e)^p)^q)
)*(h*x+g)^(1/2)/f^2/h
```

Rubi [A] time = 4.35, antiderivative size = 635, normalized size of antiderivative = 1.00, number of steps used = 29, number of rules used = 16, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.533, Rules used = {2398, 2411, 2346, 63, 208, 2348, 12, 1587, 6741, 5984, 5918, 2402, 2315, 2319, 50, 2445}

$$\frac{8b^2p^2q^2(fg-eh)^{5/2}\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}}\right)}{5f^{5/2}h}-\frac{8bpq\sqrt{g+hx}\,(fg-eh)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{5f^2h}+\frac{8bpq(}{}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)^(3/2)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2,x]
```

```
[Out] (368*b^2*(f*g - e*h)^2*p^2*q^2*Sqrt[g + h*x])/(75*f^2*h) + (128*b^2*(f*g -
e*h)*p^2*q^2*(g + h*x)^(3/2))/(225*f*h) + (16*b^2*p^2*q^2*(g + h*x)^(5/2))/
(125*h) - (368*b^2*(f*g - e*h)^(5/2)*p^2*q^2*ArcTanh[(Sqrt[f]*Sqrt[g + h*x]
)/Sqrt[f*g - e*h]])/(75*f^(5/2)*h) - (8*b^2*(f*g - e*h)^(5/2)*p^2*q^2*ArcTa
nh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]^2)/(5*f^(5/2)*h) - (8*b*(f*g -
e*h)^2*p*q*Sqrt[g + h*x]*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(5*f^2*h) - (8*b
*(f*g - e*h)*p*q*(g + h*x)^(3/2)*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(15*f*h)
 - (8*b*p*q*(g + h*x)^(5/2)*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(25*h) + (8*b
*(f*g - e*h)^(5/2)*p*q*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]*(a
+ b*Log[c*(d*(e + f*x)^p)^q]))/(5*f^(5/2)*h) + (2*(g + h*x)^(5/2)*(a + b*Lo
g[c*(d*(e + f*x)^p)^q])^2)/(5*h) + (16*b^2*(f*g - e*h)^(5/2)*p^2*q^2*ArcTan
h[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]*Log[2/(1 - (Sqrt[f]*Sqrt[g + h*x
])/Sqrt[f*g - e*h])])/(5*f^(5/2)*h) + (8*b^2*(f*g - e*h)^(5/2)*p^2*q^2*Poly
Log[2, 1 - 2/(1 - (Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h])])/(5*f^(5/2)*h)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 1587

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[(Coeff[Pp, x, p]*Log[RemoveContent[Qq, x]])/(q*Coeff[Qq, x, q]), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]*D[Qq, x])/(q*Coeff[Qq, x,
 q])]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2319

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/(e*(q + 1)), x]
- Dist[(b*n*p)/(e*(q + 1)), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 2346

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.))
/(x_), x_Symbol] :> Dist[d, Int[((d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p)/x,
 x], x] + Dist[e, Int[(d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p, x], x] /; Fre
eQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0] && GtQ[q, 0] && IntegerQ[2*q]
```

Rule 2348

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
```

```
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rule 5918

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> -Simp[((a + b*ArcTanh[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] + Dist[(b*c*
p)/e, Int[((a + b*ArcTanh[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 - c^2*x^2)
, x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2, 0
]
```

Rule 5984

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rubi steps

$$\int (g+hx)^{3/2}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2\,dx = \text{Subst}\left(\int (g+hx)^{3/2}\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2\,dx, cd^q(e+fx\right.$$

$$= \frac{2(g+hx)^{5/2}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{5h} - \text{Subst}\left(\frac{(4bfpq)\int}{}\right.$$

$$= \frac{2(g+hx)^{5/2}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{5h} - \text{Subst}\left(\frac{(4bpq)\,\text{Sub}}{}\right.$$

$$= \frac{2(g+hx)^{5/2}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{5h} - \text{Subst}\left(\frac{(4bpq)\,\text{Sub}}{}\right.$$

$$= -\frac{8bpq(g+hx)^{5/2}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{25h} + \frac{2(g+hx)^{5/2}\left(a\right.}{}$$

$$= \frac{16b^2p^2q^2(g+hx)^{5/2}}{125h} - \frac{8b(fg-eh)pq(g+hx)^{3/2}\left(a+b\log\left(c\left(d\right.\right.\right.}{15fh}$$

$$= \frac{128b^2(fg-eh)p^2q^2(g+hx)^{3/2}}{225fh} + \frac{16b^2p^2q^2(g+hx)^{5/2}}{125h} - \frac{8b(fg-}{}$$

$$= \frac{368b^2(fg-eh)^2p^2q^2\sqrt{g+hx}}{75f^2h} + \frac{128b^2(fg-eh)p^2q^2(g+hx)^{3/2}}{225fh}$$

$$= \frac{368b^2(fg-eh)^2p^2q^2\sqrt{g+hx}}{75f^2h} + \frac{128b^2(fg-eh)p^2q^2(g+hx)^{3/2}}{225fh}$$

Mathematica [C] time = 8.97, size = 2450, normalized size = 3.86

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)^(3/2)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2,x]
```

```
[Out] (2*b^2*g*p^2*q^2*Sqrt[(f*g - e*h + h*(e + f*x))/f]*(3*h*(e + f*x)*Hypergeom
etricPFQ[{-1/2, 1, 1, 1}, {2, 2, 2}, (h*(e + f*x))/(-(f*g) + e*h)] - 3*h*(e
 + f*x)*HypergeometricPFQ[{-1/2, 1, 1}, {2, 2}, (h*(e + f*x))/(-(f*g) + e*h
)]*Log[e + f*x] - f*g*Log[e + f*x]^2 + e*h*Log[e + f*x]^2 + f*g*Sqrt[1 + (h
*(e + f*x))/(f*g - e*h)]*Log[e + f*x]^2 - e*h*Sqrt[1 + (h*(e + f*x))/(f*g -
 e*h)]*Log[e + f*x]^2 + h*(e + f*x)*Sqrt[1 + (h*(e + f*x))/(f*g - e*h)]*Log
[e + f*x]^2))/(3*f*h*Sqrt[1 + (h*(e + f*x))/(f*g - e*h)]) - (2*b^2*p^2*q^2*
Sqrt[(f*g - e*h + h*(e + f*x))/f]*(10*f*g*h*(e + f*x)*HypergeometricPFQ[{-3
/2, 1, 1, 1}, {2, 2, 2}, (h*(e + f*x))/(-(f*g) + e*h)] - 10*e*h^2*(e + f*x)
*HypergeometricPFQ[{-3/2, 1, 1, 1}, {2, 2, 2}, (h*(e + f*x))/(-(f*g) + e*h)
] + 15*e*h^2*(e + f*x)*HypergeometricPFQ[{-1/2, 1, 1, 1}, {2, 2, 2}, (h*(e
+ f*x))/(-(f*g) + e*h)] - 4*f^2*g^2*Log[e + f*x] + 8*e*f*g*h*Log[e + f*x] -
 4*e^2*h^2*Log[e + f*x] + 4*f^2*g^2*Sqrt[(f*g - e*h + h*(e + f*x))/(f*g - e
*h)]*Log[e + f*x] - 8*e*f*g*h*Sqrt[(f*g - e*h + h*(e + f*x))/(f*g - e*h)]*L
og[e + f*x] + 4*e^2*h^2*Sqrt[(f*g - e*h + h*(e + f*x))/(f*g - e*h)]*Log[e +
 f*x] + 8*f*g*h*(e + f*x)*Sqrt[(f*g - e*h + h*(e + f*x))/(f*g - e*h)]*Log[e
 + f*x] - 8*e*h^2*(e + f*x)*Sqrt[(f*g - e*h + h*(e + f*x))/(f*g - e*h)]*Log
[e + f*x] + 4*h^2*(e + f*x)^2*Sqrt[(f*g - e*h + h*(e + f*x))/(f*g - e*h)]*L
og[e + f*x] - 15*e*h^2*(e + f*x)*HypergeometricPFQ[{-1/2, 1, 1}, {2, 2}, (h
*(e + f*x))/(-(f*g) + e*h)]*Log[e + f*x] - 2*f^2*g^2*Log[e + f*x]^2 - e*f*g
*h*Log[e + f*x]^2 + 3*e^2*h^2*Log[e + f*x]^2 + 2*f^2*g^2*Sqrt[(f*g - e*h +
h*(e + f*x))/(f*g - e*h)]*Log[e + f*x]^2 + e*f*g*h*Sqrt[(f*g - e*h + h*(e +
 f*x))/(f*g - e*h)]*Log[e + f*x]^2 - 3*e^2*h^2*Sqrt[(f*g - e*h + h*(e + f*x
))/(f*g - e*h)]*Log[e + f*x]^2 - f*g*h*(e + f*x)*Sqrt[(f*g - e*h + h*(e + f
*x))/(f*g - e*h)]*Log[e + f*x]^2 + 6*e*h^2*(e + f*x)*Sqrt[(f*g - e*h + h*(e
 + f*x))/(f*g - e*h)]*Log[e + f*x]^2 - 3*h^2*(e + f*x)^2*Sqrt[(f*g - e*h +
h*(e + f*x))/(f*g - e*h)]*Log[e + f*x]^2 + 10*h*(-(f*g) + e*h)*(e + f*x)*Hy
pergeometricPFQ[{-3/2, 1, 1}, {2, 2}, (h*(e + f*x))/(-(f*g) + e*h)]*(1 + Lo
g[e + f*x])))/(15*f^2*h*Sqrt[1 + (h*(e + f*x))/(f*g - e*h)]) + (4*b*g*p*q*(
(6*(f*g - e*h)^(3/2)*ArcTanh[(Sqrt[f]*Sqrt[(f*g - e*h + h*(e + f*x))/f])/Sq
rt[f*g - e*h]])/Sqrt[f] - Sqrt[(f*g - e*h + h*(e + f*x))/f]*(h*(e + f*x)*(2
 - 3*Log[e + f*x]) + (f*g - e*h)*(8 - 3*Log[e + f*x])))*(a + b*q*(-(p*Log[e
 + f*x]) + Log[d*(e + f*x)^p]) + b*(-(q*(-(p*Log[e + f*x]) + Log[d*(e + f*x
)^p])) - Log[d*(e + f*x)^p]*(q - (q*(-(p*Log[e + f*x]) + Log[d*(e + f*x)^p]
))/Log[d*(e + f*x)^p]) + Log[c*E^(q*(-(p*Log[e + f*x]) + Log[d*(e + f*x)^p]
))*(d*(e + f*x)^p)^(q - (q*(-(p*Log[e + f*x]) + Log[d*(e + f*x)^p]))/Log[d*
(e + f*x)^p])])))/(9*f*h) - (4*b*p*q*(30*(f*g - e*h)^(3/2)*(2*f*g + 3*e*h)*
ArcTanh[(Sqrt[f]*Sqrt[(f*g - e*h + h*(e + f*x))/f])/Sqrt[f*g - e*h]] + Sqrt
[f]*Sqrt[(f*g - e*h + h*(e + f*x))/f]*(9*h^2*(e + f*x)^2*(2 - 5*Log[e + f*x
]) + (f*g - e*h)*(3*e*h*(-46 + 15*Log[e + f*x]) + 2*f*g*(-31 + 15*Log[e + f
*x])) + h*(e + f*x)*(f*g*(16 - 15*Log[e + f*x]) + 6*e*h*(-11 + 15*Log[e + f
*x]))))*(a + b*q*(-(p*Log[e + f*x]) + Log[d*(e + f*x)^p]) + b*(-(q*(-(p*Log
[e + f*x]) + Log[d*(e + f*x)^p])) - Log[d*(e + f*x)^p]*(q - (q*(-(p*Log[e +
 f*x]) + Log[d*(e + f*x)^p]))/Log[d*(e + f*x)^p]) + Log[c*E^(q*(-(p*Log[e +
 f*x]) + Log[d*(e + f*x)^p]))*(d*(e + f*x)^p)^(q - (q*(-(p*Log[e + f*x]) +
Log[d*(e + f*x)^p]))/Log[d*(e + f*x)^p])])))/(225*f^(5/2)*h) + Sqrt[g + h*x
]*((2*g^2*(a + b*q*(-(p*Log[e + f*x]) + Log[d*(e + f*x)^p]) + b*(-(q*(-(p*L
og[e + f*x]) + Log[d*(e + f*x)^p])) - Log[d*(e + f*x)^p]*(q - (q*(-(p*Log[e
 + f*x]) + Log[d*(e + f*x)^p]))/Log[d*(e + f*x)^p]) + Log[c*E^(q*(-(p*Log[e
 + f*x]) + Log[d*(e + f*x)^p]))*(d*(e + f*x)^p)^(q - (q*(-(p*Log[e + f*x])
+ Log[d*(e + f*x)^p]))/Log[d*(e + f*x)^p])]))^2)/(5*h) + (4*g*x*(a + b*q*(-
(p*Log[e + f*x]) + Log[d*(e + f*x)^p]) + b*(-(q*(-(p*Log[e + f*x]) + Log[d*
```

```
(e + f*x)^p])) - Log[d*(e + f*x)^p]*(q - (q*(-(p*Log[e + f*x]) + Log[d*(e +
 f*x)^p]))/Log[d*(e + f*x)^p]) + Log[c*E^(q*(-(p*Log[e + f*x]) + Log[d*(e +
 f*x)^p]))*(d*(e + f*x)^p)^(q - (q*(-(p*Log[e + f*x]) + Log[d*(e + f*x)^p])
)/Log[d*(e + f*x)^p])]))^2)/5 + (2*h*x^2*(a + b*q*(-(p*Log[e + f*x]) + Log[
d*(e + f*x)^p]) + b*(-(q*(-(p*Log[e + f*x]) + Log[d*(e + f*x)^p])) - Log[d*
(e + f*x)^p]*(q - (q*(-(p*Log[e + f*x]) + Log[d*(e + f*x)^p]))/Log[d*(e + f
*x)^p]) + Log[c*E^(q*(-(p*Log[e + f*x]) + Log[d*(e + f*x)^p]))*(d*(e + f*x)
^p)^(q - (q*(-(p*Log[e + f*x]) + Log[d*(e + f*x)^p]))/Log[d*(e + f*x)^p])])
)^2)/5)
```

fricas [F] time = 0.47, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(b^2hx + b^2g\right)\sqrt{hx+g}\,\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^2 + 2\left(abhx + abg\right)\sqrt{hx+g}\,\log\left(\left(\left(fx+e\right)^p d\right)^q c\right) + \left(a^2hx +\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(3/2)*(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="fricas
")
```

```
[Out] integral((b^2*h*x + b^2*g)*sqrt(h*x + g)*log(((f*x + e)^p*d)^q*c)^2 + 2*(a*
b*h*x + a*b*g)*sqrt(h*x + g)*log(((f*x + e)^p*d)^q*c) + (a^2*h*x + a^2*g)*s
qrt(h*x + g), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(hx+g\right)^{\frac{3}{2}}\left(b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(3/2)*(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="giac")
```

```
[Out] integrate((h*x + g)^(3/2)*(b*log(((f*x + e)^p*d)^q*c) + a)^2, x)
```

maple [F] time = 0.36, size = 0, normalized size = 0.00

$$\int \left(hx+g\right)^{\frac{3}{2}}\left(b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)+a\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^(3/2)*(b*ln(c*(d*(f*x+e)^p)^q)+a)^2,x)
```

```
[Out] int((h*x+g)^(3/2)*(b*ln(c*(d*(f*x+e)^p)^q)+a)^2,x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(3/2)*(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="maxima
")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(e*h-f*g>0)', see `assume?` for more
 details)Is e*h-f*g positive or negative?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int {\left(g+h\,x\right)}^{3/2}\,{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)^(3/2)*(a + b*log(c*(d*(e + f*x)^p)^q))^2,x)
[Out] int((g + h*x)^(3/2)*(a + b*log(c*(d*(e + f*x)^p)^q))^2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**(3/2)*(a+b*ln(c*(d*(f*x+e)**p)**q))**2,x)
[Out] Timed out
```

3.490 $\int \sqrt{g+hx}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2\,dx$

Optimal. Leaf size=547

$$\frac{8bpq(fg-eh)^{3/2}\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{3f^{3/2}h}-\frac{8bpq(g+hx)^{3/2}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{9h}-$$

```
[Out] 16/27*b^2*p^2*q^2*(h*x+g)^(3/2)/h-64/9*b^2*(-e*h+f*g)^(3/2)*p^2*q^2*arctanh
(f^(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2))/f^(3/2)/h-8/3*b^2*(-e*h+f*g)^(3/2)
*p^2*q^2*arctanh(f^(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2))^2/f^(3/2)/h-8/9*b*
p*q*(h*x+g)^(3/2)*(a+b*ln(c*(d*(f*x+e)^p)^q))/h+8/3*b*(-e*h+f*g)^(3/2)*p*q*
arctanh(f^(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2))*(a+b*ln(c*(d*(f*x+e)^p)^q))
/f^(3/2)/h+2/3*(h*x+g)^(3/2)*(a+b*ln(c*(d*(f*x+e)^p)^q))^2/h+16/3*b^2*(-e*h
+f*g)^(3/2)*p^2*q^2*arctanh(f^(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2))*ln(2/(1
-f^(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2)))/f^(3/2)/h+8/3*b^2*(-e*h+f*g)^(3/2
)*p^2*q^2*polylog(2,1-2/(1-f^(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2)))/f^(3/2)
/h+64/9*b^2*(-e*h+f*g)*p^2*q^2*(h*x+g)^(1/2)/f/h-8/3*b*(-e*h+f*g)*p*q*(a+b*
ln(c*(d*(f*x+e)^p)^q))*(h*x+g)^(1/2)/f/h
```

Rubi [A] time = 2.98, antiderivative size = 547, normalized size of antiderivative = 1.00, number of steps used = 22, number of rules used = 16, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.533, Rules used = {2398, 2411, 2346, 63, 208, 2348, 12, 1587, 6741, 5984, 5918, 2402, 2315, 2319, 50, 2445}

$$\frac{8b^2p^2q^2(fg-eh)^{3/2}\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}}\right)}{3f^{3/2}h}+\frac{8bpq(fg-eh)^{3/2}\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{3f^{3/2}h}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[g + h*x]*(a + b*Log[c*(d*(e + f*x)^p)^q])^2,x]
```

```
[Out] (64*b^2*(f*g - e*h)*p^2*q^2*Sqrt[g + h*x])/(9*f*h) + (16*b^2*p^2*q^2*(g + h
*x)^(3/2))/(27*h) - (64*b^2*(f*g - e*h)^(3/2)*p^2*q^2*ArcTanh[(Sqrt[f]*Sqrt
[g + h*x])/Sqrt[f*g - e*h]])/(9*f^(3/2)*h) - (8*b^2*(f*g - e*h)^(3/2)*p^2*q
^2*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]^2)/(3*f^(3/2)*h) - (8*b
*(f*g - e*h)*p*q*Sqrt[g + h*x]*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(3*f*h) -
(8*b*p*q*(g + h*x)^(3/2)*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(9*h) + (8*b*(f*
g - e*h)^(3/2)*p*q*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]*(a + b*
Log[c*(d*(e + f*x)^p)^q]))/(3*f^(3/2)*h) + (2*(g + h*x)^(3/2)*(a + b*Log[c*
(d*(e + f*x)^p)^q])^2)/(3*h) + (16*b^2*(f*g - e*h)^(3/2)*p^2*q^2*ArcTanh[(S
qrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]*Log[2/(1 - (Sqrt[f]*Sqrt[g + h*x])/S
qrt[f*g - e*h])])/(3*f^(3/2)*h) + (8*b^2*(f*g - e*h)^(3/2)*p^2*q^2*PolyLog[
2, 1 - 2/(1 - (Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h])])/(3*f^(3/2)*h)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
```

```
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 1587

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[(Coeff[Pp, x, p]*Log[RemoveContent[Qq, x]])/(q*Coeff[Qq, x, q]), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]*D[Qq, x])/(q*Coeff[Qq, x,
 q])]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2319

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/(e*(q + 1)), x]
- Dist[(b*n*p)/(e*(q + 1)), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 2346

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.))
/(x_), x_Symbol] :> Dist[d, Int[((d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p)/x,
 x], x] + Dist[e, Int[(d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p, x], x] /; Fre
eQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0] && GtQ[q, 0] && IntegerQ[2*q]
```

Rule 2348

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
```

```
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rule 5918

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> -Simp[((a + b*ArcTanh[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] + Dist[(b*c*
p)/e, Int[((a + b*ArcTanh[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 - c^2*x^2)
, x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2, 0
]
```

Rule 5984

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rubi steps

$$\int \sqrt{g+hx}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2 dx = \text{Subst}\left(\int \sqrt{g+hx}\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2 dx, cd^q(e+fx\right.$$

$$= \frac{2(g+hx)^{3/2}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{3h} - \text{Subst}\left(\frac{(4bfpq)\int\right.$$

$$= \frac{2(g+hx)^{3/2}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{3h} - \text{Subst}\left(\frac{(4bpq)\,\text{Su}}{}\right.$$

$$= \frac{2(g+hx)^{3/2}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{3h} - \text{Subst}\left(\frac{(4bpq)\,\text{Su}}{}\right.$$

$$= -\frac{8bpq(g+hx)^{3/2}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{9h} + \frac{2(g+hx)^{3/2}}{}$$

$$= \frac{16b^2p^2q^2(g+hx)^{3/2}}{27h} - \frac{8b(fg-eh)pq\sqrt{g+hx}\left(a+b\log\left(c\left(d\right.\right.\right.}{3fh}$$

$$= \frac{64b^2(fg-eh)p^2q^2\sqrt{g+hx}}{9fh} + \frac{16b^2p^2q^2(g+hx)^{3/2}}{27h} - \frac{8b(fg-}{}$$

$$= \frac{64b^2(fg-eh)p^2q^2\sqrt{g+hx}}{9fh} + \frac{16b^2p^2q^2(g+hx)^{3/2}}{27h} - \frac{8b(fg-}{}$$

$$= \frac{64b^2(fg-eh)p^2q^2\sqrt{g+hx}}{9fh} + \frac{16b^2p^2q^2(g+hx)^{3/2}}{27h} - \frac{64b^2(fg}{}$$

Mathematica [C] time = 2.16, size = 365, normalized size = 0.67

$$2\left(\frac{3b^2p^2q^2\sqrt{g+hx}\left(3h(e+fx)\,{}_4F_3\left(-\frac{1}{2},1,1,1;2,2,2;\frac{h(e+fx)}{eh-fg}\right)+\log(e+fx)\left(\log(e+fx)\left(fhx\sqrt{\frac{f(g+hx)}{fg-eh}}+fg\left(\sqrt{\frac{f(g+hx)}{fg-eh}}-1\right)+eh\right)-3h(e+fx)\,{}_3F_2\left(-\frac{1}{2},1,1;2,2;\frac{h(e}{eh}\right.\right.\right.}{f\sqrt{\frac{f(g+hx)}{fg-eh}}}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[g + h*x]*(a + b*Log[c*(d*(e + f*x)^p)^q])^2,x]
```

```
[Out] (2*((3*b^2*p^2*q^2*Sqrt[g + h*x]*(3*h*(e + f*x)*HypergeometricPFQ[{-1/2, 1,
 1, 1}, {2, 2, 2}, (h*(e + f*x))/(-(f*g) + e*h)] + Log[e + f*x]*(-3*h*(e +
f*x)*HypergeometricPFQ[{-1/2, 1, 1}, {2, 2}, (h*(e + f*x))/(-(f*g) + e*h)]
+ (e*h + f*h*x*Sqrt[(f*(g + h*x))/(f*g - e*h)] + f*g*(-1 + Sqrt[(f*(g + h*x
))/(f*g - e*h)]))*Log[e + f*x])))/(f*Sqrt[(f*(g + h*x))/(f*g - e*h)]) - (2*
b*p*q*(6*(f*g - e*h)^(3/2)*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]
 + Sqrt[f]*Sqrt[g + h*x]*(6*e*h - 2*f*(4*g + h*x) + 3*f*(g + h*x)*Log[e + f
*x]))*(-a + b*p*q*Log[e + f*x] - b*Log[c*(d*(e + f*x)^p)^q]))/f^(3/2) + 3*(
g + h*x)^(3/2)*(a - b*p*q*Log[e + f*x] + b*Log[c*(d*(e + f*x)^p)^q])^2))/(9
*h)
```

fricas [F] time = 0.50, size = 0, normalized size = 0.00

$$\text{integral}\left(\sqrt{hx+g}\,b^2\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^2+2\sqrt{hx+g}\,ab\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+\sqrt{hx+g}\,a^2,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(1/2)*(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="fricas
")
```

```
[Out] integral(sqrt(h*x + g)*b^2*log(((f*x + e)^p*d)^q*c)^2 + 2*sqrt(h*x + g)*a*b
*log(((f*x + e)^p*d)^q*c) + sqrt(h*x + g)*a^2, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\sqrt{hx+g}\left(b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(1/2)*(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="giac")
```

```
[Out] integrate(sqrt(h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a)^2, x)
```

maple [F] time = 0.35, size = 0, normalized size = 0.00

$$\int\sqrt{hx+g}\,\left(b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)+a\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^(1/2)*(b*ln(c*(d*(f*x+e)^p)^q)+a)^2,x)
```

```
[Out] int((h*x+g)^(1/2)*(b*ln(c*(d*(f*x+e)^p)^q)+a)^2,x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(1/2)*(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="maxima
")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(e*h-f*g>0)', see `assume?` for more
 details)Is e*h-f*g positive or negative?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \sqrt{g+h\,x}\,{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}^2 \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)^(1/2)*(a + b*log(c*(d*(e + f*x)^p)^q))^2,x)
```

```
[Out] int((g + h*x)^(1/2)*(a + b*log(c*(d*(e + f*x)^p)^q))^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(a + b \log{\left(c \left(d \left(e + f x\right)^{p}\right)^{q} \right)}\right)^{2} \sqrt{g + h x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**(1/2)*(a+b*ln(c*(d*(f*x+e)**p)**q))**2,x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**2*sqrt(g + h*x), x)
```

3.491 $\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{\sqrt{g+hx}}\,dx$

Optimal. Leaf size=447

$$-\frac{8bpq\sqrt{g+hx}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h}+\frac{2\sqrt{g+hx}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{h}+\frac{8bpq\sqrt{fg-eh}\tanh^{-1}\left(\right.}{}$$

```
[Out] -16*b^2*p^2*q^2*arctanh(f^(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2))*(-e*h+f*g)^
(1/2)/h/f^(1/2)-8*b^2*p^2*q^2*arctanh(f^(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2
))^2*(-e*h+f*g)^(1/2)/h/f^(1/2)+8*b*p*q*arctanh(f^(1/2)*(h*x+g)^(1/2)/(-e*h
+f*g)^(1/2))*(a+b*ln(c*(d*(f*x+e)^p)^q))*(-e*h+f*g)^(1/2)/h/f^(1/2)+16*b^2*
p^2*q^2*arctanh(f^(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2))*ln(2/(1-f^(1/2)*(h*
x+g)^(1/2)/(-e*h+f*g)^(1/2)))*(-e*h+f*g)^(1/2)/h/f^(1/2)+8*b^2*p^2*q^2*poly
log(2,1-2/(1-f^(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2)))*(-e*h+f*g)^(1/2)/h/f^
(1/2)+16*b^2*p^2*q^2*(h*x+g)^(1/2)/h-8*b*p*q*(a+b*ln(c*(d*(f*x+e)^p)^q))*(h
*x+g)^(1/2)/h+2*(a+b*ln(c*(d*(f*x+e)^p)^q))^2*(h*x+g)^(1/2)/h
```

Rubi [A] time = 2.22, antiderivative size = 447, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 16, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.533, Rules used = {2398, 2411, 2346, 63, 208, 2348, 12, 1587, 6741, 5984, 5918, 2402, 2315, 2319, 50, 2445}

$$\frac{8b^2p^2q^2\sqrt{fg-eh}\,\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}}\right)}{\sqrt{f}\,h}-\frac{8bpq\sqrt{g+hx}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h}+\frac{2\sqrt{g+hx}\left(a+b\log\right.}{h}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/Sqrt[g + h*x],x]
```

```
[Out] (16*b^2*p^2*q^2*Sqrt[g + h*x])/h - (16*b^2*Sqrt[f*g - e*h]*p^2*q^2*ArcTanh[
(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]])/(Sqrt[f]*h) - (8*b^2*Sqrt[f*g - e
*h]*p^2*q^2*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]^2)/(Sqrt[f]*h)
 - (8*b*p*q*Sqrt[g + h*x]*(a + b*Log[c*(d*(e + f*x)^p)^q]))/h + (8*b*Sqrt[f
*g - e*h]*p*q*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]*(a + b*Log[c
*(d*(e + f*x)^p)^q]))/(Sqrt[f]*h) + (2*Sqrt[g + h*x]*(a + b*Log[c*(d*(e + f
*x)^p)^q])^2)/h + (16*b^2*Sqrt[f*g - e*h]*p^2*q^2*ArcTanh[(Sqrt[f]*Sqrt[g +
 h*x])/Sqrt[f*g - e*h]]*Log[2/(1 - (Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h])
])/(Sqrt[f]*h) + (8*b^2*Sqrt[f*g - e*h]*p^2*q^2*PolyLog[2, 1 - 2/(1 - (Sqrt
[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h])])/(Sqrt[f]*h)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 1587

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[(Coeff[Pp, x, p]*Log[RemoveContent[Qq, x]])/(q*Coeff[Qq, x, q]), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]*D[Qq, x])/(q*Coeff[Qq, x,
 q])]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2319

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/(e*(q + 1)), x]
- Dist[(b*n*p)/(e*(q + 1)), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 2346

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.))
/(x_), x_Symbol] :> Dist[d, Int[((d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p)/x,
 x], x] + Dist[e, Int[(d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p, x], x] /; Fre
eQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0] && GtQ[q, 0] && IntegerQ[2*q]
```

Rule 2348

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rule 5918

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> -Simp[((a + b*ArcTanh[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] + Dist[(b*c*
p)/e, Int[((a + b*ArcTanh[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 - c^2*x^2)
, x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2, 0
]
```

Rule 5984

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{\sqrt{g+hx}}dx = \text{Subst}\left(\int \frac{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}{\sqrt{g+hx}}dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right.$$

$$= \frac{2\sqrt{g+hx}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{h} - \text{Subst}\left(\frac{(4bfpq)\int \frac{\sqrt{g+hx}\left(a+b\right.}{}}{h}\right.$$

$$= \frac{2\sqrt{g+hx}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{h} - \text{Subst}\left(\frac{(4bpq)\,\text{Subst}\left(\int \frac{\sqrt{fg}}{}\right.}{}\right.$$

$$= \frac{2\sqrt{g+hx}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{h} - \text{Subst}\left(\frac{(4bpq)\,\text{Subst}\left(\int \frac{a+b}{\sqrt{}}\right.}{}\right.$$

$$= -\frac{8bpq\sqrt{g+hx}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h} + \frac{8b\sqrt{fg-eh}\,pq\tanh^{-1}\left(\right.}{}$$

$$= \frac{16b^2p^2q^2\sqrt{g+hx}}{h} - \frac{8bpq\sqrt{g+hx}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h} + \frac{8b\sqrt{}}{}$$

$$= \frac{16b^2p^2q^2\sqrt{g+hx}}{h} - \frac{8bpq\sqrt{g+hx}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h} + \frac{8b\sqrt{}}{}$$

$$= \frac{16b^2p^2q^2\sqrt{g+hx}}{h} - \frac{16b^2\sqrt{fg-eh}\,p^2q^2\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{\sqrt{f}\,h} - \frac{8bpq\sqrt{g}}{}$$

$$= \frac{16b^2p^2q^2\sqrt{g+hx}}{h} - \frac{16b^2\sqrt{fg-eh}\,p^2q^2\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{\sqrt{f}\,h} - \frac{8b^2\sqrt{fg}}{}$$

Mathematica [C] time = 1.68, size = 646, normalized size = 1.45

$$\frac{2\left(b^2hp^2q^2(e+fx)\sqrt{\frac{f(g+hx)}{fg-eh}}\ {}_4F_3\left(\frac{1}{2},1,1,1;2,2,2;\frac{h(e+fx)}{eh-fg}\right)-b^2hp^2q^2(e+fx)\log(e+fx)\sqrt{\frac{f(g+hx)}{fg-eh}}\ {}_3F_2\left(\frac{1}{2},1,1;2,2\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/Sqrt[g + h*x],x]
```

```
[Out] (2*(a^2*f*g - 4*a*b*f*g*p*q + a^2*f*h*x - 4*a*b*f*h*p*q*x + 4*a*b*Sqrt[f]*S
qrt[f*g - e*h]*p*q*Sqrt[g + h*x]*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g -
 e*h]] + b^2*h*p^2*q^2*(e + f*x)*Sqrt[(f*(g + h*x))/(f*g - e*h)]*Hypergeome
tricPFQ[{1/2, 1, 1, 1}, {2, 2, 2}, (h*(e + f*x))/(-(f*g) + e*h)] + 4*b^2*f*
g*p^2*q^2*Log[e + f*x] + 4*b^2*f*h*p^2*q^2*x*Log[e + f*x] - 4*b^2*Sqrt[f]*S
qrt[f*g - e*h]*p^2*q^2*Sqrt[g + h*x]*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f
*g - e*h]]*Log[e + f*x] - b^2*h*p^2*q^2*(e + f*x)*Sqrt[(f*(g + h*x))/(f*g -
 e*h)]*HypergeometricPFQ[{1/2, 1, 1}, {2, 2}, (h*(e + f*x))/(-(f*g) + e*h)]
*Log[e + f*x] - b^2*f*g*p^2*q^2*Sqrt[(f*(g + h*x))/(f*g - e*h)]*Log[e + f*x
]^2 + b^2*e*h*p^2*q^2*Sqrt[(f*(g + h*x))/(f*g - e*h)]*Log[e + f*x]^2 + 2*a*
b*f*g*Log[c*(d*(e + f*x)^p)^q] - 4*b^2*f*g*p*q*Log[c*(d*(e + f*x)^p)^q] + 2
*a*b*f*h*x*Log[c*(d*(e + f*x)^p)^q] - 4*b^2*f*h*p*q*x*Log[c*(d*(e + f*x)^p)
^q] + 4*b^2*Sqrt[f]*Sqrt[f*g - e*h]*p*q*Sqrt[g + h*x]*ArcTanh[(Sqrt[f]*Sqrt
[g + h*x])/Sqrt[f*g - e*h]]*Log[c*(d*(e + f*x)^p)^q] + b^2*f*g*Log[c*(d*(e
+ f*x)^p)^q]^2 + b^2*f*h*x*Log[c*(d*(e + f*x)^p)^q]^2))/(f*h*Sqrt[g + h*x])
```

fricas [F] time = 0.49, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\sqrt{hx+g}\,b^2\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^2+2\sqrt{hx+g}\,ab\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+\sqrt{hx+g}\,a^2}{hx+g},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(1/2),x, algorithm="fricas
")
```

```
[Out] integral((sqrt(h*x + g)*b^2*log(((f*x + e)^p*d)^q*c)^2 + 2*sqrt(h*x + g)*a*
b*log(((f*x + e)^p*d)^q*c) + sqrt(h*x + g)*a^2)/(h*x + g), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a\right)^2}{\sqrt{hx+g}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^2/sqrt(h*x + g), x)
```

maple [F] time = 0.35, size = 0, normalized size = 0.00

$$\int \frac{\left(b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)+a\right)^2}{\sqrt{hx+g}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^2/(h*x+g)^(1/2),x)
```

```
[Out] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^2/(h*x+g)^(1/2),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(1/2),x, algorithm="maxima
")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(e*h-f*g>0)', see `assume?` for more
 details)Is e*h-f*g positive or negative?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)^2}{\sqrt{g+h\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^2/(g + h*x)^(1/2),x)
```

```
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))^2/(g + h*x)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)\right)^{2}}{\sqrt{g+hx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**2/(h*x+g)**(1/2),x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**2/sqrt(g + h*x), x)
```

3.492 $\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{(g+hx)^{3/2}}\,dx$

Optimal. Leaf size=330

$$-\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{h\sqrt{g+hx}}-\frac{8b\sqrt{f}\,pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h\sqrt{fg-eh}}-\frac{8b^2\sqrt{f}\,p^2q^2\text{Li}_2\left(1-\right.}{h\sqrt{fg-e}}$$

```
[Out] 8*b^2*p^2*q^2*arctanh(f^(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2))^2*f^(1/2)/h/(
-e*h+f*g)^(1/2)-8*b*p*q*arctanh(f^(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2))*(a+
b*ln(c*(d*(f*x+e)^p)^q))*f^(1/2)/h/(-e*h+f*g)^(1/2)-16*b^2*p^2*q^2*arctanh(
f^(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2))*ln(2/(1-f^(1/2)*(h*x+g)^(1/2)/(-e*h
+f*g)^(1/2)))*f^(1/2)/h/(-e*h+f*g)^(1/2)-8*b^2*p^2*q^2*polylog(2,1-2/(1-f^(
1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2)))*f^(1/2)/h/(-e*h+f*g)^(1/2)-2*(a+b*ln(
c*(d*(f*x+e)^p)^q))^2/h/(h*x+g)^(1/2)
```

Rubi [A] time = 1.62, antiderivative size = 330, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 13, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.433, Rules used = {2398, 2411, 63, 208, 2348, 12, 1587, 6741, 5984, 5918, 2402, 2315, 2445}

$$-\frac{8b^2\sqrt{f}\,p^2q^2\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}}\right)}{h\sqrt{fg-eh}}-\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{h\sqrt{g+hx}}-\frac{8b\sqrt{f}\,pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)\left(a+b\,\text{lo}\right.}{h\sqrt{fg-eh}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/(g + h*x)^(3/2),x]
```

```
[Out] (8*b^2*Sqrt[f]*p^2*q^2*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]^2)/
(h*Sqrt[f*g - e*h]) - (8*b*Sqrt[f]*p*q*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt
[f*g - e*h]]*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(h*Sqrt[f*g - e*h]) - (2*(a
+ b*Log[c*(d*(e + f*x)^p)^q])^2)/(h*Sqrt[g + h*x]) - (16*b^2*Sqrt[f]*p^2*q^
2*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]*Log[2/(1 - (Sqrt[f]*Sqrt
[g + h*x])/Sqrt[f*g - e*h])])/(h*Sqrt[f*g - e*h]) - (8*b^2*Sqrt[f]*p^2*q^2*
PolyLog[2, 1 - 2/(1 - (Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h])])/(h*Sqrt[f*
g - e*h])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 1587

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[(Coeff[Pp, x, p]*Log[RemoveContent[Qq, x]])/(q*Coeff[Qq, x, q]), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]*D[Qq, x])/(q*Coeff[Qq, x,
 q])]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2348

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rule 5918

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> -Simp[((a + b*ArcTanh[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] + Dist[(b*c*
p)/e, Int[((a + b*ArcTanh[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 - c^2*x^2)
, x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2, 0
]
```

Rule 5984

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{(g+hx)^{3/2}}\,dx = \text{Subst}\left(\int \frac{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}{(g+hx)^{3/2}}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q \ldots\right.$$

$$= -\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{h\sqrt{g+hx}} + \text{Subst}\left(\frac{(4bfpq)\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{(e+fx)\sqrt{g+hx}} \ldots}{h} \ldots\right.$$

$$= -\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{h\sqrt{g+hx}} + \text{Subst}\left(\frac{(4bpq)\,\text{Subst}\left(\int \frac{a+b\log(cd^q x^{p\ldots}}{x\sqrt{\frac{fg-eh}{f}+\frac{hx}{f}\ldots}} \ldots\right.}{h} \ldots\right.$$

$$= -\frac{8b\sqrt{f}\,pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h\sqrt{fg-eh}} - \frac{2\left(a+b\,\mathrm{lo}\ldots\right.}{\ldots}$$

$$= -\frac{8b\sqrt{f}\,pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h\sqrt{fg-eh}} - \frac{2\left(a+b\,\mathrm{lo}\ldots\right.}{\ldots}$$

$$= -\frac{8b\sqrt{f}\,pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h\sqrt{fg-eh}} - \frac{2\left(a+b\,\mathrm{lo}\ldots\right.}{\ldots}$$

$$= -\frac{8b\sqrt{f}\,pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h\sqrt{fg-eh}} - \frac{2\left(a+b\,\mathrm{lo}\ldots\right.}{\ldots}$$

$$= \frac{8b^2\sqrt{f}\,p^2q^2\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)^2}{h\sqrt{fg-eh}} - \frac{8b\sqrt{f}\,pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)\left(a+b\,\mathrm{lo}\ldots\right.}{h\sqrt{fg-eh}}$$

Mathematica [C] time = 3.77, size = 356, normalized size = 1.08

$$2\left(\frac{b^2p^2q^2\left(h(e+fx)\sqrt{\frac{f(g+hx)}{fg-eh}}\,{}_4F_3\left(1,1,1,\frac{3}{2};2,2,2;\frac{h(e+fx)}{eh-fg}\right)+(fg-eh)\log(e+fx)\left(\log(e+fx)\left(\sqrt{\frac{f(g+hx)}{fg-eh}}-1\right)-4\sqrt{\frac{f(g+hx)}{fg-eh}}\log\left(\frac{1}{2}\left(\sqrt{\frac{f(g+hx)}{fg-eh}}+1\right)\right)\right)\right)}{\sqrt{g+hx}\,(fg-eh)}-\frac{(a+l}{}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/(g + h*x)^(3/2),x]
```

```
[Out] (2*((2*b*p*q*(2*Sqrt[f]*(g + h*x)*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g
- e*h]] + Sqrt[f*g - e*h]*Sqrt[g + h*x]*Log[e + f*x])*(-a + b*p*q*Log[e + f
*x] - b*Log[c*(d*(e + f*x)^p)^q]))/(Sqrt[f*g - e*h]*(g + h*x)) - (a - b*p*q
*Log[e + f*x] + b*Log[c*(d*(e + f*x)^p)^q])^2/Sqrt[g + h*x] + (b^2*p^2*q^2*
(h*(e + f*x)*Sqrt[(f*(g + h*x))/(f*g - e*h)]*HypergeometricPFQ[{1, 1, 1, 3/
2}, {2, 2, 2}, (h*(e + f*x))/(-(f*g) + e*h)] + (f*g - e*h)*Log[e + f*x]*((-
1 + Sqrt[(f*(g + h*x))/(f*g - e*h)])*Log[e + f*x] - 4*Sqrt[(f*(g + h*x))/(f
*g - e*h)]*Log[(1 + Sqrt[(f*(g + h*x))/(f*g - e*h)])/2])))/((f*g - e*h)*Sqr
t[g + h*x])))/h
```

fricas [F] time = 0.49, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{hx+g}\,b^2\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^2+2\sqrt{hx+g}\,ab\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+\sqrt{hx+g}\,a^2}{h^2x^2+2\,ghx+g^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(3/2),x, algorithm="fricas
")
```

```
[Out] integral((sqrt(h*x + g)*b^2*log(((f*x + e)^p*d)^q*c)^2 + 2*sqrt(h*x + g)*a*
b*log(((f*x + e)^p*d)^q*c) + sqrt(h*x + g)*a^2)/(h^2*x^2 + 2*g*h*x + g^2),
x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a\right)^2}{\left(hx+g\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^2/(h*x + g)^(3/2), x)
```

maple [F] time = 0.35, size = 0, normalized size = 0.00

$$\int\frac{\left(b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)+a\right)^2}{\left(hx+g\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^2/(h*x+g)^(3/2),x)
```

```
[Out] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^2/(h*x+g)^(3/2),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(3/2),x, algorithm="maxima
")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(e*h-f*g>0)', see `assume?` for more
 details)Is e*h-f*g positive or negative?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}^2}{{\left(g+h\,x\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^2/(g + h*x)^(3/2),x)
```

```
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))^2/(g + h*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)\right)^{2}}{\left(g+hx\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**2/(h*x+g)**(3/2),x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**2/(g + h*x)**(3/2), x)
```

3.493 $\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{(g+hx)^{5/2}}\,dx$

Optimal. Leaf size=449

$$-\frac{8bf^{3/2}pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{3h(fg-eh)^{3/2}}+\frac{8bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{3h\sqrt{g+hx}\,(fg-eh)}-\frac{2\left(a+b\log\left(c\left(\right.\right.\right.}{3h(g+}$$

```
[Out] 16/3*b^2*f^(3/2)*p^2*q^2*arctanh(f^(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2))/h/
(-e*h+f*g)^(3/2)+8/3*b^2*f^(3/2)*p^2*q^2*arctanh(f^(1/2)*(h*x+g)^(1/2)/(-e*
h+f*g)^(1/2))^2/h/(-e*h+f*g)^(3/2)-8/3*b*f^(3/2)*p*q*arctanh(f^(1/2)*(h*x+g
)^(1/2)/(-e*h+f*g)^(1/2))*(a+b*ln(c*(d*(f*x+e)^p)^q))/h/(-e*h+f*g)^(3/2)-2/
3*(a+b*ln(c*(d*(f*x+e)^p)^q))^2/h/(h*x+g)^(3/2)-16/3*b^2*f^(3/2)*p^2*q^2*ar
ctanh(f^(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2))*ln(2/(1-f^(1/2)*(h*x+g)^(1/2)
/(-e*h+f*g)^(1/2)))/h/(-e*h+f*g)^(3/2)-8/3*b^2*f^(3/2)*p^2*q^2*polylog(2,1-
2/(1-f^(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2)))/h/(-e*h+f*g)^(3/2)+8/3*b*f*p*
q*(a+b*ln(c*(d*(f*x+e)^p)^q))/h/(-e*h+f*g)/(h*x+g)^(1/2)
```

Rubi [A] time = 2.38, antiderivative size = 449, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 15, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.500, Rules used = {2398, 2411, 2347, 63, 208, 2348, 12, 1587, 6741, 5984, 5918, 2402, 2315, 2319, 2445}

$$-\frac{8b^2f^{3/2}p^2q^2\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}}\right)}{3h(fg-eh)^{3/2}}-\frac{8bf^{3/2}pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{3h(fg-eh)^{3/2}}+\frac{8bfpq\left(a+\right.}{3h}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/(g + h*x)^(5/2),x]
```

```
[Out] (16*b^2*f^(3/2)*p^2*q^2*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]])/(
3*h*(f*g - e*h)^(3/2)) + (8*b^2*f^(3/2)*p^2*q^2*ArcTanh[(Sqrt[f]*Sqrt[g + h
*x])/Sqrt[f*g - e*h]]^2)/(3*h*(f*g - e*h)^(3/2)) + (8*b*f*p*q*(a + b*Log[c*
(d*(e + f*x)^p)^q]))/(3*h*(f*g - e*h)*Sqrt[g + h*x]) - (8*b*f^(3/2)*p*q*Arc
Tanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]*(a + b*Log[c*(d*(e + f*x)^p)^
q]))/(3*h*(f*g - e*h)^(3/2)) - (2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/(3*h*
(g + h*x)^(3/2)) - (16*b^2*f^(3/2)*p^2*q^2*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/
Sqrt[f*g - e*h]]*Log[2/(1 - (Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h])])/(3*h
*(f*g - e*h)^(3/2)) - (8*b^2*f^(3/2)*p^2*q^2*PolyLog[2, 1 - 2/(1 - (Sqrt[f]
*Sqrt[g + h*x])/Sqrt[f*g - e*h])])/(3*h*(f*g - e*h)^(3/2))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 1587

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[(Coeff[Pp, x, p]*Log[RemoveContent[Qq, x]])/(q*Coeff[Qq, x, q]), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]*D[Qq, x])/(q*Coeff[Qq, x,
 q])]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2319

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/(e*(q + 1)), x]
- Dist[(b*n*p)/(e*(q + 1)), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 2347

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/x
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2348

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
```

```
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rule 5918

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> -Simp[((a + b*ArcTanh[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] + Dist[(b*c*
p)/e, Int[((a + b*ArcTanh[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 - c^2*x^2)
, x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2, 0
]
```

Rule 5984

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{(g+hx)^{5/2}}\,dx = \text{Subst}\left(\int \frac{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}{(g+hx)^{5/2}}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right.$$

$$= -\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{3h(g+hx)^{3/2}} + \text{Subst}\left(\frac{(4bfpq)\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{(e+fx)(g+hx)^{3/2}}}{3h}\right.$$

$$= -\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{3h(g+hx)^{3/2}} + \text{Subst}\left(\frac{(4bpq)\,\text{Subst}\left(\int \frac{a+b\log(cd^qx^p}{x\left(\frac{fg-eh}{f}+\frac{hx}{f}\right)^3}\right.}{3h}\right.$$

$$= -\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{3h(g+hx)^{3/2}} - \text{Subst}\left(\frac{(4bpq)\,\text{Subst}\left(\int \frac{a+b\log(cd^qx^{p}}{\left(\frac{fg-eh}{f}+\frac{hx}{f}\right)^{3/}}\right.}{3(fg-eh)}\right.$$

$$= \frac{8bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{3h(fg-eh)\sqrt{g+hx}} - \frac{8bf^{3/2}pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)\left(a+\right.}{3h(fg-eh)}$$

$$= \frac{8bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{3h(fg-eh)\sqrt{g+hx}} - \frac{8bf^{3/2}pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)\left(a+\right.}{3h(fg-eh)}$$

$$= \frac{16b^2f^{3/2}p^2q^2\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{3h(fg-eh)^{3/2}} + \frac{8bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{3h(fg-eh)\sqrt{g+hx}}$$

$$= \frac{16b^2f^{3/2}p^2q^2\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{3h(fg-eh)^{3/2}} + \frac{8bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{3h(fg-eh)\sqrt{g+hx}}$$

$$= \frac{16b^2f^{3/2}p^2q^2\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{3h(fg-eh)^{3/2}} + \frac{8b^2f^{3/2}p^2q^2\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)^2}{3h(fg-eh)^{3/2}} +$$

Mathematica [C] time = 6.20, size = 657, normalized size = 1.46

$$2\left(3b^2fhp^2q^2(e+fx)(g+hx)\sqrt{\frac{f(g+hx)}{fg-eh}}\,{}_4F_3\left(1,1,1,\frac{5}{2};2,2,2;\frac{h(e+fx)}{eh-fg}\right)-(fg-eh)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)-bp\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/(g + h*x)^(5/2),x]
```

```
[Out] (2*(-4*a*b*f^(3/2)*Sqrt[f*g - e*h]*p*q*(g + h*x)^(3/2)*ArcTanh[(Sqrt[f]*Sqr
t[g + h*x])/Sqrt[f*g - e*h]] + 3*b^2*f*h*p^2*q^2*(e + f*x)*(g + h*x)*Sqrt[(
f*(g + h*x))/(f*g - e*h)]*HypergeometricPFQ[{1, 1, 1, 5/2}, {2, 2, 2}, (h*(
e + f*x))/(-(f*g) + e*h)] + 4*b^2*f^(3/2)*Sqrt[f*g - e*h]*p^2*q^2*(g + h*x)
^(3/2)*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]*Log[e + f*x] + 2*a*
b*(f*g - e*h)*p*q*(2*f*(g + h*x) + (-(f*g) + e*h)*Log[e + f*x]) - 2*b^2*(f*
g - e*h)*p^2*q^2*Log[e + f*x]*(2*f*(g + h*x) + (-(f*g) + e*h)*Log[e + f*x])
 - 4*b^2*f^(3/2)*Sqrt[f*g - e*h]*p*q*(g + h*x)^(3/2)*ArcTanh[(Sqrt[f]*Sqrt[
g + h*x])/Sqrt[f*g - e*h]]*Log[c*(d*(e + f*x)^p)^q] + 2*b^2*(f*g - e*h)*p*q
*(2*f*(g + h*x) + (-(f*g) + e*h)*Log[e + f*x])*Log[c*(d*(e + f*x)^p)^q] - (
f*g - e*h)^2*(a - b*p*q*Log[e + f*x] + b*Log[c*(d*(e + f*x)^p)^q])^2 + b^2*
(f*g - e*h)*p^2*q^2*Log[e + f*x]*((e*h + f*h*x*Sqrt[(f*(g + h*x))/(f*g - e*
h)] + f*g*(-1 + Sqrt[(f*(g + h*x))/(f*g - e*h)]))*Log[e + f*x] - 4*f*(g + h
*x)*(-1 + Sqrt[(f*(g + h*x))/(f*g - e*h)] + Sqrt[(f*(g + h*x))/(f*g - e*h)]
*Log[(1 + Sqrt[(f*(g + h*x))/(f*g - e*h)])/2]))))/(3*h*(f*g - e*h)^2*(g + h
*x)^(3/2))
```

fricas [F] time = 0.48, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(\frac{\sqrt{hx+g}\,b^2\log\left(\left(\left(fx+e\right)^pd\right)^qc\right)^2+2\,\sqrt{hx+g}\,ab\log\left(\left(\left(fx+e\right)^pd\right)^qc\right)+\sqrt{hx+g}\,a^2}{h^3x^3+3\,gh^2x^2+3\,g^2hx+g^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(5/2),x, algorithm="fricas
")
```

```
[Out] integral((sqrt(h*x + g)*b^2*log(((f*x + e)^p*d)^q*c)^2 + 2*sqrt(h*x + g)*a*
b*log(((f*x + e)^p*d)^q*c) + sqrt(h*x + g)*a^2)/(h^3*x^3 + 3*g*h^2*x^2 + 3*
g^2*h*x + g^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(b\log\left(\left(\left(fx+e\right)^pd\right)^qc\right)+a\right)^2}{\left(hx+g\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^2/(h*x + g)^(5/2), x)
```

maple [F] time = 0.35, size = 0, normalized size = 0.00

$$\int\frac{\left(b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)+a\right)^2}{\left(hx+g\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^2/(h*x+g)^(5/2),x)
```

```
[Out] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^2/(h*x+g)^(5/2),x)
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(5/2),x, algorithm="maxima
")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(e*h-f*g>0)', see `assume?` for more
 details)Is e*h-f*g positive or negative?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)^2}{{\left(g+h\,x\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^2/(g + h*x)^(5/2),x)
```

```
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))^2/(g + h*x)^(5/2), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**2/(h*x+g)**(5/2),x)
```

```
[Out] Timed out
```

3.494 $\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{(g+hx)^{7/2}}\,dx$

Optimal. Leaf size=537

$$-\frac{8bf^{5/2}pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{5h(fg-eh)^{5/2}}+\frac{8bf^2pq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{5h\sqrt{g+hx}\,(fg-eh)^2}+\frac{8bfpq\left(a+b\right.}{15h(g+}$$

```
[Out] 64/15*b^2*f^(5/2)*p^2*q^2*arctanh(f^(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2))/h
/(-e*h+f*g)^(5/2)+8/5*b^2*f^(5/2)*p^2*q^2*arctanh(f^(1/2)*(h*x+g)^(1/2)/(-e
*h+f*g)^(1/2))^2/h/(-e*h+f*g)^(5/2)+8/15*b*f*p*q*(a+b*ln(c*(d*(f*x+e)^p)^q)
)/h/(-e*h+f*g)/(h*x+g)^(3/2)-8/5*b*f^(5/2)*p*q*arctanh(f^(1/2)*(h*x+g)^(1/2
)/(-e*h+f*g)^(1/2))*(a+b*ln(c*(d*(f*x+e)^p)^q))/h/(-e*h+f*g)^(5/2)-2/5*(a+b
*ln(c*(d*(f*x+e)^p)^q))^2/h/(h*x+g)^(5/2)-16/5*b^2*f^(5/2)*p^2*q^2*arctanh(
f^(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2))*ln(2/(1-f^(1/2)*(h*x+g)^(1/2)/(-e*h
+f*g)^(1/2)))/h/(-e*h+f*g)^(5/2)-8/5*b^2*f^(5/2)*p^2*q^2*polylog(2,1-2/(1-f
^(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2)))/h/(-e*h+f*g)^(5/2)-16/15*b^2*f^2*p^
2*q^2/h/(-e*h+f*g)^2/(h*x+g)^(1/2)+8/5*b*f^2*p*q*(a+b*ln(c*(d*(f*x+e)^p)^q)
)/h/(-e*h+f*g)^2/(h*x+g)^(1/2)
```

Rubi [A] time = 3.08, antiderivative size = 537, normalized size of antiderivative = 1.00, number of steps used = 20, number of rules used = 16, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.533$, Rules used = {2398, 2411, 2347, 63, 208, 2348, 12, 1587, 6741, 5984, 5918, 2402, 2315, 2319, 51, 2445}

$$-\frac{8b^2f^{5/2}p^2q^2\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}}\right)}{5h(fg-eh)^{5/2}}+\frac{8bf^2pq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{5h\sqrt{g+hx}\,(fg-eh)^2}-\frac{8bf^{5/2}pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)\left(a\right.}{5h(fg-e}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/(g + h*x)^(7/2),x]
```

```
[Out] (-16*b^2*f^2*p^2*q^2)/(15*h*(f*g - e*h)^2*Sqrt[g + h*x]) + (64*b^2*f^(5/2)*
p^2*q^2*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]])/(15*h*(f*g - e*h)
^(5/2)) + (8*b^2*f^(5/2)*p^2*q^2*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g -
 e*h]]^2)/(5*h*(f*g - e*h)^(5/2)) + (8*b*f*p*q*(a + b*Log[c*(d*(e + f*x)^p)
^q]))/(15*h*(f*g - e*h)*(g + h*x)^(3/2)) + (8*b*f^2*p*q*(a + b*Log[c*(d*(e
+ f*x)^p)^q]))/(5*h*(f*g - e*h)^2*Sqrt[g + h*x]) - (8*b*f^(5/2)*p*q*ArcTanh
[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]*(a + b*Log[c*(d*(e + f*x)^p)^q]))
/(5*h*(f*g - e*h)^(5/2)) - (2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/(5*h*(g +
 h*x)^(5/2)) - (16*b^2*f^(5/2)*p^2*q^2*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt
[f*g - e*h]]*Log[2/(1 - (Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h])])/(5*h*(f*
g - e*h)^(5/2)) - (8*b^2*f^(5/2)*p^2*q^2*PolyLog[2, 1 - 2/(1 - (Sqrt[f]*Sqr
t[g + h*x])/Sqrt[f*g - e*h])])/(5*h*(f*g - e*h)^(5/2))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
```

```
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 1587

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[(Coeff[Pp, x, p]*Log[RemoveContent[Qq, x]])/(q*Coeff[Qq, x, q]), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]*D[Qq, x])/(q*Coeff[Qq, x,
 q])]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2319

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/(e*(q + 1)), x]
- Dist[(b*n*p)/(e*(q + 1)), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 2347

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/x
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2348

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
```

```
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rule 5918

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> -Simp[((a + b*ArcTanh[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] + Dist[(b*c*
p)/e, Int[((a + b*ArcTanh[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 - c^2*x^2)
, x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2, 0
]
```

Rule 5984

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{(g+hx)^{7/2}}\,dx = \text{Subst}\left(\int \frac{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}{(g+hx)^{7/2}}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right.$$

$$= -\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{5h(g+hx)^{5/2}} + \text{Subst}\left(\frac{(4bfpq)\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{(e+fx)(g+hx)^{5/2}}}{5h}\right.$$

$$= -\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{5h(g+hx)^{5/2}} + \text{Subst}\left(\frac{(4bpq)\,\text{Subst}\left(\int \frac{a+b\log(cd^qx^p}{x\left(\frac{fg-eh}{f}+\frac{hx}{f}\right)^5}\right.}{5h}\right.$$

$$= -\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{5h(g+hx)^{5/2}} - \text{Subst}\left(\frac{(4bpq)\,\text{Subst}\left(\int \frac{a+b\log(cd^qx^p}{\left(\frac{fg-eh}{f}+\frac{hx}{f}\right)^{5/}}\right.}{5(fg-eh)}\right.$$

$$= \frac{8bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{15h(fg-eh)(g+hx)^{3/2}} - \frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{5h(g+hx)^{5/2}} -$$

$$= -\frac{16b^2f^2p^2q^2}{15h(fg-eh)^2\sqrt{g+hx}} + \frac{8bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{15h(fg-eh)(g+hx)^{3/2}} + \frac{8bf^2}{}$$

$$= -\frac{16b^2f^2p^2q^2}{15h(fg-eh)^2\sqrt{g+hx}} + \frac{8bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{15h(fg-eh)(g+hx)^{3/2}} + \frac{8bf^2}{}$$

$$= -\frac{16b^2f^2p^2q^2}{15h(fg-eh)^2\sqrt{g+hx}} + \frac{64b^2f^{5/2}p^2q^2\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{15h(fg-eh)^{5/2}} + \frac{8bfpq\left(\right.}{15}$$

$$= -\frac{16b^2f^2p^2q^2}{15h(fg-eh)^2\sqrt{g+hx}} + \frac{64b^2f^{5/2}p^2q^2\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{15h(fg-eh)^{5/2}} + \frac{8bfpq\left(\right.}{15}$$

Mathematica [C] time = 7.75, size = 1183, normalized size = 2.20

$$\frac{4abpq\left(\frac{\sqrt{f}\sqrt{\frac{fg-eh+h(e+fx)}{f}}\left(-3\log(e+fx)(fg-eh)^2+2(fg+fhx)(fg-eh)+6(fg+fhx)^2\right)}{(fg-eh)^2(fg+fhx)^3}-\frac{6\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{\frac{fg-eh+h(e+fx)}{f}}}{\sqrt{fg-eh}}\right)}{(fg-eh)^{5/2}}\right)f^{5/2}}{15h}+\frac{4b^2pq^2\left(\sqrt{f}\ \cdots\right.}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/(g + h*x)^(7/2),x]
```

```
[Out] (2*b^2*p^2*q^2*(1 + (h*(e + f*x))/(f*g - e*h))*(5*h*(e + f*x)*((f*g - e*h +
 h*(e + f*x))/(f*g - e*h))^(5/2)*HypergeometricPFQ[{1, 1, 1, 7/2}, {2, 2, 2
}, (h*(e + f*x))/(-(f*g) + e*h)] - 5*h*(e + f*x)*((f*g - e*h + h*(e + f*x))
/(f*g - e*h))^(5/2)*HypergeometricPFQ[{1, 1, 7/2}, {2, 2}, (h*(e + f*x))/(-
(f*g) + e*h)]*Log[e + f*x] - f*g*Log[e + f*x]^2 + e*h*Log[e + f*x]^2 + f*g*
((f*g - e*h + h*(e + f*x))/(f*g - e*h))^(5/2)*Log[e + f*x]^2 - e*h*((f*g -
e*h + h*(e + f*x))/(f*g - e*h))^(5/2)*Log[e + f*x]^2))/(5*f*h*((f*g - e*h +
 h*(e + f*x))/f)^(7/2)) + (4*a*b*f^(5/2)*p*q*((-6*ArcTanh[(Sqrt[f]*Sqrt[(f*
g - e*h + h*(e + f*x))/f])/Sqrt[f*g - e*h]])/(f*g - e*h)^(5/2) + (Sqrt[f]*S
qrt[(f*g - e*h + h*(e + f*x))/f]*(2*(f*g - e*h)*(f*g + f*h*x) + 6*(f*g + f*
h*x)^2 - 3*(f*g - e*h)^2*Log[e + f*x]))/((f*g - e*h)^2*(f*g + f*h*x)^3)))/(
15*h) + (4*b^2*f^(5/2)*p*q^2*((-6*ArcTanh[(Sqrt[f]*Sqrt[(f*g - e*h + h*(e +
 f*x))/f])/Sqrt[f*g - e*h]])/(f*g - e*h)^(5/2) + (Sqrt[f]*Sqrt[(f*g - e*h +
 h*(e + f*x))/f]*(2*(f*g - e*h)*(f*g + f*h*x) + 6*(f*g + f*h*x)^2 - 3*(f*g
- e*h)^2*Log[e + f*x]))/((f*g - e*h)^2*(f*g + f*h*x)^3))*(-(p*Log[e + f*x])
 + Log[d*(e + f*x)^p]))/(15*h) + (4*b^2*f^(5/2)*p*q*((-6*ArcTanh[(Sqrt[f]*S
qrt[(f*g - e*h + h*(e + f*x))/f])/Sqrt[f*g - e*h]])/(f*g - e*h)^(5/2) + (Sq
rt[f]*Sqrt[(f*g - e*h + h*(e + f*x))/f]*(2*(f*g - e*h)*(f*g + f*h*x) + 6*(f
*g + f*h*x)^2 - 3*(f*g - e*h)^2*Log[e + f*x]))/((f*g - e*h)^2*(f*g + f*h*x)
^3))*(-(q*(-(p*Log[e + f*x]) + Log[d*(e + f*x)^p])) - Log[d*(e + f*x)^p]*(q
 - (q*(-(p*Log[e + f*x]) + Log[d*(e + f*x)^p]))/Log[d*(e + f*x)^p]) + Log[c
*E^(q*(-(p*Log[e + f*x]) + Log[d*(e + f*x)^p]))*(d*(e + f*x)^p)^(q - (q*(-(
p*Log[e + f*x]) + Log[d*(e + f*x)^p]))/Log[d*(e + f*x)^p])]))/(15*h) - (2*(
a + b*q*(-(p*Log[e + f*x]) + Log[d*(e + f*x)^p]) + b*(-(q*(-(p*Log[e + f*x]
) + Log[d*(e + f*x)^p])) - Log[d*(e + f*x)^p]*(q - (q*(-(p*Log[e + f*x]) +
Log[d*(e + f*x)^p]))/Log[d*(e + f*x)^p]) + Log[c*E^(q*(-(p*Log[e + f*x]) +
Log[d*(e + f*x)^p]))*(d*(e + f*x)^p)^(q - (q*(-(p*Log[e + f*x]) + Log[d*(e
+ f*x)^p]))/Log[d*(e + f*x)^p])]))^2)/(5*h*(g + h*x)^(5/2))
```

fricas [F] time = 0.49, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{hx+g}\,b^2\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^2+2\sqrt{hx+g}\,ab\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+\sqrt{hx+g}\,a^2}{h^4x^4+4\,gh^3x^3+6\,g^2h^2x^2+4\,g^3hx+g^4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(7/2),x, algorithm="fricas
")
```

```
[Out] integral((sqrt(h*x + g)*b^2*log(((f*x + e)^p*d)^q*c)^2 + 2*sqrt(h*x + g)*a*
b*log(((f*x + e)^p*d)^q*c) + sqrt(h*x + g)*a^2)/(h^4*x^4 + 4*g*h^3*x^3 + 6*
g^2*h^2*x^2 + 4*g^3*h*x + g^4), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)^{2}}{\left(hx+g\right)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(7/2),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^2/(h*x + g)^(7/2), x)
```

maple [F] time = 0.35, size = 0, normalized size = 0.00

$$\int \frac{\left(b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)+a\right)^{2}}{\left(hx+g\right)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^2/(h*x+g)^(7/2),x)
```

```
[Out] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^2/(h*x+g)^(7/2),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(7/2),x, algorithm="maxima
")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(e*h-f*g>0)', see `assume?` for more
 details)Is e*h-f*g positive or negative?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}^2}{{\left(g+h\,x\right)}^{7/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^2/(g + h*x)^(7/2),x)
```

```
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))^2/(g + h*x)^(7/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**2/(h*x+g)**(7/2),x)
```

```
[Out] Timed out
```

3.495 $\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{(g+hx)^{9/2}}\,dx$

Optimal. Leaf size=625

$$-\frac{8bf^{7/2}pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{7h(fg-eh)^{7/2}}+\frac{8bf^3pq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{7h\sqrt{g+hx}\,(fg-eh)^3}+\frac{8bf^2pq\left(a+b\right.}{21h(g+}$$

```
[Out] -16/105*b^2*f^2*p^2*q^2/h/(-e*h+f*g)^2/(h*x+g)^(3/2)+368/105*b^2*f^(7/2)*p^
2*q^2*arctanh(f^(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2))/h/(-e*h+f*g)^(7/2)+8/
7*b^2*f^(7/2)*p^2*q^2*arctanh(f^(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2))^2/h/(
-e*h+f*g)^(7/2)+8/35*b*f*p*q*(a+b*ln(c*(d*(f*x+e)^p)^q))/h/(-e*h+f*g)/(h*x+
g)^(5/2)+8/21*b*f^2*p*q*(a+b*ln(c*(d*(f*x+e)^p)^q))/h/(-e*h+f*g)^2/(h*x+g)^
(3/2)-8/7*b*f^(7/2)*p*q*arctanh(f^(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2))*(a+
b*ln(c*(d*(f*x+e)^p)^q))/h/(-e*h+f*g)^(7/2)-2/7*(a+b*ln(c*(d*(f*x+e)^p)^q))
^2/h/(h*x+g)^(7/2)-16/7*b^2*f^(7/2)*p^2*q^2*arctanh(f^(1/2)*(h*x+g)^(1/2)/(
-e*h+f*g)^(1/2))*ln(2/(1-f^(1/2)*(h*x+g)^(1/2)/(-e*h+f*g)^(1/2)))/h/(-e*h+f
*g)^(7/2)-8/7*b^2*f^(7/2)*p^2*q^2*polylog(2,1-2/(1-f^(1/2)*(h*x+g)^(1/2)/(-
e*h+f*g)^(1/2)))/h/(-e*h+f*g)^(7/2)-128/105*b^2*f^3*p^2*q^2/h/(-e*h+f*g)^3/
(h*x+g)^(1/2)+8/7*b*f^3*p*q*(a+b*ln(c*(d*(f*x+e)^p)^q))/h/(-e*h+f*g)^3/(h*x
+g)^(1/2)
```

Rubi [A] time = 3.93, antiderivative size = 625, normalized size of antiderivative = 1.00, number of steps used = 26, number of rules used = 16, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.533, Rules used = {2398, 2411, 2347, 63, 208, 2348, 12, 1587, 6741, 5984, 5918, 2402, 2315, 2319, 51, 2445}

$$-\frac{8b^2f^{7/2}p^2q^2\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}}\right)}{7h(fg-eh)^{7/2}}+\frac{8bf^3pq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{7h\sqrt{g+hx}\,(fg-eh)^3}+\frac{8bf^2pq\left(a+b\log\left(c\left(d(e+fx\right.\right.\right.}{21h(g+hx)^{3/2}(fg-eh)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/(g + h*x)^(9/2),x]
```

```
[Out] (-16*b^2*f^2*p^2*q^2)/(105*h*(f*g - e*h)^2*(g + h*x)^(3/2)) - (128*b^2*f^3*
p^2*q^2)/(105*h*(f*g - e*h)^3*Sqrt[g + h*x]) + (368*b^2*f^(7/2)*p^2*q^2*Arc
Tanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]])/(105*h*(f*g - e*h)^(7/2)) +
(8*b^2*f^(7/2)*p^2*q^2*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]^2)/
(7*h*(f*g - e*h)^(7/2)) + (8*b*f*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(35*
h*(f*g - e*h)*(g + h*x)^(5/2)) + (8*b*f^2*p*q*(a + b*Log[c*(d*(e + f*x)^p)^
q]))/(21*h*(f*g - e*h)^2*(g + h*x)^(3/2)) + (8*b*f^3*p*q*(a + b*Log[c*(d*(e
 + f*x)^p)^q]))/(7*h*(f*g - e*h)^3*Sqrt[g + h*x]) - (8*b*f^(7/2)*p*q*ArcTan
h[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]*(a + b*Log[c*(d*(e + f*x)^p)^q])
)/(7*h*(f*g - e*h)^(7/2)) - (2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/(7*h*(g
+ h*x)^(7/2)) - (16*b^2*f^(7/2)*p^2*q^2*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqr
t[f*g - e*h]]*Log[2/(1 - (Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h])])/(7*h*(f
*g - e*h)^(7/2)) - (8*b^2*f^(7/2)*p^2*q^2*PolyLog[2, 1 - 2/(1 - (Sqrt[f]*Sq
rt[g + h*x])/Sqrt[f*g - e*h])])/(7*h*(f*g - e*h)^(7/2))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 1587

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[(Coeff[Pp, x, p]*Log[RemoveContent[Qq, x]])/(q*Coeff[Qq, x, q]), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]*D[Qq, x])/(q*Coeff[Qq, x,
 q])]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2319

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/(e*(q + 1)), x]
- Dist[(b*n*p)/(e*(q + 1)), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 2347

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/x
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2348

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
```

```
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rule 5918

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> -Simp[((a + b*ArcTanh[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] + Dist[(b*c*
p)/e, Int[((a + b*ArcTanh[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 - c^2*x^2)
, x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2, 0
]
```

Rule 5984

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{(g+hx)^{9/2}}dx = \text{Subst}\left(\int \frac{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}{(g+hx)^{9/2}}dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right.$$

$$= -\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{7h(g+hx)^{7/2}} + \text{Subst}\left(\frac{(4bfpq)\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{(e+fx)(g+hx)^{7/2}}}{7h}\right.$$

$$= -\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{7h(g+hx)^{7/2}} + \text{Subst}\left(\frac{(4bpq)\,\text{Subst}\left(\int \frac{a+b\log(cd^qx^p}{x\left(\frac{fg-eh}{f}+\frac{hx}{f}\right)^7}\right.}{7h}\right.$$

$$= -\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{7h(g+hx)^{7/2}} - \text{Subst}\left(\frac{(4bpq)\,\text{Subst}\left(\int \frac{a+b\log(cd^qx^{p}}{\left(\frac{fg-eh}{f}+\frac{hx}{f}\right)^{7/}}\right.}{7(fg-eh)}\right.$$

$$= \frac{8bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{35h(fg-eh)(g+hx)^{5/2}} - \frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{7h(g+hx)^{7/2}} -$$

$$= -\frac{16b^2f^2p^2q^2}{105h(fg-eh)^2(g+hx)^{3/2}} + \frac{8bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{35h(fg-eh)(g+hx)^{5/2}} + \frac{8b}{}$$

$$= -\frac{16b^2f^2p^2q^2}{105h(fg-eh)^2(g+hx)^{3/2}} - \frac{128b^2f^3p^2q^2}{105h(fg-eh)^3\sqrt{g+hx}} + \frac{8bfpq\left(a+b\right.}{35h(fg}$$

$$= -\frac{16b^2f^2p^2q^2}{105h(fg-eh)^2(g+hx)^{3/2}} - \frac{128b^2f^3p^2q^2}{105h(fg-eh)^3\sqrt{g+hx}} + \frac{8bfpq\left(a+b\right.}{35h(fg}$$

$$= -\frac{16b^2f^2p^2q^2}{105h(fg-eh)^2(g+hx)^{3/2}} - \frac{128b^2f^3p^2q^2}{105h(fg-eh)^3\sqrt{g+hx}} + \frac{368b^2f^{7/2}p^2q}{105h}$$

Mathematica [C] time = 7.83, size = 1249, normalized size = 2.00

$$\frac{4abpq\left(\frac{\sqrt{f}\sqrt{\frac{fg-eh+h(e+fx)}{f}}\left(-15\log(e+fx)(fg-eh)^3+6(fg+fhx)(fg-eh)^2+10(fg+fhx)^2(fg-eh)+30(fg+fhx)^3\right)}{(fg-eh)^3(fg+fhx)^4}-\frac{30\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{\frac{fg-eh+h(e+fx)}{f}}}{\sqrt{fg-eh}}\right)}{(fg-eh)^{7/2}}\right.}{105h}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/(g + h*x)^(9/2),x]
```

```
[Out] (2*b^2*p^2*q^2*(1 + (h*(e + f*x))/(f*g - e*h))*(7*h*(e + f*x)*((f*g - e*h +
 h*(e + f*x))/(f*g - e*h))^(7/2)*HypergeometricPFQ[{1, 1, 1, 9/2}, {2, 2, 2
}, (h*(e + f*x))/(-(f*g) + e*h)] - 7*h*(e + f*x)*((f*g - e*h + h*(e + f*x))
/(f*g - e*h))^(7/2)*HypergeometricPFQ[{1, 1, 9/2}, {2, 2}, (h*(e + f*x))/(-
(f*g) + e*h)]*Log[e + f*x] - f*g*Log[e + f*x]^2 + e*h*Log[e + f*x]^2 + f*g*
((f*g - e*h + h*(e + f*x))/(f*g - e*h))^(7/2)*Log[e + f*x]^2 - e*h*((f*g -
e*h + h*(e + f*x))/(f*g - e*h))^(7/2)*Log[e + f*x]^2))/(7*f*h*((f*g - e*h +
 h*(e + f*x))/f)^(9/2)) + (4*a*b*f^(7/2)*p*q*((-30*ArcTanh[(Sqrt[f]*Sqrt[(f
*g - e*h + h*(e + f*x))/f])/Sqrt[f*g - e*h]])/(f*g - e*h)^(7/2) + (Sqrt[f]*
Sqrt[(f*g - e*h + h*(e + f*x))/f]*(6*(f*g - e*h)^2*(f*g + f*h*x) + 10*(f*g
- e*h)*(f*g + f*h*x)^2 + 30*(f*g + f*h*x)^3 - 15*(f*g - e*h)^3*Log[e + f*x]
))/((f*g - e*h)^3*(f*g + f*h*x)^4)))/(105*h) + (4*b^2*f^(7/2)*p*q^2*((-30*A
rcTanh[(Sqrt[f]*Sqrt[(f*g - e*h + h*(e + f*x))/f])/Sqrt[f*g - e*h]])/(f*g -
 e*h)^(7/2) + (Sqrt[f]*Sqrt[(f*g - e*h + h*(e + f*x))/f]*(6*(f*g - e*h)^2*(
f*g + f*h*x) + 10*(f*g - e*h)*(f*g + f*h*x)^2 + 30*(f*g + f*h*x)^3 - 15*(f*
g - e*h)^3*Log[e + f*x]))/((f*g - e*h)^3*(f*g + f*h*x)^4))*(-(p*Log[e + f*x
]) + Log[d*(e + f*x)^p]))/(105*h) + (4*b^2*f^(7/2)*p*q*((-30*ArcTanh[(Sqrt[
f]*Sqrt[(f*g - e*h + h*(e + f*x))/f])/Sqrt[f*g - e*h]])/(f*g - e*h)^(7/2) +
 (Sqrt[f]*Sqrt[(f*g - e*h + h*(e + f*x))/f]*(6*(f*g - e*h)^2*(f*g + f*h*x)
+ 10*(f*g - e*h)*(f*g + f*h*x)^2 + 30*(f*g + f*h*x)^3 - 15*(f*g - e*h)^3*Lo
g[e + f*x]))/((f*g - e*h)^3*(f*g + f*h*x)^4))*(-(q*(-(p*Log[e + f*x]) + Log
[d*(e + f*x)^p])) - Log[d*(e + f*x)^p]*(q - (q*(-(p*Log[e + f*x]) + Log[d*(
e + f*x)^p]))/Log[d*(e + f*x)^p]) + Log[c*E^(q*(-(p*Log[e + f*x]) + Log[d*(
e + f*x)^p]))*(d*(e + f*x)^p)^(q - (q*(-(p*Log[e + f*x]) + Log[d*(e + f*x)^
p]))/Log[d*(e + f*x)^p])]))/(105*h) - (2*(a + b*q*(-(p*Log[e + f*x]) + Log[
d*(e + f*x)^p]) + b*(-(q*(-(p*Log[e + f*x]) + Log[d*(e + f*x)^p])) - Log[d*
(e + f*x)^p]*(q - (q*(-(p*Log[e + f*x]) + Log[d*(e + f*x)^p]))/Log[d*(e + f
*x)^p]) + Log[c*E^(q*(-(p*Log[e + f*x]) + Log[d*(e + f*x)^p]))*(d*(e + f*x)
^p)^(q - (q*(-(p*Log[e + f*x]) + Log[d*(e + f*x)^p]))/Log[d*(e + f*x)^p])])
)^2)/(7*h*(g + h*x)^(7/2))
```

fricas [F] time = 0.51, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{hx+g}\,b^2\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^2+2\sqrt{hx+g}\,ab\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+\sqrt{hx+g}\,a^2}{h^5x^5+5\,gh^4x^4+10\,g^2h^3x^3+10\,g^3h^2x^2+5\,g^4hx+g^5},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(9/2),x, algorithm="fricas
")
```

```
[Out] integral((sqrt(h*x + g)*b^2*log(((f*x + e)^p*d)^q*c)^2 + 2*sqrt(h*x + g)*a*
b*log(((f*x + e)^p*d)^q*c) + sqrt(h*x + g)*a^2)/(h^5*x^5 + 5*g*h^4*x^4 + 10
*g^2*h^3*x^3 + 10*g^3*h^2*x^2 + 5*g^4*h*x + g^5), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b \log\left(\left(\left(fx+e\right)^{p} d\right)^{q} c\right) + a\right)^{2}}{\left(hx+g\right)^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(9/2),x, algorithm="giac")
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^2/(h*x + g)^(9/2), x)
```

maple [F] time = 0.38, size = 0, normalized size = 0.00

$$\int \frac{\left(b \ln\left(c \left(d \left(fx+e\right)^{p}\right)^{q}\right) + a\right)^{2}}{\left(hx+g\right)^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^2/(h*x+g)^(9/2),x)
[Out] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^2/(h*x+g)^(9/2),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(9/2),x, algorithm="maxima
")
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(e*h-f*g>0)', see `assume?` for more
 details)Is e*h-f*g positive or negative?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a + b\,\ln\left(c\,\left(d\,\left(e+f\,x\right)^{p}\right)^{q}\right)\right)^{2}}{\left(g+h\,x\right)^{9/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^2/(g + h*x)^(9/2),x)
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))^2/(g + h*x)^(9/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**2/(h*x+g)**(9/2),x)
[Out] Timed out
```

3.496 $\int \frac{(g+hx)^{3/2}}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$

Optimal. Leaf size=33

$$\mathrm{Int}\left(\frac{(g+hx)^{3/2}}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)},x\right)$$

```
[Out] Unintegrable((h*x+g)^(3/2)/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

Rubi [A] time = 0.09, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(g+hx)^{3/2}}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(g + h*x)^(3/2)/(a + b*Log[c*(d*(e + f*x)^p)^q]),x]
[Out] Defer[Int][(g + h*x)^(3/2)/(a + b*Log[c*(d*(e + f*x)^p)^q]), x]
```

Rubi steps

$$\int \frac{(g+hx)^{3/2}}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx=\int \frac{(g+hx)^{3/2}}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$$

Mathematica [A] time = 1.29, size = 0, normalized size = 0.00

$$\int \frac{(g+hx)^{3/2}}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(g + h*x)^(3/2)/(a + b*Log[c*(d*(e + f*x)^p)^q]),x]
[Out] Integrate[(g + h*x)^(3/2)/(a + b*Log[c*(d*(e + f*x)^p)^q]), x]
```

fricas [A] time = 0.46, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\left(hx+g\right)^{\frac{3}{2}}}{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(3/2)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="fricas")
[Out] integral((h*x + g)^(3/2)/(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(hx+g\right)^{\frac{3}{2}}}{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(3/2)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="giac")
[Out] integrate((h*x + g)^(3/2)/(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

maple [A] time = 0.35, size = 0, normalized size = 0.00

$$\int \frac{(hx+g)^{\frac{3}{2}}}{b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^(3/2)/(b*ln(c*(d*(f*x+e)^p)^q)+a),x)
[Out] int((h*x+g)^(3/2)/(b*ln(c*(d*(f*x+e)^p)^q)+a),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(hx+g)^{\frac{3}{2}}}{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(3/2)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="maxima")
[Out] integrate((h*x + g)^(3/2)/(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{(g+h\,x)^{3/2}}{a+b\,\ln\left(c\left(d\left(e+f\,x\right)^{p}\right)^{q}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)^(3/2)/(a + b*log(c*(d*(e + f*x)^p)^q)),x)
[Out] int((g + h*x)^(3/2)/(a + b*log(c*(d*(e + f*x)^p)^q)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**(3/2)/(a+b*ln(c*(d*(f*x+e)**p)**q)),x)
[Out] Timed out
```

3.497 $\int \frac{\sqrt{g+hx}}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$

Optimal. Leaf size=33

$$\text{Int}\left(\frac{\sqrt{g+hx}}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)},x\right)$$

```
[Out] Unintegrable((h*x+g)^(1/2)/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

Rubi [A] time = 0.08, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sqrt{g+hx}}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sqrt[g + h*x]/(a + b*Log[c*(d*(e + f*x)^p)^q]),x]
[Out] Defer[Int][Sqrt[g + h*x]/(a + b*Log[c*(d*(e + f*x)^p)^q]), x]
```

Rubi steps

$$\int \frac{\sqrt{g+hx}}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx=\int \frac{\sqrt{g+hx}}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$$

Mathematica [A] time = 1.11, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{g+hx}}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sqrt[g + h*x]/(a + b*Log[c*(d*(e + f*x)^p)^q]),x]
[Out] Integrate[Sqrt[g + h*x]/(a + b*Log[c*(d*(e + f*x)^p)^q]), x]
```

fricas [A] time = 0.48, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{hx+g}}{b\log\left(\left((fx+e)^p d\right)^q c\right)+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(1/2)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="fricas")
[Out] integral(sqrt(h*x + g)/(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{hx+g}}{b\log\left(\left((fx+e)^p d\right)^q c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(1/2)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="giac")
[Out] integrate(sqrt(h*x + g)/(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

maple [A] time = 0.36, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{hx+g}}{b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^(1/2)/(b*ln(c*(d*(f*x+e)^p)^q)+a),x)
[Out] int((h*x+g)^(1/2)/(b*ln(c*(d*(f*x+e)^p)^q)+a),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{hx+g}}{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(1/2)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="maxima")
[Out] integrate(sqrt(h*x + g)/(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\sqrt{g+h\,x}}{a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)^(1/2)/(a + b*log(c*(d*(e + f*x)^p)^q)),x)
[Out] int((g + h*x)^(1/2)/(a + b*log(c*(d*(e + f*x)^p)^q)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**(1/2)/(a+b*ln(c*(d*(f*x+e)**p)**q)),x)
[Out] Timed out
```

3.498 $\int \frac{1}{\sqrt{g+hx}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$

Optimal. Leaf size=33

$$\text{Int}\left(\frac{1}{\sqrt{g+hx}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)},x\right)$$

```
[Out] Unintegrable(1/(a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g)^(1/2),x)
```

Rubi [A] time = 0.08, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{\sqrt{g+hx}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/(Sqrt[g + h*x]*(a + b*Log[c*(d*(e + f*x)^p)^q])),x]
[Out] Defer[Int][1/(Sqrt[g + h*x]*(a + b*Log[c*(d*(e + f*x)^p)^q])), x]
```

Rubi steps

$$\int \frac{1}{\sqrt{g+hx}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx=\int \frac{1}{\sqrt{g+hx}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$$

Mathematica [A] time = 1.60, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{g+hx}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/(Sqrt[g + h*x]*(a + b*Log[c*(d*(e + f*x)^p)^q])),x]
[Out] Integrate[1/(Sqrt[g + h*x]*(a + b*Log[c*(d*(e + f*x)^p)^q])), x]
```

fricas [A] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{hx+g}}{ahx+ag+(bhx+bg)\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^(1/2),x, algorithm="fricas
")
[Out] integral(sqrt(h*x + g)/(a*h*x + a*g + (b*h*x + b*g)*log(((f*x + e)^p*d)^q*c
)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{hx+g}\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^(1/2),x, algorithm="giac")
[Out] integrate(1/(sqrt(h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

maple [A] time = 0.36, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)+a\right)\sqrt{hx+g}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*ln(c*(d*(f*x+e)^p)^q)+a)/(h*x+g)^(1/2),x)
[Out] int(1/(b*ln(c*(d*(f*x+e)^p)^q)+a)/(h*x+g)^(1/2),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{hx+g}\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^(1/2),x, algorithm="maxima
")
[Out] integrate(1/(sqrt(h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{\sqrt{g+h\,x}\,\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((g + h*x)^(1/2)*(a + b*log(c*(d*(e + f*x)^p)^q))),x)
[Out] int(1/((g + h*x)^(1/2)*(a + b*log(c*(d*(e + f*x)^p)^q))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)\right)\sqrt{g+hx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(d*(f*x+e)**p)**q))/(h*x+g)**(1/2),x)
[Out] Integral(1/((a + b*log(c*(d*(e + f*x)**p)**q))*sqrt(g + h*x)), x)
```

3.499 $\int \frac{1}{(g+hx)^{3/2}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$

Optimal. Leaf size=33

$$\text{Int}\left(\frac{1}{(g+hx)^{3/2}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)},x\right)$$

```
[Out] Unintegrable(1/(h*x+g)^(3/2)/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

Rubi [A] time = 0.09, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(g+hx)^{3/2}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((g + h*x)^(3/2)*(a + b*Log[c*(d*(e + f*x)^p)^q])),x]
[Out] Defer[Int][1/((g + h*x)^(3/2)*(a + b*Log[c*(d*(e + f*x)^p)^q])), x]
```

Rubi steps

$$\int \frac{1}{(g+hx)^{3/2}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx=\int \frac{1}{(g+hx)^{3/2}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$$

Mathematica [A] time = 1.96, size = 0, normalized size = 0.00

$$\int \frac{1}{(g+hx)^{3/2}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((g + h*x)^(3/2)*(a + b*Log[c*(d*(e + f*x)^p)^q])),x]
[Out] Integrate[1/((g + h*x)^(3/2)*(a + b*Log[c*(d*(e + f*x)^p)^q])), x]
```

fricas [A] time = 0.48, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{hx+g}}{ah^2x^2+2\,aghx+ag^2+\left(bh^2x^2+2\,bghx+bg^2\right)\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)^(3/2)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="fricas
")
[Out] integral(sqrt(h*x + g)/(a*h^2*x^2 + 2*a*g*h*x + a*g^2 + (b*h^2*x^2 + 2*b*g*
h*x + b*g^2)*log(((f*x + e)^p*d)^q*c)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(hx+g)^{\frac{3}{2}}\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)^(3/2)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="giac")
[Out] integrate(1/((h*x + g)^(3/2)*(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

maple [A] time = 0.36, size = 0, normalized size = 0.00

$$\int \frac{1}{(hx+g)^{\frac{3}{2}}\left(b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(h*x+g)^(3/2)/(b*ln(c*(d*(f*x+e)^p)^q)+a),x)
[Out] int(1/(h*x+g)^(3/2)/(b*ln(c*(d*(f*x+e)^p)^q)+a),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(hx+g)^{\frac{3}{2}}\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)^(3/2)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="maxima
")
[Out] integrate(1/((h*x + g)^(3/2)*(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{{\left(g+h\,x\right)}^{3/2}\,\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((g + h*x)^(3/2)*(a + b*log(c*(d*(e + f*x)^p)^q))),x)
[Out] int(1/((g + h*x)^(3/2)*(a + b*log(c*(d*(e + f*x)^p)^q))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)\right)(g+hx)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)**(3/2)/(a+b*ln(c*(d*(f*x+e)**p)**q)),x)
[Out] Integral(1/((a + b*log(c*(d*(e + f*x)**p)**q))*(g + h*x)**(3/2)), x)
```

3.500 $\int \sqrt{g+hx}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$

Optimal. Leaf size=35

$$\text{Int}\left(\sqrt{g+hx}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)},x\right)$$

```
[Out] Unintegrable((h*x+g)^(1/2)*(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

Rubi [A] time = 0.33, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \sqrt{g+hx}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sqrt[g + h*x]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]],x]
[Out] Defer[Int][Sqrt[g + h*x]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]], x]
```

Rubi steps

$$\int \sqrt{g+hx}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx=\int \sqrt{g+hx}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$$

Mathematica [A] time = 1.81, size = 0, normalized size = 0.00

$$\int \sqrt{g+hx}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sqrt[g + h*x]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]],x]
[Out] Integrate[Sqrt[g + h*x]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]], x]
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(1/2)*(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="fr
icas")
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{hx+g}\sqrt{b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(1/2)*(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="gi
ac")
```

```
[Out] integrate(sqrt(h*x + g)*sqrt(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

maple [A] time = 0.36, size = 0, normalized size = 0.00

$$\int \sqrt{hx+g}\,\sqrt{b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^(1/2)*(b*ln(c*(d*(f*x+e)^p)^q)+a)^(1/2),x)
```

```
[Out] int((h*x+g)^(1/2)*(b*ln(c*(d*(f*x+e)^p)^q)+a)^(1/2),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{hx+g}\,\sqrt{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(1/2)*(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="ma
xima")
```

```
[Out] integrate(sqrt(h*x + g)*sqrt(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \sqrt{g+h\,x}\,\sqrt{a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^{p}\right)}^{q}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)^(1/2)*(a + b*log(c*(d*(e + f*x)^p)^q))^(1/2),x)
```

```
[Out] int((g + h*x)^(1/2)*(a + b*log(c*(d*(e + f*x)^p)^q))^(1/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**(1/2)*(a+b*ln(c*(d*(f*x+e)**p)**q))**(1/2),x)
```

```
[Out] Timed out
```

3.501 $\int \frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{g+hx}}\,dx$

Optimal. Leaf size=35

$$\text{Int}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{g+hx}},x\right)$$

```
[Out] Unintegrable((a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/(h*x+g)^(1/2),x)
```

Rubi [A] time = 0.31, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{g+hx}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/Sqrt[g + h*x],x]
[Out] Defer[Int][Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/Sqrt[g + h*x], x]
```

Rubi steps

$$\int \frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{g+hx}}\,dx=\int \frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{g+hx}}\,dx$$

Mathematica [A] time = 2.07, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{g+hx}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/Sqrt[g + h*x],x]
[Out] Integrate[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/Sqrt[g + h*x], x]
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(1/2)/(h*x+g)^(1/2),x, algorithm="fr
icas")
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}}{\sqrt{hx+g}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(1/2)/(h*x+g)^(1/2),x, algorithm="gi
ac")
```

```
[Out] integrate(sqrt(b*log(((f*x + e)^p*d)^q*c) + a)/sqrt(h*x + g), x)
```

maple [A] time = 0.35, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)+a}}{\sqrt{hx+g}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^(1/2)/(h*x+g)^(1/2),x)
```

```
[Out] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^(1/2)/(h*x+g)^(1/2),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}}{\sqrt{hx+g}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(1/2)/(h*x+g)^(1/2),x, algorithm="ma
xima")
```

```
[Out] integrate(sqrt(b*log(((f*x + e)^p*d)^q*c) + a)/sqrt(h*x + g), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\sqrt{a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)}}{\sqrt{g+h\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^(1/2)/(g + h*x)^(1/2),x)
```

```
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))^(1/2)/(g + h*x)^(1/2), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)}}{\sqrt{g+hx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**(1/2)/(h*x+g)**(1/2),x)
```

```
[Out] Integral(sqrt(a + b*log(c*(d*(e + f*x)**p)**q))/sqrt(g + h*x), x)
```

3.502 $\int \frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{(g+hx)^{3/2}}\,dx$

Optimal. Leaf size=35

$$\text{Int}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{(g+hx)^{3/2}},x\right)$$

```
[Out] Unintegrable((a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/(h*x+g)^(3/2),x)
```

Rubi [A] time = 0.32, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{(g+hx)^{3/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(g + h*x)^(3/2),x]
```

```
[Out] Defer[Int][Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(g + h*x)^(3/2), x]
```

Rubi steps

$$\int \frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{(g+hx)^{3/2}}\,dx=\int \frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{(g+hx)^{3/2}}\,dx$$

Mathematica [A] time = 1.85, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{(g+hx)^{3/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(g + h*x)^(3/2),x]
```

```
[Out] Integrate[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(g + h*x)^(3/2), x]
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(1/2)/(h*x+g)^(3/2),x, algorithm="fr
icas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}}{\left(hx+g\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(1/2)/(h*x+g)^(3/2),x, algorithm="gi
ac")
```

```
[Out] integrate(sqrt(b*log(((f*x + e)^p*d)^q*c) + a)/(h*x + g)^(3/2), x)
```

maple [A] time = 0.36, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)+a}}{\left(hx+g\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^(1/2)/(h*x+g)^(3/2),x)
```

```
[Out] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^(1/2)/(h*x+g)^(3/2),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}}{\left(hx+g\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(1/2)/(h*x+g)^(3/2),x, algorithm="ma
xima")
```

```
[Out] integrate(sqrt(b*log(((f*x + e)^p*d)^q*c) + a)/(h*x + g)^(3/2), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\sqrt{a+b\,\ln\left(c\left(d\left(e+f\,x\right)^{p}\right)^{q}\right)}}{\left(g+h\,x\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^(1/2)/(g + h*x)^(3/2),x)
```

```
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))^(1/2)/(g + h*x)^(3/2), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)}}{\left(g+hx\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**(1/2)/(h*x+g)**(3/2),x)
[Out] Integral(sqrt(a + b*log(c*(d*(e + f*x)**p)**q))/(g + h*x)**(3/2), x)
```

3.503 $\int \frac{\sqrt{g+hx}}{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$

Optimal. Leaf size=35

$$\text{Int}\left(\frac{\sqrt{g+hx}}{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}},x\right)$$

```
[Out] Unintegrable((h*x+g)^(1/2)/(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

Rubi [A] time = 0.11, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sqrt{g+hx}}{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sqrt[g + h*x]/Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]],x]
[Out] Defer[Int][Sqrt[g + h*x]/Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]], x]
```

Rubi steps

$$\int \frac{\sqrt{g+hx}}{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx=\int \frac{\sqrt{g+hx}}{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$$

Mathematica [A] time = 7.78, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{g+hx}}{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sqrt[g + h*x]/Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]],x]
[Out] Integrate[Sqrt[g + h*x]/Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]], x]
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(1/2)/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="fr
icas")
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{hx+g}}{\sqrt{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(1/2)/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="gi
ac")
```

```
[Out] integrate(sqrt(h*x + g)/sqrt(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

maple [A] time = 0.36, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{hx+g}}{\sqrt{b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^(1/2)/(b*ln(c*(d*(f*x+e)^p)^q)+a)^(1/2),x)
```

```
[Out] int((h*x+g)^(1/2)/(b*ln(c*(d*(f*x+e)^p)^q)+a)^(1/2),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{hx+g}}{\sqrt{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(1/2)/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="ma
xima")
```

```
[Out] integrate(sqrt(h*x + g)/sqrt(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\sqrt{g+h\,x}}{\sqrt{a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)^(1/2)/(a + b*log(c*(d*(e + f*x)^p)^q))^(1/2),x)
```

```
[Out] int((g + h*x)^(1/2)/(a + b*log(c*(d*(e + f*x)^p)^q))^(1/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**(1/2)/(a+b*ln(c*(d*(f*x+e)**p)**q))**(1/2),x)
```

```
[Out] Timed out
```

3.504 $\int \frac{1}{\sqrt{g+hx}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$

Optimal. Leaf size=35

$$\text{Int}\left(\frac{1}{\sqrt{g+hx}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}},x\right)$$

```
[Out] Unintegrable(1/(h*x+g)^(1/2)/(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

Rubi [A] time = 0.12, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{\sqrt{g+hx}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/(Sqrt[g + h*x]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]),x]
[Out] Defer[Int][1/(Sqrt[g + h*x]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]), x]
```

Rubi steps

$$\int \frac{1}{\sqrt{g+hx}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx = \int \frac{1}{\sqrt{g+hx}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$$

Mathematica [A] time = 4.13, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{g+hx}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/(Sqrt[g + h*x]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]),x]
[Out] Integrate[1/(Sqrt[g + h*x]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]), x]
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)^(1/2)/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="
fricas")
[Out] Exception raised: TypeError >> Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{hx+g}\sqrt{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)^(1/2)/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="
giac")
```

```
[Out] integrate(1/(sqrt(h*x + g)*sqrt(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

maple [A] time = 0.36, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{hx+g}\sqrt{b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(h*x+g)^(1/2)/(b*ln(c*(d*(f*x+e)^p)^q)+a)^(1/2),x)
```

```
[Out] int(1/(h*x+g)^(1/2)/(b*ln(c*(d*(f*x+e)^p)^q)+a)^(1/2),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{hx+g}\sqrt{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)^(1/2)/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="
maxima")
```

```
[Out] integrate(1/(sqrt(h*x + g)*sqrt(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{\sqrt{g+h\,x}\,\sqrt{a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((g + h*x)^(1/2)*(a + b*log(c*(d*(e + f*x)^p)^q))^(1/2)),x)
```

```
[Out] int(1/((g + h*x)^(1/2)*(a + b*log(c*(d*(e + f*x)^p)^q))^(1/2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)}\sqrt{g+hx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)**(1/2)/(a+b*ln(c*(d*(f*x+e)**p)**q))**(1/2),x)
```

```
[Out] Integral(1/(sqrt(a + b*log(c*(d*(e + f*x)**p)**q))*sqrt(g + h*x)), x)
```

3.505 $\int \frac{1}{(g+hx)^{3/2}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$

Optimal. Leaf size=35

$$\text{Int}\left(\frac{1}{(g+hx)^{3/2}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}},x\right)$$

```
[Out] Unintegrable(1/(h*x+g)^(3/2)/(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

Rubi [A] time = 0.12, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(g+hx)^{3/2}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((g + h*x)^(3/2)*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]),x]
[Out] Defer[Int][1/((g + h*x)^(3/2)*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]), x]
```

Rubi steps

$$\int \frac{1}{(g+hx)^{3/2}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx=\int \frac{1}{(g+hx)^{3/2}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$$

Mathematica [A] time = 1.02, size = 0, normalized size = 0.00

$$\int \frac{1}{(g+hx)^{3/2}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((g + h*x)^(3/2)*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]),x]
[Out] Integrate[1/((g + h*x)^(3/2)*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]), x]
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)^(3/2)/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="
fricas")
[Out] Exception raised: TypeError >> Error detected within library code: integ
rate: implementation incomplete (constant residues)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(hx+g\right)^{\frac{3}{2}}\sqrt{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)^(3/2)/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="
giac")
```

```
[Out] integrate(1/((h*x + g)^(3/2)*sqrt(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

maple [A] time = 0.36, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(hx+g\right)^{\frac{3}{2}}\sqrt{b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(h*x+g)^(3/2)/(b*ln(c*(d*(f*x+e)^p)^q)+a)^(1/2),x)
```

```
[Out] int(1/(h*x+g)^(3/2)/(b*ln(c*(d*(f*x+e)^p)^q)+a)^(1/2),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(hx+g\right)^{\frac{3}{2}}\sqrt{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)^(3/2)/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="
maxima")
```

```
[Out] integrate(1/((h*x + g)^(3/2)*sqrt(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{{\left(g+h\,x\right)}^{3/2}\,\sqrt{a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((g + h*x)^(3/2)*(a + b*log(c*(d*(e + f*x)^p)^q))^(1/2)),x)
```

```
[Out] int(1/((g + h*x)^(3/2)*(a + b*log(c*(d*(e + f*x)^p)^q))^(1/2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)}\left(g+hx\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)**(3/2)/(a+b*ln(c*(d*(f*x+e)**p)**q))**(1/2),x)
```

```
[Out] Integral(1/(sqrt(a + b*log(c*(d*(e + f*x)**p)**q))*(g + h*x)**(3/2)), x)
```

3.506 $\int (g+hx)^m \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\,dx$

Optimal. Leaf size=99

$$\frac{(g+hx)^{m+1}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h(m+1)}+\frac{bfpq(g+hx)^{m+2}\,{}_2F_1\left(1,m+2;m+3;\frac{f(g+hx)}{fg-eh}\right)}{h(m+1)(m+2)(fg-eh)}$$

```
[Out] b*f*p*q*(h*x+g)^(2+m)*hypergeom([1, 2+m],[3+m],f*(h*x+g)/(-e*h+f*g))/h/(-e*
h+f*g)/(1+m)/(2+m)+(h*x+g)^(1+m)*(a+b*ln(c*(d*(f*x+e)^p)^q))/h/(1+m)
```

Rubi [A] time = 0.11, antiderivative size = 99, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.115, Rules used = {2395, 68, 2445}

$$\frac{(g+hx)^{m+1}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h(m+1)}+\frac{bfpq(g+hx)^{m+2}\,{}_2F_1\left(1,m+2;m+3;\frac{f(g+hx)}{fg-eh}\right)}{h(m+1)(m+2)(fg-eh)}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)^m*(a + b*Log[c*(d*(e + f*x)^p)^q]),x]
```

```
[Out] (b*f*p*q*(g + h*x)^(2 + m)*Hypergeometric2F1[1, 2 + m, 3 + m, (f*(g + h*x))
/(f*g - e*h)])/(h*(f*g - e*h)*(1 + m)*(2 + m)) + ((g + h*x)^(1 + m)*(a + b*
Log[c*(d*(e + f*x)^p)^q]))/(h*(1 + m))
```

Rule 68

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((
b*c - a*d)^n*(a + b*x)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*(a
+ b*x))/(b*c - a*d))])/(b^(n + 1)*(m + 1)), x] /; FreeQ[{a, b, c, d, m}, x]
 && NeQ[b*c - a*d, 0] &&  !IntegerQ[m] && IntegerQ[n]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int (g+hx)^m \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right) dx = \text{Subst}\left(\int (g+hx)^m \left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right) dx, cd^q(e+fx)^{pq}, \right.$$

$$= \frac{(g+hx)^{1+m}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h(1+m)} - \text{Subst}\left(\frac{(bfpq)\int \frac{(g+hx}{e+}}{h(1+m}\right.$$

$$= \frac{bfpq(g+hx)^{2+m}\,{}_2F_1\left(1,2+m;3+m;\frac{f(g+hx)}{fg-eh}\right)}{h(fg-eh)(1+m)(2+m)} + \frac{(g+hx)^{1+m}\left(a+\right.}{}$$

Mathematica [A] time = 0.12, size = 86, normalized size = 0.87

$$\frac{(g+hx)^{m+1}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)+\frac{bfpq(g+hx)\,{}_2F_1\left(1,m+2;m+3;\frac{f(g+hx)}{fg-eh}\right)}{(m+2)(fg-eh)}\right)}{h(m+1)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)^m*(a + b*Log[c*(d*(e + f*x)^p)^q]),x]
```

```
[Out] ((g + h*x)^(1 + m)*(a + (b*f*p*q*(g + h*x)*Hypergeometric2F1[1, 2 + m, 3 +
m, (f*(g + h*x))/(f*g - e*h)])/((f*g - e*h)*(2 + m)) + b*Log[c*(d*(e + f*x)
^p)^q]))/(h*(1 + m))
```

fricas [F] time = 0.49, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(hx+g\right)^m b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right) + \left(hx+g\right)^m a, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m*(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="fricas")
```

```
[Out] integral((h*x + g)^m*b*log(((f*x + e)^p*d)^q*c) + (h*x + g)^m*a, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a\right)\left(hx+g\right)^m dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m*(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)*(h*x + g)^m, x)
```

maple [F] time = 0.40, size = 0, normalized size = 0.00

$$\int \left(b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)+a\right)\left(hx+g\right)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^m*(b*ln(c*(d*(f*x+e)^p)^q)+a),x)
```

```
[Out] int((h*x+g)^m*(b*ln(c*(d*(f*x+e)^p)^q)+a),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$b\left(\frac{(hx+g)(hx+g)^m\log\left(\left((fx+e)^p\right)^q\right)}{h(m+1)}+\int-\frac{\left(fgpq-eh(m+1)\log(c)-(mq+q)eh\log(d)+\left(fhpq-fh(m\right.\right.}{fh(m+1)x+eh(m}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m*(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="maxima")
```

```
[Out] b*((h*x + g)*(h*x + g)^m*log(((f*x + e)^p)^q)/(h*(m + 1)) + integrate(-(f*g
*p*q - e*h*(m + 1)*log(c) - (m*q + q)*e*h*log(d) + (f*h*p*q - f*h*(m + 1)*l
og(c) - (m*q + q)*f*h*log(d))*x)*(h*x + g)^m/(f*h*(m + 1)*x + e*h*(m + 1)),
 x)) + (h*x + g)^(m + 1)*a/(h*(m + 1))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int (g+h\,x)^m\,\left(a+b\,\ln\left(c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)^m*(a + b*log(c*(d*(e + f*x)^p)^q)),x)
```

```
[Out] int((g + h*x)^m*(a + b*log(c*(d*(e + f*x)^p)^q)), x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**m*(a+b*ln(c*(d*(f*x+e)**p)**q)),x)
```

```
[Out] Exception raised: HeuristicGCDFailed
```

3.507 $\int \frac{(g+hx)^m}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{(g+hx)^m}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)},x\right)$$

[Out] Unintegrable((h*x+g)^m/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)

Rubi [A] time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(g+hx)^m}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$$

Verification is Not applicable to the result.

[In] Int[(g + h*x)^m/(a + b*Log[c*(d*(e + f*x)^p)^q]),x]

[Out] Defer[Int][(g + h*x)^m/(a + b*Log[c*(d*(e + f*x)^p)^q]), x]

Rubi steps

$$\int \frac{(g+hx)^m}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx = \int \frac{(g+hx)^m}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$$

Mathematica [A] time = 0.42, size = 0, normalized size = 0.00

$$\int \frac{(g+hx)^m}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$$

Verification is Not applicable to the result.

[In] Integrate[(g + h*x)^m/(a + b*Log[c*(d*(e + f*x)^p)^q]),x]

[Out] Integrate[(g + h*x)^m/(a + b*Log[c*(d*(e + f*x)^p)^q]), x]

fricas [A] time = 0.51, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(hx+g\right)^m}{b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((h*x+g)^m/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="fricas")

[Out] integral((h*x + g)^m/(b*log(((f*x + e)^p*d)^q*c) + a), x)

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(hx+g\right)^m}{b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="giac")
[Out] integrate((h*x + g)^m/(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

maple [A] time = 0.36, size = 0, normalized size = 0.00

$$\int \frac{\left(hx+g\right)^{m}}{b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^m/(b*ln(c*(d*(f*x+e)^p)^q)+a),x)
[Out] int((h*x+g)^m/(b*ln(c*(d*(f*x+e)^p)^q)+a),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(hx+g\right)^{m}}{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="maxima")
[Out] integrate((h*x + g)^m/(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\left(g+h\,x\right)^{m}}{a+b\,\ln\left(c\,\left(d\,\left(e+f\,x\right)^{p}\right)^{q}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)^m/(a + b*log(c*(d*(e + f*x)^p)^q)),x)
[Out] int((g + h*x)^m/(a + b*log(c*(d*(e + f*x)^p)^q)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(g+hx\right)^{m}}{a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**m/(a+b*ln(c*(d*(f*x+e)**p)**q)),x)
[Out] Integral((g + h*x)**m/(a + b*log(c*(d*(e + f*x)**p)**q)), x)
```

3.508 $\int \frac{(g+hx)^m}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{(g+hx)^m}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2},x\right)$$

```
[Out] Unintegrable((h*x+g)^m/(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

Rubi [A] time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(g+hx)^m}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(g + h*x)^m/(a + b*Log[c*(d*(e + f*x)^p)^q])^2,x]
[Out] Defer[Int][(g + h*x)^m/(a + b*Log[c*(d*(e + f*x)^p)^q])^2, x]
```

Rubi steps

$$\int \frac{(g+hx)^m}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx = \int \frac{(g+hx)^m}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$$

Mathematica [A] time = 2.73, size = 0, normalized size = 0.00

$$\int \frac{(g+hx)^m}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(g + h*x)^m/(a + b*Log[c*(d*(e + f*x)^p)^q])^2,x]
[Out] Integrate[(g + h*x)^m/(a + b*Log[c*(d*(e + f*x)^p)^q])^2, x]
```

fricas [A] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(hx+g\right)^m}{b^2\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^2+2\,ab\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="fricas")
[Out] integral((h*x + g)^m/(b^2*log(((f*x + e)^p*d)^q*c)^2 + 2*a*b*log(((f*x + e)
^p*d)^q*c) + a^2), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(hx+g)^m}{\left(b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="giac")
[Out] integrate((h*x + g)^m/(b*log(((f*x + e)^p*d)^q*c) + a)^2, x)
```

maple [A] time = 0.36, size = 0, normalized size = 0.00

$$\int \frac{(hx+g)^m}{\left(b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^m/(b*ln(c*(d*(f*x+e)^p)^q)+a)^2,x)
[Out] int((h*x+g)^m/(b*ln(c*(d*(f*x+e)^p)^q)+a)^2,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{(fx+e)(hx+g)^m}{b^2fpq\log\left(\left(\left(fx+e\right)^p\right)^q\right)+abfpq+\left(fpq^2\log(d)+fpq\log(c)\right)b^2}+\int \frac{}{abfgpq+\left(fgpq^2\log(d)+fgpq\log(c\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="maxima")
[Out] -(f*x + e)*(h*x + g)^m/(b^2*f*p*q*log(((f*x + e)^p)^q) + a*b*f*p*q + (f*p*q
^2*log(d) + f*p*q*log(c))*b^2) + integrate((f*h*(m + 1)*x + e*h*m + f*g)*(h
*x + g)^m/(a*b*f*g*p*q + (f*g*p*q^2*log(d) + f*g*p*q*log(c))*b^2 + (a*b*f*h
*p*q + (f*h*p*q^2*log(d) + f*h*p*q*log(c))*b^2)*x + (b^2*f*h*p*q*x + b^2*f*
g*p*q)*log(((f*x + e)^p)^q)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{(g+h\,x)^m}{\left(a+b\,\ln\left(c\left(d\left(e+f\,x\right)^p\right)^q\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)^m/(a + b*log(c*(d*(e + f*x)^p)^q))^2,x)
[Out] int((g + h*x)^m/(a + b*log(c*(d*(e + f*x)^p)^q))^2, x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**m/(a+b*ln(c*(d*(f*x+e)**p)**q))**2,x)
[Out] Exception raised: HeuristicGCDFailed
```

3.509 $\int (g+hx)^m \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2} dx$

Optimal. Leaf size=33

$$\text{Int}\left((g+hx)^m\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2},x\right)$$

```
[Out] Unintegrable((h*x+g)^m*(a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2),x)
```

Rubi [A] time = 0.11, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int (g+hx)^m\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2} dx$$

Verification is Not applicable to the result.

```
[In] Int[(g + h*x)^m*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2),x]
[Out] Defer[Int][(g + h*x)^m*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2), x]
```

Rubi steps

$$\int (g+hx)^m\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2} dx = \int (g+hx)^m\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2} dx$$

Mathematica [A] time = 9.72, size = 0, normalized size = 0.00

$$\int (g+hx)^m\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2} dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(g + h*x)^m*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2),x]
[Out] Integrate[(g + h*x)^m*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2), x]
```

fricas [A] time = 0.49, size = 0, normalized size = 0.00

$$\text{integral}\left(\left((hx+g)^m b\log\left(\left((fx+e)^p d\right)^q c\right)+(hx+g)^m a\right)\sqrt{b\log\left(\left((fx+e)^p d\right)^q c\right)+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m*(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="fricas
")
[Out] integral(((h*x + g)^m*b*log(((f*x + e)^p*d)^q*c) + (h*x + g)^m*a)*sqrt(b*lo
g(((f*x + e)^p*d)^q*c) + a), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b\log\left(\left((fx+e)^p d\right)^q c\right)+a\right)^{\frac{3}{2}}(hx+g)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m*(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^(3/2)*(h*x + g)^m, x)
```

maple [A] time = 0.36, size = 0, normalized size = 0.00

$$\int \left(b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)+a\right)^{\frac{3}{2}}\left(hx+g\right)^{m}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^m*(b*ln(c*(d*(f*x+e)^p)^q)+a)^(3/2),x)
```

```
[Out] int((h*x+g)^m*(b*ln(c*(d*(f*x+e)^p)^q)+a)^(3/2),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)^{\frac{3}{2}}\left(hx+g\right)^{m}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m*(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="maxima
")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^(3/2)*(h*x + g)^m, x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int {\left(g+h\,x\right)}^m\,{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}^{3/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)^m*(a + b*log(c*(d*(e + f*x)^p)^q))^(3/2),x)
```

```
[Out] int((g + h*x)^m*(a + b*log(c*(d*(e + f*x)^p)^q))^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**m*(a+b*ln(c*(d*(f*x+e)**p)**q))**(3/2),x)
```

```
[Out] Timed out
```

3.510 $\int (g+hx)^m \sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$

Optimal. Leaf size=33

$$\mathrm{Int}\left((g+hx)^m\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)},x\right)$$

```
[Out] Unintegrable((h*x+g)^m*(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

Rubi [A] time = 0.09, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} =$ 0.000, Rules used = {}

$$\int (g+hx)^m\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(g + h*x)^m*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]],x]
[Out] Defer[Int][(g + h*x)^m*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]], x]
```

Rubi steps

$$\int (g+hx)^m\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx = \int (g+hx)^m\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$$

Mathematica [A] time = 0.08, size = 0, normalized size = 0.00

$$\int (g+hx)^m\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(g + h*x)^m*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]],x]
[Out] Integrate[(g + h*x)^m*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]], x]
```

fricas [A] time = 0.46, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\sqrt{b\log\left(\left((fx+e)^p d\right)^q c\right)+a}\,(hx+g)^m,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m*(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="fricas
")
[Out] integral(sqrt(b*log(((f*x + e)^p*d)^q*c) + a)*(h*x + g)^m, x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{b\log\left(\left((fx+e)^p d\right)^q c\right)+a}\,(hx+g)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m*(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="giac")
[Out] integrate(sqrt(b*log(((f*x + e)^p*d)^q*c) + a)*(h*x + g)^m, x)
```

maple [A] time = 0.36, size = 0, normalized size = 0.00

$$\int \sqrt{b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)+a}\,\left(hx+g\right)^{m}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^m*(b*ln(c*(d*(f*x+e)^p)^q)+a)^(1/2),x)
[Out] int((h*x+g)^m*(b*ln(c*(d*(f*x+e)^p)^q)+a)^(1/2),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}\left(hx+g\right)^{m}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m*(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="maxima
")
[Out] integrate(sqrt(b*log(((f*x + e)^p*d)^q*c) + a)*(h*x + g)^m, x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int {\left(g+h\,x\right)}^m\,\sqrt{a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)^m*(a + b*log(c*(d*(e + f*x)^p)^q))^(1/2),x)
[Out] int((g + h*x)^m*(a + b*log(c*(d*(e + f*x)^p)^q))^(1/2), x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**m*(a+b*ln(c*(d*(f*x+e)**p)**q))**(1/2),x)
[Out] Exception raised: HeuristicGCDFailed
```

3.511 $\int \frac{(g+hx)^m}{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$

Optimal. Leaf size=33

$$\text{Int}\left(\frac{(g+hx)^m}{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}},x\right)$$

```
[Out] Unintegrable((h*x+g)^m/(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

Rubi [A] time = 0.10, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(g+hx)^m}{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(g + h*x)^m/Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]],x]
[Out] Defer[Int][(g + h*x)^m/Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]], x]
```

Rubi steps

$$\int \frac{(g+hx)^m}{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx=\int \frac{(g+hx)^m}{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$$

Mathematica [A] time = 4.15, size = 0, normalized size = 0.00

$$\int \frac{(g+hx)^m}{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(g + h*x)^m/Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]],x]
[Out] Integrate[(g + h*x)^m/Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]], x]
```

fricas [A] time = 0.48, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(hx+g\right)^m}{\sqrt{b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="fricas
")
[Out] integral((h*x + g)^m/sqrt(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(hx+g)^m}{\sqrt{b\log\left(\left((fx+e)^p d\right)^q c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="giac")
[Out] integrate((h*x + g)^m/sqrt(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

maple [A] time = 0.36, size = 0, normalized size = 0.00

$$\int \frac{(hx+g)^m}{\sqrt{b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^m/(b*ln(c*(d*(f*x+e)^p)^q)+a)^(1/2),x)
[Out] int((h*x+g)^m/(b*ln(c*(d*(f*x+e)^p)^q)+a)^(1/2),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(hx+g)^m}{\sqrt{b\log\left(\left((fx+e)^p d\right)^q c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="maxima
")
[Out] integrate((h*x + g)^m/sqrt(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{(g+h\,x)^m}{\sqrt{a+b\,\ln\left(c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)^m/(a + b*log(c*(d*(e + f*x)^p)^q))^(1/2),x)
[Out] int((g + h*x)^m/(a + b*log(c*(d*(e + f*x)^p)^q))^(1/2), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(g+hx)^m}{\sqrt{a+b\log\left(c\left(d\left(e+fx\right)^p\right)^q\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**m/(a+b*ln(c*(d*(f*x+e)**p)**q))**(1/2),x)
[Out] Integral((g + h*x)**m/sqrt(a + b*log(c*(d*(e + f*x)**p)**q)), x)
```

3.512 $\int \frac{(g+hx)^m}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}\,dx$

Optimal. Leaf size=33

$$\text{Int}\left(\frac{(g+hx)^m}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}},x\right)$$

```
[Out] Unintegrable((h*x+g)^m/(a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2),x)
```

Rubi [A] time = 0.11, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(g+hx)^m}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(g + h*x)^m/(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2),x]
[Out] Defer[Int][(g + h*x)^m/(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2), x]
```

Rubi steps

$$\int \frac{(g+hx)^m}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}\,dx=\int \frac{(g+hx)^m}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}\,dx$$

Mathematica [A] time = 3.98, size = 0, normalized size = 0.00

$$\int \frac{(g+hx)^m}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(g + h*x)^m/(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2),x]
[Out] Integrate[(g + h*x)^m/(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2), x]
```

fricas [A] time = 0.53, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a}\,\left(hx+g\right)^m}{b^2\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^2+2\,ab\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m/(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="fricas
")
```

[Out] integral(sqrt(b*log(((f*x + e)^p*d)^q*c) + a)*(h*x + g)^m/(b^2*log(((f*x + e)^p*d)^q*c)^2 + 2*a*b*log(((f*x + e)^p*d)^q*c) + a^2), x)

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(hx+g)^m}{\left(b\log\left(\left((fx+e)^p d\right)^q c\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m/(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((h*x + g)^m/(b*log(((f*x + e)^p*d)^q*c) + a)^(3/2), x)
```

maple [A] time = 0.35, size = 0, normalized size = 0.00

$$\int \frac{(hx+g)^m}{\left(b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^m/(b*ln(c*(d*(f*x+e)^p)^q)+a)^(3/2),x)
```

```
[Out] int((h*x+g)^m/(b*ln(c*(d*(f*x+e)^p)^q)+a)^(3/2),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(hx+g)^m}{\left(b\log\left(\left((fx+e)^p d\right)^q c\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m/(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="maxima
")
```

```
[Out] integrate((h*x + g)^m/(b*log(((f*x + e)^p*d)^q*c) + a)^(3/2), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{(g+h\,x)^m}{\left(a+b\,\ln\left(c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right)\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)^m/(a + b*log(c*(d*(e + f*x)^p)^q))^(3/2),x)
```

```
[Out] int((g + h*x)^m/(a + b*log(c*(d*(e + f*x)^p)^q))^(3/2), x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**m/(a+b*ln(c*(d*(f*x+e)**p)**q))**(3/2),x)
```

```
[Out] Exception raised: HeuristicGCDFailed
```

3.513 $\int (g+hx)^m \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^n\,dx$

Optimal. Leaf size=31

$$\mathrm{Int}\left((g+hx)^m\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^n,x\right)$$

```
[Out] Unintegrable((h*x+g)^m*(a+b*ln(c*(d*(f*x+e)^p)^q))^n,x)
```

Rubi [A] time = 0.05, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int (g+hx)^m\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^n\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(g + h*x)^m*(a + b*Log[c*(d*(e + f*x)^p)^q])^n,x]
[Out] Defer[Int][(g + h*x)^m*(a + b*Log[c*(d*(e + f*x)^p)^q])^n, x]
```

Rubi steps

$$\int (g+hx)^m\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^n\,dx=\int (g+hx)^m\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^n\,dx$$

Mathematica [A] time = 0.65, size = 0, normalized size = 0.00

$$\int (g+hx)^m\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^n\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(g + h*x)^m*(a + b*Log[c*(d*(e + f*x)^p)^q])^n,x]
[Out] Integrate[(g + h*x)^m*(a + b*Log[c*(d*(e + f*x)^p)^q])^n, x]
```

fricas [A] time = 0.47, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\left(hx+g\right)^m\left(b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a\right)^n,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m*(a+b*log(c*(d*(f*x+e)^p)^q))^n,x, algorithm="fricas")
[Out] integral((h*x + g)^m*(b*log(((f*x + e)^p*d)^q*c) + a)^n, x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(hx+g\right)^m\left(b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m*(a+b*log(c*(d*(f*x+e)^p)^q))^n,x, algorithm="giac")
[Out] integrate((h*x + g)^m*(b*log(((f*x + e)^p*d)^q*c) + a)^n, x)
```

maple [A] time = 0.49, size = 0, normalized size = 0.00

$$\int \left(b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)+a\right)^{n}\left(hx+g\right)^{m}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^m*(b*ln(c*(d*(f*x+e)^p)^q)+a)^n,x)
[Out] int((h*x+g)^m*(b*ln(c*(d*(f*x+e)^p)^q)+a)^n,x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m*(a+b*log(c*(d*(f*x+e)^p)^q))^n,x, algorithm="maxima")
[Out] Exception raised: RuntimeError >> ECL says: In function CAR, the value of t
he first argument is  0which is not of the expected type LIST
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int {\left(g+h\,x\right)}^m\,{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}^n \,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)^m*(a + b*log(c*(d*(e + f*x)^p)^q))^n,x)
[Out] int((g + h*x)^m*(a + b*log(c*(d*(e + f*x)^p)^q))^n, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**m*(a+b*ln(c*(d*(f*x+e)**p)**q))**n,x)
[Out] Timed out
```

3.514 $\int (g+hx)^2 \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^n dx$

Optimal. Leaf size=432

$$\frac{h2^{-n}(e+fx)^2e^{-\frac{2a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^n\left(-\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)^{-n}\Gamma\left(n+1,-\right.}{f^3}$$

```
[Out] 3^(-1-n)*h^2*(f*x+e)^3*GAMMA(1+n,-3*(a+b*ln(c*(d*(f*x+e)^p)^q))/b/p/q)*(a+b
*ln(c*(d*(f*x+e)^p)^q))^n/exp(3*a/b/p/q)/f^3/((c*(d*(f*x+e)^p)^q)^(3/p/q))/
(((-a-b*ln(c*(d*(f*x+e)^p)^q))/b/p/q)^n)+h*(-e*h+f*g)*(f*x+e)^2*GAMMA(1+n,-
2*(a+b*ln(c*(d*(f*x+e)^p)^q))/b/p/q)*(a+b*ln(c*(d*(f*x+e)^p)^q))^n/(2^n)/ex
p(2*a/b/p/q)/f^3/((c*(d*(f*x+e)^p)^q)^(2/p/q))/(((-a-b*ln(c*(d*(f*x+e)^p)^q
))/b/p/q)^n)+(-e*h+f*g)^2*(f*x+e)*GAMMA(1+n,(-a-b*ln(c*(d*(f*x+e)^p)^q))/b/
p/q)*(a+b*ln(c*(d*(f*x+e)^p)^q))^n/exp(a/b/p/q)/f^3/((c*(d*(f*x+e)^p)^q)^(1
/p/q))/(((-a-b*ln(c*(d*(f*x+e)^p)^q))/b/p/q)^n)
```

Rubi [A] time = 0.96, antiderivative size = 432, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 7, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {2401, 2389, 2300, 2181, 2390, 2310, 2445}

$$\frac{h2^{-n}(e+fx)^2e^{-\frac{2a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^n\left(-\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)^{-n}\text{Gamma}\left(\right.}{f^3}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^n,x]
```

```
[Out] (3^(-1 - n)*h^2*(e + f*x)^3*Gamma[1 + n, (-3*(a + b*Log[c*(d*(e + f*x)^p)^q
]))/(b*p*q)]*(a + b*Log[c*(d*(e + f*x)^p)^q])^n)/(E^((3*a)/(b*p*q))*f^3*(c*
(d*(e + f*x)^p)^q)^(3/(p*q))*(-((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)))^
n) + (h*(f*g - e*h)*(e + f*x)^2*Gamma[1 + n, (-2*(a + b*Log[c*(d*(e + f*x)^
p)^q]))/(b*p*q)]*(a + b*Log[c*(d*(e + f*x)^p)^q])^n)/(2^n*E^((2*a)/(b*p*q))
*f^3*(c*(d*(e + f*x)^p)^q)^(2/(p*q))*(-((a + b*Log[c*(d*(e + f*x)^p)^q])/(b
*p*q)))^n) + ((f*g - e*h)^2*(e + f*x)*Gamma[1 + n, -((a + b*Log[c*(d*(e + f
*x)^p)^q])/(b*p*q))]*(a + b*Log[c*(d*(e + f*x)^p)^q])^n)/(E^(a/(b*p*q))*f^3
*(c*(d*(e + f*x)^p)^q)^(1/(p*q))*(-((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q
)))^n)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] && !I
ntegerQ[m]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
```

```
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int (g+hx)^2 \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^n dx = \text{Subst}\left(\int (g+hx)^2 \left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^n dx, cd^q(e+fx$$

$$= \text{Subst}\left(\int \left(\frac{(fg-eh)^2 \left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^n}{f^2} + \frac{2h(fg-$$

$$= \text{Subst}\left(\frac{h^2 \int (e+fx)^2 \left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^n dx}{f^2}, cd^q(e+$$

$$= \text{Subst}\left(\frac{h^2\,\text{Subst}\left(\int x^2 \left(a+b\log\left(cd^q x^{pq}\right)\right)^n dx, x, e+fx\right)}{f^3}, cd^q$$

$$= \text{Subst}\left(\frac{\left(h^2(e+fx)^3 \left(cd^q(e+fx)^{pq}\right)^{-\frac{3}{pq}}\right)\text{Subst}\left(\int e^{\frac{3x}{pq}}(a+bx)^n\right.}{f^3pq}$$

$$= \frac{3^{-1-n} e^{-\frac{3a}{bpq}} h^2 (e+fx)^3 \left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{3}{pq}} \Gamma\left(1+n, -\frac{3\left(a+b\log(\right.}{}\right.}{}$$

Mathematica [A] time = 1.08, size = 326, normalized size = 0.75

$$2^{-n}3^{-n-1}(e+fx)e^{-\frac{3a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{3}{pq}}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^n\left(-\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)^{-n}\left(3^{n+1}e^{\frac{a}{bpq}}(fg-e\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^n,x]
```

```
[Out] (3^(-1 - n)*(e + f*x)*(2^n*h^2*(e + f*x)^2*Gamma[1 + n, (-3*(a + b*Log[c*(d
*(e + f*x)^p)^q]))/(b*p*q)] + 3^(1 + n)*E^(a/(b*p*q))*(f*g - e*h)*(c*(d*(e
+ f*x)^p)^q)^(1/(p*q))*(h*(e + f*x)*Gamma[1 + n, (-2*(a + b*Log[c*(d*(e + f
*x)^p)^q]))/(b*p*q)] + 2^n*E^(a/(b*p*q))*(f*g - e*h)*(c*(d*(e + f*x)^p)^q)^
(1/(p*q))*Gamma[1 + n, -((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q))]))*(a +
b*Log[c*(d*(e + f*x)^p)^q])^n)/(2^n*E^((3*a)/(b*p*q))*f^3*(c*(d*(e + f*x)^p
)^q)^(3/(p*q))*(-((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)))^n)
```

fricas [F] time = 0.49, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\left(h^2x^2+2\,ghx+g^2\right)\left(b\log\left(\left(\left(fx+e\right)^pd\right)^qc\right)+a\right)^n,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^n,x, algorithm="fricas")
```

```
[Out] integral((h^2*x^2 + 2*g*h*x + g^2)*(b*log(((f*x + e)^p*d)^q*c) + a)^n, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(hx+g\right)^2\left(b\log\left(\left(\left(fx+e\right)^pd\right)^qc\right)+a\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^n,x, algorithm="giac")
```

```
[Out] integrate((h*x + g)^2*(b*log(((f*x + e)^p*d)^q*c) + a)^n, x)
```

maple [F] time = 0.33, size = 0, normalized size = 0.00

$$\int\left(hx+g\right)^2\left(b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)+a\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^2*(b*ln(c*(d*(f*x+e)^p)^q)+a)^n,x)
```

```
[Out] int((h*x+g)^2*(b*ln(c*(d*(f*x+e)^p)^q)+a)^n,x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^n,x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: In function CAR, the value of t
he first argument is  0which is not of the expected type LIST
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int {\left (g+h\,x\right)}^2\,{\left (a+b\,\ln \left (c\,{\left (d\,{\left (e+f\,x\right)}^p\right)}^q\right)\right)}^n \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)^2*(a + b*log(c*(d*(e + f*x)^p)^q))^n,x)
[Out] int((g + h*x)^2*(a + b*log(c*(d*(e + f*x)^p)^q))^n, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(a + b \log{\left (c \left(d \left(e + f x\right)^{p}\right)^{q} \right)}\right)^{n} \left(g + h x\right)^{2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**2*(a+b*ln(c*(d*(f*x+e)**p)**q))**n,x)
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**n*(g + h*x)**2, x)
```

3.515 $\int (g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^n\,dx$

Optimal. Leaf size=281

$$\frac{(e+fx)e^{-\frac{a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^n\left(-\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)^{-n}\Gamma\left(n+1,-\frac{a+b\log}{}\right.}{f^2}$$

```
[Out] 2^(-1-n)*h*(f*x+e)^2*GAMMA(1+n,-2*(a+b*ln(c*(d*(f*x+e)^p)^q))/b/p/q)*(a+b*l
n(c*(d*(f*x+e)^p)^q))^n/exp(2*a/b/p/q)/f^2/((c*(d*(f*x+e)^p)^q)^(2/p/q))/((
(-a-b*ln(c*(d*(f*x+e)^p)^q))/b/p/q)^n)+(-e*h+f*g)*(f*x+e)*GAMMA(1+n,(-a-b*l
n(c*(d*(f*x+e)^p)^q))/b/p/q)*(a+b*ln(c*(d*(f*x+e)^p)^q))^n/exp(a/b/p/q)/f^2
/((c*(d*(f*x+e)^p)^q)^(1/p/q))/(((-a-b*ln(c*(d*(f*x+e)^p)^q))/b/p/q)^n)
```

Rubi [A] time = 0.53, antiderivative size = 281, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.269$, Rules used = {2401, 2389, 2300, 2181, 2390, 2310, 2445}

$$\frac{(e+fx)e^{-\frac{a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^n\left(-\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)^{-n}\text{Gamma}\left(n+1,\right.}{f^2}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^n,x]
```

```
[Out] (2^(-1 - n)*h*(e + f*x)^2*Gamma[1 + n, (-2*(a + b*Log[c*(d*(e + f*x)^p)^q])
)/(b*p*q)]*(a + b*Log[c*(d*(e + f*x)^p)^q])^n)/(E^((2*a)/(b*p*q))*f^2*(c*(d
*(e + f*x)^p)^q)^(2/(p*q))*(-((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)))^n)
 + ((f*g - e*h)*(e + f*x)*Gamma[1 + n, -((a + b*Log[c*(d*(e + f*x)^p)^q])/(
b*p*q))]*(a + b*Log[c*(d*(e + f*x)^p)^q])^n)/(E^(a/(b*p*q))*f^2*(c*(d*(e +
f*x)^p)^q)^(1/(p*q))*(-((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)))^n)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
ntegerQ[m]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
```

```
, b, c, d, e, n, p}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int (g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^n\,dx = \text{Subst}\left(\int (g+hx)\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^n\,dx, cd^q(e+fx)^p\right.$$

$$= \text{Subst}\left(\int\left(\frac{(fg-eh)\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^n}{f}+\frac{h(e+fx)\left(\right.}{}\right.\right.$$

$$= \text{Subst}\left(\frac{h\int(e+fx)\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^n\,dx}{f}, cd^q(e+fx\right.$$

$$= \text{Subst}\left(\frac{h\,\text{Subst}\left(\int x\left(a+b\log\left(cd^qx^{pq}\right)\right)^n\,dx, x, e+fx\right)}{f^2}, cd^q(e\right.$$

$$= \text{Subst}\left(\frac{\left(h(e+fx)^2\left(cd^q(e+fx)^{pq}\right)^{-\frac{2}{pq}}\right)\text{Subst}\left(\int e^{\frac{2x}{pq}}(a+bx)^n\,d\right.}{f^2pq}\right.$$

$$= \frac{2^{-1-n}e^{-\frac{2a}{bpq}}h(e+fx)^2\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\Gamma\left(1+n,-\frac{2\left(a+b\log\left(c\left(\right.\right.\right.}{bp}\right.}{}$$

Mathematica [A] time = 0.36, size = 227, normalized size = 0.81

$$\frac{2^{-n-1}(e+fx)e^{-\frac{2a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^n\left(-\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)^{-n}\left(2^{n+1}e^{\frac{a}{bpq}}(fg-e\right.}{f^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^n,x]
```

```
[Out] (2^(-1 - n)*(e + f*x)*(h*(e + f*x)*Gamma[1 + n, (-2*(a + b*Log[c*(d*(e + f*
x)^p)^q]))/(b*p*q)] + 2^(1 + n)*E^(a/(b*p*q))*(f*g - e*h)*(c*(d*(e + f*x)^p
)^q)^(1/(p*q))*Gamma[1 + n, -((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q))]])*(
a + b*Log[c*(d*(e + f*x)^p)^q])^n)/(E^((2*a)/(b*p*q))*f^2*(c*(d*(e + f*x)^p
)^q)^(2/(p*q))*(-((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)))^n)
```

fricas [F] time = 0.48, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(hx+g\right)\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)^{n},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*log(c*(d*(f*x+e)^p)^q))^n,x, algorithm="fricas")
```

```
[Out] integral((h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a)^n, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(hx+g\right)\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)^{n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*log(c*(d*(f*x+e)^p)^q))^n,x, algorithm="giac")
```

```
[Out] integrate((h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a)^n, x)
```

maple [F] time = 0.14, size = 0, normalized size = 0.00

$$\int\left(hx+g\right)\left(b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)+a\right)^{n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)*(b*ln(c*(d*(f*x+e)^p)^q)+a)^n,x)
```

```
[Out] int((h*x+g)*(b*ln(c*(d*(f*x+e)^p)^q)+a)^n,x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*log(c*(d*(f*x+e)^p)^q))^n,x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: In function CAR, the value of t
he first argument is  0which is not of the expected type LIST
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\left(g+h\,x\right)\,{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g + h*x)*(a + b*log(c*(d*(e + f*x)^p)^q))^n,x)
```

```
[Out] int((g + h*x)*(a + b*log(c*(d*(e + f*x)^p)^q))^n, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(a+b\log \left(c\left(d\left(e+fx\right)^p\right)^q\right)\right)^n \left(g+hx\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*ln(c*(d*(f*x+e)**p)**q))**n,x)
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**n*(g + h*x), x)
```

3.516 $\int \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^n\,dx$

Optimal. Leaf size=131

$$\frac{(e+fx)e^{-\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^n\left(-\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)^{-n}\Gamma\left(n+1,-\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)}{f}$$

```
[Out] (f*x+e)*GAMMA(1+n,(-a-b*ln(c*(d*(f*x+e)^p)^q))/b/p/q)*(a+b*ln(c*(d*(f*x+e)^
p)^q))^n/exp(a/b/p/q)/f/((c*(d*(f*x+e)^p)^q)^(1/p/q))/(((-a-b*ln(c*(d*(f*x+
e)^p)^q))/b/p/q)^n)
```

Rubi [A] time = 0.15, antiderivative size = 131, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.200$, Rules used = {2389, 2300, 2181, 2445}

$$\frac{(e+fx)e^{-\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^n\left(-\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)^{-n}\text{Gamma}\left(n+1,-\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)}{f}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^n,x]
```

```
[Out] ((e + f*x)*Gamma[1 + n, -((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q))]*(a + b
*Log[c*(d*(e + f*x)^p)^q])^n)/(E^(a/(b*p*q))*f*(c*(d*(e + f*x)^p)^q)^(1/(p*
q))*(-((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)))^n)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] && !I
ntegerQ[m]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] && !IntegerQ[n] && !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^n\,dx = \text{Subst}\left(\int \left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^n\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right.$$
$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \left(a+b\log\left(cd^q x^{pq}\right)\right)^n\,dx, x, e+fx\right)}{f}, cd^q(e+fx)^{pq}, c\left(d\right.\right.$$
$$= \text{Subst}\left(\frac{\left((e+fx)\left(cd^q(e+fx)^{pq}\right)^{-\frac{1}{pq}}\right)\text{Subst}\left(\int e^{\frac{x}{pq}}(a+bx)^n\,dx, x, \log\left(c\right.\right.}{fpq}\right.$$
$$= \frac{e^{-\frac{a}{bpq}}(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\Gamma\left(1+n, -\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)\left(a+b\,l\right.}{f}$$

Mathematica [A] time = 0.13, size = 131, normalized size = 1.00

$$\frac{(e+fx)e^{-\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^n\left(-\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)^{-n}\Gamma\left(n+1, -\frac{a+b\log\left(c\left(d(e+\right.\right.}{bpq}\right.}{f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^n,x]
```

```
[Out] ((e + f*x)*Gamma[1 + n, -((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q))]*(a + b
*Log[c*(d*(e + f*x)^p)^q])^n)/(E^(a/(b*p*q))*f*(c*(d*(e + f*x)^p)^q)^(1/(p*
q))*(-((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)))^n)
```

fricas [A] time = 0.47, size = 80, normalized size = 0.61

$$\frac{e^{\left(-\frac{bnpq\log\left(-\frac{1}{bpq}\right)+bq\log(d)+b\log(c)+a}{bpq}\right)}\Gamma\left(n+1, -\frac{bpq\log\left(fx+e\right)+bq\log(d)+b\log(c)+a}{bpq}\right)}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^n,x, algorithm="fricas")
```

```
[Out] e^(-(b*n*p*q*log(-1/(b*p*q)) + b*q*log(d) + b*log(c) + a)/(b*p*q))*gamma(n
+ 1, -(b*p*q*log(f*x + e) + b*q*log(d) + b*log(c) + a)/(b*p*q))/f
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^n,x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^n, x)
```

maple [F] time = 0.11, size = 0, normalized size = 0.00

$$\int \left(b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)+a\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^n,x)
```

```
[Out] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^n,x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^n,x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: In function CAR, the value of t
he first argument is  0which is not of the expected type LIST
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^n,x)
```

```
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))^n, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)\right)^{n}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**n,x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**n, x)
```

3.517 $\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^n}{g+hx}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^n}{g+hx},x\right)$$

```
[Out] Unintegrable((a+b*ln(c*(d*(f*x+e)^p)^q))^n/(h*x+g),x)
```

Rubi [A] time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^n}{g+hx}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^n/(g + h*x),x]
[Out] Defer[Int][(a + b*Log[c*(d*(e + f*x)^p)^q])^n/(g + h*x), x]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^n}{g+hx}\,dx=\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^n}{g+hx}\,dx$$

Mathematica [A] time = 0.36, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^n}{g+hx}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^n/(g + h*x),x]
[Out] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^n/(g + h*x), x]
```

fricas [A] time = 0.52, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a\right)^n}{hx+g},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^n/(h*x+g),x, algorithm="fricas")
[Out] integral((b*log(((f*x + e)^p*d)^q*c) + a)^n/(h*x + g), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a\right)^n}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^n/(h*x+g),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^n/(h*x + g), x)
```

maple [A] time = 0.35, size = 0, normalized size = 0.00

$$\int \frac{\left(b \ln \left(c \left(d \left(fx+e\right)^{p}\right)^{q}\right)+a\right)^{n}}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^n/(h*x+g),x)
```

```
[Out] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^n/(h*x+g),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^n/(h*x+g),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: In function CAR, the value of t
he first argument is  0which is not of the expected type LIST
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}^n}{g+h\,x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^n/(g + h*x),x)
```

```
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))^n/(g + h*x), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a + b \log{\left(c \left(d \left(e + f x\right)^{p}\right)^{q} \right)}\right)^{n}}{g + h x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**n/(h*x+g),x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**n/(g + h*x), x)
```

3.518 $\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{g+hx^2}\,dx$

Optimal. Leaf size=249

$$\frac{\log\left(\frac{f\left(\sqrt{-g}-\sqrt{h}\,x\right)}{e\sqrt{h}+f\sqrt{-g}}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{2\sqrt{-g}\,\sqrt{h}}-\frac{\log\left(\frac{f\left(\sqrt{-g}+\sqrt{h}\,x\right)}{f\sqrt{-g}-e\sqrt{h}}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{2\sqrt{-g}\,\sqrt{h}}-\frac{bpq\mathrm{Li}_2\left(-\frac{\sqrt{}}{f\sqrt{}}\right.}{2\sqrt{-g}}$$

```
[Out] 1/2*(a+b*ln(c*(d*(f*x+e)^p)^q))*ln(f*((-g)^(1/2)-x*h^(1/2))/(f*(-g)^(1/2)+e
*h^(1/2)))/(-g)^(1/2)/h^(1/2)-1/2*(a+b*ln(c*(d*(f*x+e)^p)^q))*ln(f*((-g)^(1
/2)+x*h^(1/2))/(f*(-g)^(1/2)-e*h^(1/2)))/(-g)^(1/2)/h^(1/2)-1/2*b*p*q*polyl
og(2,-(f*x+e)*h^(1/2)/(f*(-g)^(1/2)-e*h^(1/2)))/(-g)^(1/2)/h^(1/2)+1/2*b*p*
q*polylog(2,(f*x+e)*h^(1/2)/(f*(-g)^(1/2)+e*h^(1/2)))/(-g)^(1/2)/h^(1/2)
```

Rubi [A] time = 0.50, antiderivative size = 249, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {2409, 2394, 2393, 2391, 2445}

$$-\frac{bpq\mathrm{PolyLog}\left(2,-\frac{\sqrt{h}(e+fx)}{f\sqrt{-g}-e\sqrt{h}}\right)}{2\sqrt{-g}\,\sqrt{h}}+\frac{bpq\mathrm{PolyLog}\left(2,\frac{\sqrt{h}(e+fx)}{e\sqrt{h}+f\sqrt{-g}}\right)}{2\sqrt{-g}\,\sqrt{h}}+\frac{\log\left(\frac{f\left(\sqrt{-g}-\sqrt{h}\,x\right)}{e\sqrt{h}+f\sqrt{-g}}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{2\sqrt{-g}\,\sqrt{h}}-$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x^2),x]
```

```
[Out] ((a + b*Log[c*(d*(e + f*x)^p)^q])*Log[(f*(Sqrt[-g] - Sqrt[h]*x))/(f*Sqrt[-g
] + e*Sqrt[h])])/(2*Sqrt[-g]*Sqrt[h]) - ((a + b*Log[c*(d*(e + f*x)^p)^q])*L
og[(f*(Sqrt[-g] + Sqrt[h]*x))/(f*Sqrt[-g] - e*Sqrt[h])])/(2*Sqrt[-g]*Sqrt[h
]) - (b*p*q*PolyLog[2, -((Sqrt[h]*(e + f*x))/(f*Sqrt[-g] - e*Sqrt[h]))])/(2
*Sqrt[-g]*Sqrt[h]) + (b*p*q*PolyLog[2, (Sqrt[h]*(e + f*x))/(f*Sqrt[-g] + e*
Sqrt[h])])/(2*Sqrt[-g]*Sqrt[h])
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
```

```
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{g+hx^2}\,dx = \text{Subst}\left(\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{g+hx^2}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \text{Subst}\left(\int\left(\frac{\sqrt{-g}\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)}{2g\left(\sqrt{-g}-\sqrt{h}\,x\right)}+\frac{\sqrt{-g}\left(a+b\log\left(cd^q(e+fx)^{pq}\right.\right.}{2g\left(\sqrt{-g}+\sqrt{h}\,x\right)}\right.\right.$$

$$= -\text{Subst}\left(\frac{\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{\sqrt{-g}-\sqrt{h}\,x}\,dx}{2\sqrt{-g}}, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right) - \text{Subst}\left(\frac{\int \frac{a+}{}}{}\right.$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\log\left(\frac{f\left(\sqrt{-g}-\sqrt{h}\,x\right)}{f\sqrt{-g}+e\sqrt{h}}\right)}{2\sqrt{-g}\,\sqrt{h}} - \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right.}{2\sqrt{-g}\,\sqrt{h}}$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\log\left(\frac{f\left(\sqrt{-g}-\sqrt{h}\,x\right)}{f\sqrt{-g}+e\sqrt{h}}\right)}{2\sqrt{-g}\,\sqrt{h}} - \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right.}{2\sqrt{-g}\,\sqrt{h}}$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\log\left(\frac{f\left(\sqrt{-g}-\sqrt{h}\,x\right)}{f\sqrt{-g}+e\sqrt{h}}\right)}{2\sqrt{-g}\,\sqrt{h}} - \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right.}{2\sqrt{-g}\,\sqrt{h}}$$

Mathematica [A] time = 0.15, size = 190, normalized size = 0.76

$$\frac{\left(\log\left(\frac{f\left(\sqrt{-g}-\sqrt{h}\,x\right)}{e\sqrt{h}+f\sqrt{-g}}\right)-\log\left(\frac{f\left(\sqrt{-g}+\sqrt{h}\,x\right)}{f\sqrt{-g}-e\sqrt{h}}\right)\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)-bpq\text{Li}_2\left(-\frac{\sqrt{h}(e+fx)}{f\sqrt{-g}-e\sqrt{h}}\right)+bpq\text{Li}_2\left(\frac{\sqrt{h}(e+fx)}{\sqrt{h}e+f\sqrt{-g}}\right.}{2\sqrt{-g}\,\sqrt{h}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x^2),x]
```

```
[Out] ((a + b*Log[c*(d*(e + f*x)^p)^q])*(Log[(f*(Sqrt[-g] - Sqrt[h]*x))/(f*Sqrt[-
g] + e*Sqrt[h])] - Log[(f*(Sqrt[-g] + Sqrt[h]*x))/(f*Sqrt[-g] - e*Sqrt[h])]
) - b*p*q*PolyLog[2, -((Sqrt[h]*(e + f*x))/(f*Sqrt[-g] - e*Sqrt[h]))] + b*p
*q*PolyLog[2, (Sqrt[h]*(e + f*x))/(f*Sqrt[-g] + e*Sqrt[h])])/(2*Sqrt[-g]*Sq
rt[h])
```

fricas [F]   time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}{hx^{2}+g},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x^2+g),x, algorithm="fricas")
[Out] integral((b*log(((f*x + e)^p*d)^q*c) + a)/(h*x^2 + g), x)
```

giac [F]   time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}{hx^{2}+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x^2+g),x, algorithm="giac")
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)/(h*x^2 + g), x)
```

maple [F]   time = 0.35, size = 0, normalized size = 0.00

$$\int\frac{b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)+a}{h\,x^{2}+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(d*(f*x+e)^p)^q)+a)/(h*x^2+g),x)
[Out] int((b*ln(c*(d*(f*x+e)^p)^q)+a)/(h*x^2+g),x)
```

maxima [F]   time = 0.00, size = 0, normalized size = 0.00

$$b\int\frac{q\log(d)+\log\left(\left(\left(fx+e\right)^{p}\right)^{q}\right)+\log(c)}{hx^{2}+g}\,dx+\frac{a\arctan\left(\frac{hx}{\sqrt{gh}}\right)}{\sqrt{gh}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x^2+g),x, algorithm="maxima")
[Out] b*integrate((q*log(d) + log(((f*x + e)^p)^q) + log(c))/(h*x^2 + g), x) + a*
arctan(h*x/sqrt(g*h))/sqrt(g*h)
```

mupad [F]   time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{a+b\,\ln\left(c\left(d\left(e+f\,x\right)^{p}\right)^{q}\right)}{h\,x^{2}+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))/(g + h*x^2),x)
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))/(g + h*x^2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)}{g+hx^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))/(h*x**2+g),x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))/(g + h*x**2), x)
```

3.519 $\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{\sqrt{2+hx^2}}\,dx$

Optimal. Leaf size=335

$$\frac{\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{2}}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{\sqrt{h}}-\frac{bpq\text{Li}_2\left(-\frac{\sqrt{2}e^{\sinh^{-1}\left(\frac{\sqrt{h}x}{\sqrt{2}}\right)}f}{e\sqrt{h}-\sqrt{he^2+2f^2}}\right)}{\sqrt{h}}-\frac{bpq\text{Li}_2\left(-\frac{\sqrt{2}e^{\sinh^{-1}\left(\frac{\sqrt{h}x}{\sqrt{2}}\right)}f}{\sqrt{h}e+\sqrt{he^2+2f^2}}\right)}{\sqrt{h}}-\frac{bpq\sinh^{-1}}{}$$

```
[Out] 1/2*b*p*q*arcsinh(1/2*x*h^(1/2)*2^(1/2))^2/h^(1/2)+arcsinh(1/2*x*h^(1/2)*2^
(1/2))*(a+b*ln(c*(d*(f*x+e)^p)^q))/h^(1/2)-b*p*q*arcsinh(1/2*x*h^(1/2)*2^(1
/2))*ln(1+(1/2*x*h^(1/2)*2^(1/2)+1/2*(2*h*x^2+4)^(1/2))*f*2^(1/2)/(e*h^(1/2
)-(e^2*h+2*f^2)^(1/2)))/h^(1/2)-b*p*q*arcsinh(1/2*x*h^(1/2)*2^(1/2))*ln(1+(
1/2*x*h^(1/2)*2^(1/2)+1/2*(2*h*x^2+4)^(1/2))*f*2^(1/2)/(e*h^(1/2)+(e^2*h+2*
f^2)^(1/2)))/h^(1/2)-b*p*q*polylog(2,-(1/2*x*h^(1/2)*2^(1/2)+1/2*(2*h*x^2+4
)^(1/2))*f*2^(1/2)/(e*h^(1/2)-(e^2*h+2*f^2)^(1/2)))/h^(1/2)-b*p*q*polylog(2
,-(1/2*x*h^(1/2)*2^(1/2)+1/2*(2*h*x^2+4)^(1/2))*f*2^(1/2)/(e*h^(1/2)+(e^2*h
+2*f^2)^(1/2)))/h^(1/2)
```

Rubi [A] time = 0.83, antiderivative size = 335, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 9, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.300, Rules used = {215, 2404, 12, 5799, 5561, 2190, 2279, 2391, 2445}

$$-\frac{bpq\text{PolyLog}\left(2,-\frac{\sqrt{2}fe^{\sinh^{-1}\left(\frac{\sqrt{h}x}{\sqrt{2}}\right)}}{e\sqrt{h}-\sqrt{e^2h+2f^2}}\right)}{\sqrt{h}}-\frac{bpq\text{PolyLog}\left(2,-\frac{\sqrt{2}fe^{\sinh^{-1}\left(\frac{\sqrt{h}x}{\sqrt{2}}\right)}}{\sqrt{e^2h+2f^2}+e\sqrt{h}}\right)}{\sqrt{h}}+\frac{\sinh^{-1}\left(\frac{\sqrt{h}x}{\sqrt{2}}\right)\left(a+b\log\left(c\left(d(e+fx)\right.\right.\right.}{\sqrt{h}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])/Sqrt[2 + h*x^2],x]
```

```
[Out] (b*p*q*ArcSinh[(Sqrt[h]*x)/Sqrt[2]]^2)/(2*Sqrt[h]) - (b*p*q*ArcSinh[(Sqrt[h
]*x)/Sqrt[2]]*Log[1 + (Sqrt[2]*E^ArcSinh[(Sqrt[h]*x)/Sqrt[2]]*f)/(e*Sqrt[h]
 - Sqrt[2*f^2 + e^2*h])]])/Sqrt[h] - (b*p*q*ArcSinh[(Sqrt[h]*x)/Sqrt[2]]*Log
[1 + (Sqrt[2]*E^ArcSinh[(Sqrt[h]*x)/Sqrt[2]]*f)/(e*Sqrt[h] + Sqrt[2*f^2 + e
^2*h])])/Sqrt[h] + (ArcSinh[(Sqrt[h]*x)/Sqrt[2]]*(a + b*Log[c*(d*(e + f*x)^
p)^q]))/Sqrt[h] - (b*p*q*PolyLog[2, -((Sqrt[2]*E^ArcSinh[(Sqrt[h]*x)/Sqrt[2
]]*f)/(e*Sqrt[h] - Sqrt[2*f^2 + e^2*h]))])/Sqrt[h] - (b*p*q*PolyLog[2, -((S
qrt[2]*E^ArcSinh[(Sqrt[h]*x)/Sqrt[2]]*f)/(e*Sqrt[h] + Sqrt[2*f^2 + e^2*h]))
])/Sqrt[h]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
```

```
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2404

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/Sqrt[(f_) + (g_.)*
(x_)^2], x_Symbol] :> With[{u = IntHide[1/Sqrt[f + g*x^2], x]}, Simp[u*(a +
 b*Log[c*(d + e*x)^n]), x] - Dist[b*e*n, Int[SimplifyIntegrand[u/(d + e*x),
 x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && GtQ[f, 0]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5799

```
Int[((a_.) + ArcSinh[(c_.)*(x_)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbo
l] :> Subst[Int[((a + b*x)^n*Cosh[x])/(c*d + e*Sinh[x]), x], x, ArcSinh[c*x
]] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{\sqrt{2+hx^2}}\,dx = \text{Subst}\left(\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{\sqrt{2+hx^2}}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \frac{\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{2}}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{\sqrt{h}} - \text{Subst}\left((bfpq)\int \frac{\sinh^{-1}\left(\frac{\sqrt{h}}{\sqrt{2}}\right.}{\sqrt{h}\,(e+f}\right.$$

$$= \frac{\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{2}}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{\sqrt{h}} - \text{Subst}\left(\frac{(bfpq)\int \frac{\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{2}}\right)}{e+fx}}{\sqrt{h}}\right.$$

$$= \frac{\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{2}}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{\sqrt{h}} - \text{Subst}\left(\frac{(bfpq)\,\text{Subst}\left(\int \frac{x}{\frac{e\sqrt{h}}{\sqrt{2}}+}\right.}{}\right.$$

$$= \frac{bpq\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{2}}\right)^2}{2\sqrt{h}} + \frac{\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{2}}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{\sqrt{h}} - \text{Subst}$$

$$= \frac{bpq\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{2}}\right)^2}{2\sqrt{h}} - \frac{bpq\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{2}}\right)\log\left(1+\frac{\sqrt{2}\,e^{\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{2}}\right)}f}{e\sqrt{h}-\sqrt{2f^2+e^2h}}\right)}{\sqrt{h}} - \frac{bpq\sin}{}$$

$$= \frac{bpq\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{2}}\right)^2}{2\sqrt{h}} - \frac{bpq\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{2}}\right)\log\left(1+\frac{\sqrt{2}\,e^{\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{2}}\right)}f}{e\sqrt{h}-\sqrt{2f^2+e^2h}}\right)}{\sqrt{h}} - \frac{bpq\sin}{}$$

$$= \frac{bpq\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{2}}\right)^2}{2\sqrt{h}} - \frac{bpq\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{2}}\right)\log\left(1+\frac{\sqrt{2}\,e^{\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{2}}\right)}f}{e\sqrt{h}-\sqrt{2f^2+e^2h}}\right)}{\sqrt{h}} - \frac{bpq\sin}{}$$

Mathematica [A] time = 0.23, size = 284, normalized size = 0.85

$$\frac{\sinh^{-1}\left(\frac{\sqrt{h}x}{\sqrt{2}}\right)\left(2a+2b\log\left(c\left(d(e+fx)^p\right)^q\right)-2bpq\log\left(\frac{\sqrt{2}fe^{\sinh^{-1}\left(\frac{\sqrt{h}x}{\sqrt{2}}\right)}}{e\sqrt{h}-\sqrt{e^2h+2f^2}}+1\right)-2bpq\log\left(\frac{\sqrt{2}fe^{\sinh^{-1}\left(\frac{\sqrt{h}x}{\sqrt{2}}\right)}}{\sqrt{e^2h+2f^2}+e\sqrt{h}}+1\right)+bp\right.}{2\sqrt{h}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])/Sqrt[2 + h*x^2],x]
```

```
[Out] (ArcSinh[(Sqrt[h]*x)/Sqrt[2]]*(2*a + b*p*q*ArcSinh[(Sqrt[h]*x)/Sqrt[2]] - 2
*b*p*q*Log[1 + (Sqrt[2]*E^ArcSinh[(Sqrt[h]*x)/Sqrt[2]]*f)/(e*Sqrt[h] - Sqrt
[2*f^2 + e^2*h])] - 2*b*p*q*Log[1 + (Sqrt[2]*E^ArcSinh[(Sqrt[h]*x)/Sqrt[2]]
*f)/(e*Sqrt[h] + Sqrt[2*f^2 + e^2*h])] + 2*b*Log[c*(d*(e + f*x)^p)^q]) - 2*
b*p*q*PolyLog[2, (Sqrt[2]*E^ArcSinh[(Sqrt[h]*x)/Sqrt[2]]*f)/(-(e*Sqrt[h]) +
 Sqrt[2*f^2 + e^2*h])] - 2*b*p*q*PolyLog[2, -((Sqrt[2]*E^ArcSinh[(Sqrt[h]*x
)/Sqrt[2]]*f)/(e*Sqrt[h] + Sqrt[2*f^2 + e^2*h]))])/(2*Sqrt[h])
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{hx^2+2}\,b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+\sqrt{hx^2+2}\,a}{hx^2+2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x^2+2)^(1/2),x, algorithm="fricas
")
```

```
[Out] integral((sqrt(h*x^2 + 2)*b*log(((f*x + e)^p*d)^q*c) + sqrt(h*x^2 + 2)*a)/(
h*x^2 + 2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a}{\sqrt{hx^2+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x^2+2)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)/sqrt(h*x^2 + 2), x)
```

maple [F] time = 0.39, size = 0, normalized size = 0.00

$$\int \frac{b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)+a}{\sqrt{h\,x^2+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(d*(f*x+e)^p)^q)+a)/(h*x^2+2)^(1/2),x)
```

```
[Out] int((b*ln(c*(d*(f*x+e)^p)^q)+a)/(h*x^2+2)^(1/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$b\int \frac{q\log(d)+\log\left(\left(\left(fx+e\right)^p\right)^q\right)+\log(c)}{\sqrt{hx^2+2}}\,dx+\frac{a\,\text{arsinh}\left(\frac{1}{2}\sqrt{2}\sqrt{h}\,x\right)}{\sqrt{h}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x^2+2)^(1/2),x, algorithm="maxima
")
```

```
[Out] b*integrate((q*log(d) + log(((f*x + e)^p)^q) + log(c))/sqrt(h*x^2 + 2), x)
+ a*arcsinh(1/2*sqrt(2)*sqrt(h)*x)/sqrt(h)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a + b\ \ln\left(c\left(d\left(e + f\,x\right)^p\right)^q\right)}{\sqrt{h\,x^2 + 2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))/(h*x^2 + 2)^(1/2),x)
```

```
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))/(h*x^2 + 2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a + b\log\left(c\left(d\left(e + fx\right)^p\right)^q\right)}{\sqrt{hx^2 + 2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))/(h*x**2+2)**(1/2),x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))/sqrt(h*x**2 + 2), x)
```

3.520 $\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{\sqrt{g+hx^2}}\,dx$

Optimal. Leaf size=515

$$\frac{\sqrt{g}\sqrt{\frac{hx^2}{g}+1}\,\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{g}}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{\sqrt{h}\sqrt{g+hx^2}}-\frac{b\sqrt{g}\,pq\sqrt{\frac{hx^2}{g}+1}\,\mathrm{Li}_2\left(-\frac{e^{\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{g}}\right)}f\sqrt{g}}{e\sqrt{h}-\sqrt{he^2+f^2g}}\right)}{\sqrt{h}\sqrt{g+hx^2}}-\frac{b\sqrt{g}\,pq\sqrt{\frac{hx^2}{g}}\ldots}{\ldots}$$

```
[Out] 1/2*b*p*q*arcsinh(x*h^(1/2)/g^(1/2))^2*g^(1/2)*(1+h*x^2/g)^(1/2)/h^(1/2)/(h
*x^2+g)^(1/2)+arcsinh(x*h^(1/2)/g^(1/2))*(a+b*ln(c*(d*(f*x+e)^p)^q))*g^(1/2
)*(1+h*x^2/g)^(1/2)/h^(1/2)/(h*x^2+g)^(1/2)-b*p*q*arcsinh(x*h^(1/2)/g^(1/2)
)*ln(1+(x*h^(1/2)/g^(1/2)+(1+h*x^2/g)^(1/2))*f*g^(1/2)/(e*h^(1/2)-(e^2*h+f^
2*g)^(1/2)))*g^(1/2)*(1+h*x^2/g)^(1/2)/h^(1/2)/(h*x^2+g)^(1/2)-b*p*q*arcsin
h(x*h^(1/2)/g^(1/2))*ln(1+(x*h^(1/2)/g^(1/2)+(1+h*x^2/g)^(1/2))*f*g^(1/2)/(
e*h^(1/2)+(e^2*h+f^2*g)^(1/2)))*g^(1/2)*(1+h*x^2/g)^(1/2)/h^(1/2)/(h*x^2+g)
^(1/2)-b*p*q*polylog(2,-(x*h^(1/2)/g^(1/2)+(1+h*x^2/g)^(1/2))*f*g^(1/2)/(e*
h^(1/2)-(e^2*h+f^2*g)^(1/2)))*g^(1/2)*(1+h*x^2/g)^(1/2)/h^(1/2)/(h*x^2+g)^(
1/2)-b*p*q*polylog(2,-(x*h^(1/2)/g^(1/2)+(1+h*x^2/g)^(1/2))*f*g^(1/2)/(e*h^
(1/2)+(e^2*h+f^2*g)^(1/2)))*g^(1/2)*(1+h*x^2/g)^(1/2)/h^(1/2)/(h*x^2+g)^(1/
2)
```

Rubi [A] time = 1.20, antiderivative size = 515, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 10, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {2406, 215, 2404, 12, 5799, 5561, 2190, 2279, 2391, 2445}

$$-\frac{b\sqrt{g}\,pq\sqrt{\frac{hx^2}{g}+1}\,\mathrm{PolyLog}\left(2,-\frac{f\sqrt{g}\,e^{\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{g}}\right)}}{e\sqrt{h}-\sqrt{e^2h+f^2g}}\right)}{\sqrt{h}\sqrt{g+hx^2}}-\frac{b\sqrt{g}\,pq\sqrt{\frac{hx^2}{g}+1}\,\mathrm{PolyLog}\left(2,-\frac{f\sqrt{g}\,e^{\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{g}}\right)}}{\sqrt{e^2h+f^2g}+e\sqrt{h}}\right)}{\sqrt{h}\sqrt{g+hx^2}}+\frac{\sqrt{g}\sqrt{\frac{hx^2}{g}+1}\ldots}{\ldots}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])/Sqrt[g + h*x^2],x]
```

```
[Out] (b*Sqrt[g]*p*q*Sqrt[1 + (h*x^2)/g]*ArcSinh[(Sqrt[h]*x)/Sqrt[g]]^2)/(2*Sqrt[
h]*Sqrt[g + h*x^2]) - (b*Sqrt[g]*p*q*Sqrt[1 + (h*x^2)/g]*ArcSinh[(Sqrt[h]*x
)/Sqrt[g]]*Log[1 + (E^ArcSinh[(Sqrt[h]*x)/Sqrt[g]]*f*Sqrt[g])/(e*Sqrt[h] -
Sqrt[f^2*g + e^2*h])]])/(Sqrt[h]*Sqrt[g + h*x^2]) - (b*Sqrt[g]*p*q*Sqrt[1 +
(h*x^2)/g]*ArcSinh[(Sqrt[h]*x)/Sqrt[g]]*Log[1 + (E^ArcSinh[(Sqrt[h]*x)/Sqrt
[g]]*f*Sqrt[g])/(e*Sqrt[h] + Sqrt[f^2*g + e^2*h])]])/(Sqrt[h]*Sqrt[g + h*x^2
]) + (Sqrt[g]*Sqrt[1 + (h*x^2)/g]*ArcSinh[(Sqrt[h]*x)/Sqrt[g]]*(a + b*Log[c
*(d*(e + f*x)^p)^q]))/(Sqrt[h]*Sqrt[g + h*x^2]) - (b*Sqrt[g]*p*q*Sqrt[1 + (
h*x^2)/g]*PolyLog[2, -((E^ArcSinh[(Sqrt[h]*x)/Sqrt[g]]*f*Sqrt[g])/(e*Sqrt[h
] - Sqrt[f^2*g + e^2*h]))]])/(Sqrt[h]*Sqrt[g + h*x^2]) - (b*Sqrt[g]*p*q*Sqrt
[1 + (h*x^2)/g]*PolyLog[2, -((E^ArcSinh[(Sqrt[h]*x)/Sqrt[g]]*f*Sqrt[g])/(e*
Sqrt[h] + Sqrt[f^2*g + e^2*h]))]])/(Sqrt[h]*Sqrt[g + h*x^2])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] && !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2404

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/Sqrt[(f_) + (g_.)*
(x_)^2], x_Symbol] :> With[{u = IntHide[1/Sqrt[f + g*x^2], x]}, Simp[u*(a +
 b*Log[c*(d + e*x)^n]), x] - Dist[b*e*n, Int[SimplifyIntegrand[u/(d + e*x),
 x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && GtQ[f, 0]
```

Rule 2406

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/Sqrt[(f_) + (g_.)*
(x_)^2], x_Symbol] :> Dist[Sqrt[1 + (g*x^2)/f]/Sqrt[f + g*x^2], Int[(a + b*
Log[c*(d + e*x)^n])/Sqrt[1 + (g*x^2)/f], x], x] /; FreeQ[{a, b, c, d, e, f,
 g, n}, x] &&  !GtQ[f, 0]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5799

```
Int[((a_.) + ArcSinh[(c_.)*(x_)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbo
l] :> Subst[Int[((a + b*x)^n*Cosh[x])/(c*d + e*Sinh[x]), x], x, ArcSinh[c*x
]] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{\sqrt{g+hx^2}}\,dx = \text{Subst}\left(\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{\sqrt{g+hx^2}}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \text{Subst}\left(\frac{\sqrt{1+\frac{hx^2}{g}}\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{\sqrt{1+\frac{hx^2}{g}}}\,dx}{\sqrt{g+hx^2}}, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \frac{\sqrt{g}\sqrt{1+\frac{hx^2}{g}}\,\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{g}}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{\sqrt{h}\sqrt{g+hx^2}} - \text{Subst}\left(\frac{\left(bfpq\sqrt{1\right.}{\ldots}\right.$$

$$= \frac{\sqrt{g}\sqrt{1+\frac{hx^2}{g}}\,\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{g}}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{\sqrt{h}\sqrt{g+hx^2}} - \text{Subst}\left(\frac{\left(bf\sqrt{g}\,pq\ldots\right.}{\ldots}\right.$$

$$= \frac{\sqrt{g}\sqrt{1+\frac{hx^2}{g}}\,\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{g}}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{\sqrt{h}\sqrt{g+hx^2}} - \text{Subst}\left(\frac{\left(bf\sqrt{g}\,pq\ldots\right.}{\ldots}\right.$$

$$= \frac{b\sqrt{g}\,pq\sqrt{1+\frac{hx^2}{g}}\,\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{g}}\right)^2}{2\sqrt{h}\sqrt{g+hx^2}} + \frac{\sqrt{g}\sqrt{1+\frac{hx^2}{g}}\,\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{g}}\right)\left(a+b\log\left(c\left(\ldots\right.\right.\right.}{\sqrt{h}\sqrt{g+hx^2}}$$

$$= \frac{b\sqrt{g}\,pq\sqrt{1+\frac{hx^2}{g}}\,\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{g}}\right)^2}{2\sqrt{h}\sqrt{g+hx^2}} - \frac{b\sqrt{g}\,pq\sqrt{1+\frac{hx^2}{g}}\,\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{g}}\right)\log\left(1+\frac{e\ldots}{e\ldots}\right.}{\sqrt{h}\sqrt{g+hx^2}}$$

$$= \frac{b\sqrt{g}\,pq\sqrt{1+\frac{hx^2}{g}}\,\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{g}}\right)^2}{2\sqrt{h}\sqrt{g+hx^2}} - \frac{b\sqrt{g}\,pq\sqrt{1+\frac{hx^2}{g}}\,\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{g}}\right)\log\left(1+\frac{e\ldots}{e\ldots}\right.}{\sqrt{h}\sqrt{g+hx^2}}$$

$$= \frac{b\sqrt{g}\,pq\sqrt{1+\frac{hx^2}{g}}\,\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{g}}\right)^2}{2\sqrt{h}\sqrt{g+hx^2}} - \frac{b\sqrt{g}\,pq\sqrt{1+\frac{hx^2}{g}}\,\sinh^{-1}\left(\frac{\sqrt{h}\,x}{\sqrt{g}}\right)\log\left(1+\frac{e\ldots}{e\ldots}\right.}{\sqrt{h}\sqrt{g+hx^2}}$$

Mathematica [F] time = 3.79, size = 0, normalized size = 0.00

$$\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{\sqrt{g+hx^2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])/Sqrt[g + h*x^2],x]
[Out] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])/Sqrt[g + h*x^2], x]
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\sqrt{hx^2+g}\,b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+\sqrt{hx^2+g}\,a}{hx^2+g}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x^2+g)^(1/2),x, algorithm="fricas
")
[Out] integral((sqrt(h*x^2 + g)*b*log(((f*x + e)^p*d)^q*c) + sqrt(h*x^2 + g)*a)/(
h*x^2 + g), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a}{\sqrt{hx^2+g}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x^2+g)^(1/2),x, algorithm="giac")
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)/sqrt(h*x^2 + g), x)
```

maple [F] time = 0.36, size = 0, normalized size = 0.00

$$\int \frac{b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)+a}{\sqrt{h\,x^2+g}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(d*(f*x+e)^p)^q)+a)/(h*x^2+g)^(1/2),x)
[Out] int((b*ln(c*(d*(f*x+e)^p)^q)+a)/(h*x^2+g)^(1/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$b\int \frac{q\log(d)+\log\left(\left(\left(fx+e\right)^p\right)^q\right)+\log(c)}{\sqrt{hx^2+g}}\,dx+\frac{a\,\mathrm{arsinh}\left(\frac{hx}{\sqrt{gh}}\right)}{\sqrt{h}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x^2+g)^(1/2),x, algorithm="maxima
")
```

```
[Out] b*integrate((q*log(d) + log(((f*x + e)^p)^q) + log(c))/sqrt(h*x^2 + g), x)
+ a*arcsinh(h*x/sqrt(g*h))/sqrt(h)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a + b\ln\left(c\left(d\left(e + f\,x\right)^p\right)^q\right)}{\sqrt{h\,x^2 + g}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))/(g + h*x^2)^(1/2),x)
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))/(g + h*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a + b\log\left(c\left(d\left(e + fx\right)^p\right)^q\right)}{\sqrt{g + hx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))/(h*x**2+g)**(1/2),x)
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))/sqrt(g + h*x**2), x)
```

3.521 $\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{\sqrt{2-hx}\sqrt{2+hx}}\,dx$

Optimal. Leaf size=287

$$\frac{\sin^{-1}\left(\frac{hx}{2}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h}+\frac{ibpq\text{Li}_2\left(-\frac{2e^{i\sin^{-1}\left(\frac{hx}{2}\right)}f}{ieh-\sqrt{4f^2-e^2h^2}}\right)}{h}+\frac{ibpq\text{Li}_2\left(-\frac{2e^{i\sin^{-1}\left(\frac{hx}{2}\right)}f}{ieh+\sqrt{4f^2-e^2h^2}}\right)}{h}-\frac{bpq\sin^{-1}\left(\frac{hx}{2}\right)\text{l}\cdots}{\cdots}$$

```
[Out] 1/2*I*b*p*q*arcsin(1/2*h*x)^2/h+arcsin(1/2*h*x)*(a+b*ln(c*(d*(f*x+e)^p)^q))
/h-b*p*q*arcsin(1/2*h*x)*ln(1+2*(1/2*I*h*x+1/2*(-h^2*x^2+4)^(1/2))*f/(I*e*h
-(-e^2*h^2+4*f^2)^(1/2)))/h-b*p*q*arcsin(1/2*h*x)*ln(1+2*(1/2*I*h*x+1/2*(-h
^2*x^2+4)^(1/2))*f/(I*e*h+(-e^2*h^2+4*f^2)^(1/2)))/h+I*b*p*q*polylog(2,-2*(
1/2*I*h*x+1/2*(-h^2*x^2+4)^(1/2))*f/(I*e*h-(-e^2*h^2+4*f^2)^(1/2)))/h+I*b*p
*q*polylog(2,-2*(1/2*I*h*x+1/2*(-h^2*x^2+4)^(1/2))*f/(I*e*h+(-e^2*h^2+4*f^2
)^(1/2)))/h
```

Rubi [A] time = 1.06, antiderivative size = 287, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 8, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.210, Rules used = {216, 2405, 4741, 4521, 2190, 2279, 2391, 2445}

$$\frac{ibpq\text{PolyLog}\left(2,-\frac{2fe^{i\sin^{-1}\left(\frac{hx}{2}\right)}}{-\sqrt{4f^2-e^2h^2}+ieh}\right)}{h}+\frac{ibpq\text{PolyLog}\left(2,-\frac{2fe^{i\sin^{-1}\left(\frac{hx}{2}\right)}}{\sqrt{4f^2-e^2h^2}+ieh}\right)}{h}+\frac{\sin^{-1}\left(\frac{hx}{2}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h}\cdots$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])/(Sqrt[2 - h*x]*Sqrt[2 + h*x]),x]
```

```
[Out] ((I/2)*b*p*q*ArcSin[(h*x)/2]^2)/h - (b*p*q*ArcSin[(h*x)/2]*Log[1 + (2*E^(I*
ArcSin[(h*x)/2])*f)/(I*e*h - Sqrt[4*f^2 - e^2*h^2])])/h - (b*p*q*ArcSin[(h*
x)/2]*Log[1 + (2*E^(I*ArcSin[(h*x)/2])*f)/(I*e*h + Sqrt[4*f^2 - e^2*h^2])])
/h + (ArcSin[(h*x)/2]*(a + b*Log[c*(d*(e + f*x)^p)^q]))/h + (I*b*p*q*PolyLo
g[2, (-2*E^(I*ArcSin[(h*x)/2])*f)/(I*e*h - Sqrt[4*f^2 - e^2*h^2])])/h + (I*
b*p*q*PolyLog[2, (-2*E^(I*ArcSin[(h*x)/2])*f)/(I*e*h + Sqrt[4*f^2 - e^2*h^2
])])/h
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2405

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/(Sqrt[(f1_) + (g1_
.)*(x_)]*Sqrt[(f2_) + (g2_.)*(x_)]), x_Symbol] :> With[{u = IntHide[1/Sqrt[
f1*f2 + g1*g2*x^2], x]}, Simp[u*(a + b*Log[c*(d + e*x)^n]), x] - Dist[b*e*n
, Int[SimplifyIntegrand[u/(d + e*x), x], x], x]] /; FreeQ[{a, b, c, d, e, f
1, g1, f2, g2, n}, x] && EqQ[f2*g1 + f1*g2, 0] && GtQ[f1, 0] && GtQ[f2, 0]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rule 4521

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(I*a - Rt[-a^2 + b^2, 2]
 + b*E^(I*(c + d*x))), x], x] + Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(
I*a + Rt[-a^2 + b^2, 2] + b*E^(I*(c + d*x))), x], x]) /; FreeQ[{a, b, c, d,
 e, f}, x] && IGtQ[m, 0] && NegQ[a^2 - b^2]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[((a + b*x)^n*Cos[x])/(c*d + e*Sin[x]), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{\sqrt{2-hx}\sqrt{2+hx}}\,dx = \text{Subst}\left(\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{\sqrt{2-hx}\sqrt{2+hx}}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \frac{\sin^{-1}\left(\frac{hx}{2}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h} - \text{Subst}\left((bfpq)\int \frac{\sin^{-1}\left(\frac{hx}{2}\right)}{eh+fhx}\,dx,\right.$$

$$= \frac{\sin^{-1}\left(\frac{hx}{2}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h} - \text{Subst}\left((bfpq)\,\text{Subst}\left(\int \frac{x\,\text{co}}{\frac{eh^2}{2}+f}\right.\right.$$

$$= \frac{ibpq\sin^{-1}\left(\frac{hx}{2}\right)^2}{2h} + \frac{\sin^{-1}\left(\frac{hx}{2}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h} - \text{Subst}\left((ibfp\right.$$

$$= \frac{ibpq\sin^{-1}\left(\frac{hx}{2}\right)^2}{2h} - \frac{bpq\sin^{-1}\left(\frac{hx}{2}\right)\log\left(1+\frac{2e^{i\sin^{-1}\left(\frac{hx}{2}\right)}f}{ieh-\sqrt{4f^2-e^2h^2}}\right)}{h} - \frac{bpq\sin^{-1}\left(\frac{hx}{2}\right)}{}$$

$$= \frac{ibpq\sin^{-1}\left(\frac{hx}{2}\right)^2}{2h} - \frac{bpq\sin^{-1}\left(\frac{hx}{2}\right)\log\left(1+\frac{2e^{i\sin^{-1}\left(\frac{hx}{2}\right)}f}{ieh-\sqrt{4f^2-e^2h^2}}\right)}{h} - \frac{bpq\sin^{-1}\left(\frac{hx}{2}\right)}{}$$

$$= \frac{ibpq\sin^{-1}\left(\frac{hx}{2}\right)^2}{2h} - \frac{bpq\sin^{-1}\left(\frac{hx}{2}\right)\log\left(1+\frac{2e^{i\sin^{-1}\left(\frac{hx}{2}\right)}f}{ieh-\sqrt{4f^2-e^2h^2}}\right)}{h} - \frac{bpq\sin^{-1}\left(\frac{hx}{2}\right)}{}$$

Mathematica [A] time = 0.03, size = 316, normalized size = 1.10

$$\frac{a\sin^{-1}\left(\frac{hx}{2}\right)}{h} + \frac{b\sin^{-1}\left(\frac{hx}{2}\right)\log\left(c\left(d(e+fx)^p\right)^q\right)}{h} + \frac{ibpq\text{Li}_2\left(\frac{2ie^{i\sin^{-1}\left(\frac{hx}{2}\right)}f}{eh-i\sqrt{4f^2-e^2h^2}}\right)}{h} + \frac{ibpq\text{Li}_2\left(\frac{2ie^{i\sin^{-1}\left(\frac{hx}{2}\right)}f}{eh+i\sqrt{4f^2-e^2h^2}}\right)}{h} - \frac{bpq\sin^{-1}\left(\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])/(Sqrt[2 - h*x]*Sqrt[2 + h*x]),x]
```

```
[Out] (a*ArcSin[(h*x)/2])/h + ((I/2)*b*p*q*ArcSin[(h*x)/2]^2)/h - (b*p*q*ArcSin[(
h*x)/2]*Log[1 + (E^(I*ArcSin[(h*x)/2])*f*h)/((I/2)*e*h^2 - (h*Sqrt[4*f^2 -
e^2*h^2])/2)])/h - (b*p*q*ArcSin[(h*x)/2]*Log[1 + (E^(I*ArcSin[(h*x)/2])*f*
h)/((I/2)*e*h^2 + (h*Sqrt[4*f^2 - e^2*h^2])/2)])/h + (b*ArcSin[(h*x)/2]*Log
[c*(d*(e + f*x)^p)^q])/h + (I*b*p*q*PolyLog[2, ((2*I)*E^(I*ArcSin[(h*x)/2])
*f)/(e*h - I*Sqrt[4*f^2 - e^2*h^2])])/h + (I*b*p*q*PolyLog[2, ((2*I)*E^(I*A
rcSin[(h*x)/2])*f)/(e*h + I*Sqrt[4*f^2 - e^2*h^2])])/h
```

fricas [F] time = 0.47, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{hx+2}\sqrt{-hx+2}\,b\log\left(\left(\left(fx+e\right)^pd\right)^qc\right)+\sqrt{hx+2}\sqrt{-hx+2}\,a}{h^2x^2-4}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(-h*x+2)^(1/2)/(h*x+2)^(1/2),x, algo
rithm="fricas")
```

```
[Out] integral(-(sqrt(h*x + 2)*sqrt(-h*x + 2)*b*log(((f*x + e)^p*d)^q*c) + sqrt(h
*x + 2)*sqrt(-h*x + 2)*a)/(h^2*x^2 - 4), x)
```

giac **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b \log\left(\left(\left(fx+e\right)^{p} d\right)^{q} c\right) + a}{\sqrt{hx+2}\,\sqrt{-hx+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(-h*x+2)^(1/2)/(h*x+2)^(1/2),x, algo
rithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)/(sqrt(h*x + 2)*sqrt(-h*x + 2)),
x)
```

maple **[F]** time = 0.54, size = 0, normalized size = 0.00

$$\int \frac{b \ln\left(c \left(d \left(fx+e\right)^{p}\right)^{q}\right)+a}{\sqrt{-hx+2}\,\sqrt{hx+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(d*(f*x+e)^p)^q)+a)/(-h*x+2)^(1/2)/(h*x+2)^(1/2),x)
```

```
[Out] int((b*ln(c*(d*(f*x+e)^p)^q)+a)/(-h*x+2)^(1/2)/(h*x+2)^(1/2),x)
```

maxima **[F]** time = 0.00, size = 0, normalized size = 0.00

$$b \int \frac{q \log(d) + \log\left(\left(\left(fx+e\right)^{p}\right)^{q}\right) + \log(c)}{\sqrt{hx+2}\,\sqrt{-hx+2}}\,dx + \frac{a \arcsin\left(\frac{1}{2}\,hx\right)}{h}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(-h*x+2)^(1/2)/(h*x+2)^(1/2),x, algo
rithm="maxima")
```

```
[Out] b*integrate((q*log(d) + log(((f*x + e)^p)^q) + log(c))/(sqrt(h*x + 2)*sqrt(
-h*x + 2)), x) + a*arcsin(1/2*h*x)/h
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)}{\sqrt{2-h\,x}\,\sqrt{h\,x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))/((2 - h*x)^(1/2)*(h*x + 2)^(1/2)),x)
```

```
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))/((2 - h*x)^(1/2)*(h*x + 2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)}{\sqrt{-hx+2}\,\sqrt{hx+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))/(-h*x+2)**(1/2)/(h*x+2)**(1/2),x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))/(sqrt(-h*x + 2)*sqrt(h*x + 2)),
 x)
```

3.522 $\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{\sqrt{g-hx}\,\sqrt{g+hx}}\,dx$

Optimal. Leaf size=519

$$\frac{g\sqrt{1-\frac{h^2x^2}{g^2}}\,\sin^{-1}\left(\frac{hx}{g}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h\sqrt{g-hx}\,\sqrt{g+hx}}+\frac{ibgpq\sqrt{1-\frac{h^2x^2}{g^2}}\,\text{Li}_2\left(-\frac{e^{i\sin^{-1}\left(\frac{hx}{g}\right)}fg}{ieh-\sqrt{f^2g^2-e^2h^2}}\right)}{h\sqrt{g-hx}\,\sqrt{g+hx}}+\frac{ibgpq\sqrt{1-\frac{h^2x^2}{g^2}}\,\text{Li}_2\left(\ldots\right.}{h\sqrt{g-hx}\,\sqrt{\ldots}}$$

```
[Out] 1/2*I*b*g*p*q*arcsin(h*x/g)^2*(1-h^2*x^2/g^2)^(1/2)/h/(-h*x+g)^(1/2)/(h*x+g
)^(1/2)+g*arcsin(h*x/g)*(a+b*ln(c*(d*(f*x+e)^p)^q))*(1-h^2*x^2/g^2)^(1/2)/h
/(-h*x+g)^(1/2)/(h*x+g)^(1/2)-b*g*p*q*arcsin(h*x/g)*ln(1+(I*h*x/g+(1-h^2*x^
2/g^2)^(1/2))*f*g/(I*e*h-(-e^2*h^2+f^2*g^2)^(1/2)))*(1-h^2*x^2/g^2)^(1/2)/h
/(-h*x+g)^(1/2)/(h*x+g)^(1/2)-b*g*p*q*arcsin(h*x/g)*ln(1+(I*h*x/g+(1-h^2*x^
2/g^2)^(1/2))*f*g/(I*e*h+(-e^2*h^2+f^2*g^2)^(1/2)))*(1-h^2*x^2/g^2)^(1/2)/h
/(-h*x+g)^(1/2)/(h*x+g)^(1/2)+I*b*g*p*q*polylog(2,-(I*h*x/g+(1-h^2*x^2/g^2)
^(1/2))*f*g/(I*e*h-(-e^2*h^2+f^2*g^2)^(1/2)))*(1-h^2*x^2/g^2)^(1/2)/h/(-h*x
+g)^(1/2)/(h*x+g)^(1/2)+I*b*g*p*q*polylog(2,-(I*h*x/g+(1-h^2*x^2/g^2)^(1/2)
)*f*g/(I*e*h+(-e^2*h^2+f^2*g^2)^(1/2)))*(1-h^2*x^2/g^2)^(1/2)/h/(-h*x+g)^(1
/2)/(h*x+g)^(1/2)
```

Rubi [A] time = 1.41, antiderivative size = 519, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 10, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.263, Rules used = {2407, 216, 2404, 12, 4741, 4521, 2190, 2279, 2391, 2445}

$$\frac{ibgpq\sqrt{1-\frac{h^2x^2}{g^2}}\,\text{PolyLog}\left(2,-\frac{fge^{i\sin^{-1}\left(\frac{hx}{g}\right)}}{-\sqrt{f^2g^2-e^2h^2}+ieh}\right)}{h\sqrt{g-hx}\,\sqrt{g+hx}}+\frac{ibgpq\sqrt{1-\frac{h^2x^2}{g^2}}\,\text{PolyLog}\left(2,-\frac{fge^{i\sin^{-1}\left(\frac{hx}{g}\right)}}{\sqrt{f^2g^2-e^2h^2}+ieh}\right)}{h\sqrt{g-hx}\,\sqrt{g+hx}}+\frac{g\sqrt{1-\frac{h^2x^2}{g^2}}\,\sin^{-1}\ldots}{h\ldots}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])/(Sqrt[g - h*x]*Sqrt[g + h*x]),x]
```

```
[Out] ((I/2)*b*g*p*q*Sqrt[1 - (h^2*x^2)/g^2]*ArcSin[(h*x)/g]^2)/(h*Sqrt[g - h*x]*
Sqrt[g + h*x]) - (b*g*p*q*Sqrt[1 - (h^2*x^2)/g^2]*ArcSin[(h*x)/g]*Log[1 + (
E^(I*ArcSin[(h*x)/g])*f*g)/(I*e*h - Sqrt[f^2*g^2 - e^2*h^2])])/(h*Sqrt[g -
h*x]*Sqrt[g + h*x]) - (b*g*p*q*Sqrt[1 - (h^2*x^2)/g^2]*ArcSin[(h*x)/g]*Log[
1 + (E^(I*ArcSin[(h*x)/g])*f*g)/(I*e*h + Sqrt[f^2*g^2 - e^2*h^2])])/(h*Sqrt
[g - h*x]*Sqrt[g + h*x]) + (g*Sqrt[1 - (h^2*x^2)/g^2]*ArcSin[(h*x)/g]*(a +
b*Log[c*(d*(e + f*x)^p)^q]))/(h*Sqrt[g - h*x]*Sqrt[g + h*x]) + (I*b*g*p*q*S
qrt[1 - (h^2*x^2)/g^2]*PolyLog[2, -((E^(I*ArcSin[(h*x)/g])*f*g)/(I*e*h - Sq
rt[f^2*g^2 - e^2*h^2]))])/(h*Sqrt[g - h*x]*Sqrt[g + h*x]) + (I*b*g*p*q*Sqrt
[1 - (h^2*x^2)/g^2]*PolyLog[2, -((E^(I*ArcSin[(h*x)/g])*f*g)/(I*e*h + Sqrt[
f^2*g^2 - e^2*h^2]))])/(h*Sqrt[g - h*x]*Sqrt[g + h*x])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2404

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/Sqrt[(f_) + (g_.)*
(x_)^2], x_Symbol] :> With[{u = IntHide[1/Sqrt[f + g*x^2], x]}, Simp[u*(a +
 b*Log[c*(d + e*x)^n]), x] - Dist[b*e*n, Int[SimplifyIntegrand[u/(d + e*x),
 x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && GtQ[f, 0]
```

Rule 2407

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/(Sqrt[(f1_) + (g1_
.)*(x_)]*Sqrt[(f2_) + (g2_.)*(x_)]), x_Symbol] :> Dist[Sqrt[1 + (g1*g2*x^2)
/(f1*f2)]/(Sqrt[f1 + g1*x]*Sqrt[f2 + g2*x]), Int[(a + b*Log[c*(d + e*x)^n])
/Sqrt[1 + (g1*g2*x^2)/(f1*f2)], x], x] /; FreeQ[{a, b, c, d, e, f1, g1, f2,
 g2, n}, x] && EqQ[f2*g1 + f1*g2, 0]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rule 4521

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(I*a - Rt[-a^2 + b^2, 2]
 + b*E^(I*(c + d*x))), x], x] + Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(
I*a + Rt[-a^2 + b^2, 2] + b*E^(I*(c + d*x))), x], x]) /; FreeQ[{a, b, c, d,
 e, f}, x] && IGtQ[m, 0] && NegQ[a^2 - b^2]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[((a + b*x)^n*Cos[x])/(c*d + e*Sin[x]), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{\sqrt{g-hx}\sqrt{g+hx}}\,dx = \text{Subst}\left(\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{\sqrt{g-hx}\sqrt{g+hx}}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \text{Subst}\left(\frac{\sqrt{1-\frac{h^2x^2}{g^2}}\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{\sqrt{1-\frac{h^2x^2}{g^2}}}\,dx}{\sqrt{g-hx}\sqrt{g+hx}}, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \frac{g\sqrt{1-\frac{h^2x^2}{g^2}}\sin^{-1}\left(\frac{hx}{g}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h\sqrt{g-hx}\sqrt{g+hx}} - \text{Subst}\left(\frac{\left(bfpq\sqrt{1-\frac{h^2x}{g^2}}\right.}{\sqrt{g-hx}}\right.$$

$$= \frac{g\sqrt{1-\frac{h^2x^2}{g^2}}\sin^{-1}\left(\frac{hx}{g}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h\sqrt{g-hx}\sqrt{g+hx}} - \text{Subst}\left(\frac{\left(bfgpq\sqrt{1-\frac{h^2}{g}}\right.}{\sqrt{g-hx}}\right.$$

$$= \frac{g\sqrt{1-\frac{h^2x^2}{g^2}}\sin^{-1}\left(\frac{hx}{g}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h\sqrt{g-hx}\sqrt{g+hx}} - \text{Subst}\left(\left(bfgpq\sqrt{1-\frac{h^2}{g}}\right.\right.$$

$$= \frac{ibgpq\sqrt{1-\frac{h^2x^2}{g^2}}\sin^{-1}\left(\frac{hx}{g}\right)^2}{2h\sqrt{g-hx}\sqrt{g+hx}} + \frac{g\sqrt{1-\frac{h^2x^2}{g^2}}\sin^{-1}\left(\frac{hx}{g}\right)\left(a+b\log\left(c\left(d(e+fx)\right.\right.\right.}{h\sqrt{g-hx}\sqrt{g+hx}}$$

$$= \frac{ibgpq\sqrt{1-\frac{h^2x^2}{g^2}}\sin^{-1}\left(\frac{hx}{g}\right)^2}{2h\sqrt{g-hx}\sqrt{g+hx}} - \frac{bgpq\sqrt{1-\frac{h^2x^2}{g^2}}\sin^{-1}\left(\frac{hx}{g}\right)\log\left(1+\frac{e^{i\sin^{-1}\left(\frac{hx}{g}\right)}f}{ieh-\sqrt{f^2g^2-e^2}}\right.}{h\sqrt{g-hx}\sqrt{g+hx}}$$

$$= \frac{ibgpq\sqrt{1-\frac{h^2x^2}{g^2}}\sin^{-1}\left(\frac{hx}{g}\right)^2}{2h\sqrt{g-hx}\sqrt{g+hx}} - \frac{bgpq\sqrt{1-\frac{h^2x^2}{g^2}}\sin^{-1}\left(\frac{hx}{g}\right)\log\left(1+\frac{e^{i\sin^{-1}\left(\frac{hx}{g}\right)}f}{ieh-\sqrt{f^2g^2-e^2}}\right.}{h\sqrt{g-hx}\sqrt{g+hx}}$$

$$= \frac{ibgpq\sqrt{1-\frac{h^2x^2}{g^2}}\sin^{-1}\left(\frac{hx}{g}\right)^2}{2h\sqrt{g-hx}\sqrt{g+hx}} - \frac{bgpq\sqrt{1-\frac{h^2x^2}{g^2}}\sin^{-1}\left(\frac{hx}{g}\right)\log\left(1+\frac{e^{i\sin^{-1}\left(\frac{hx}{g}\right)}f}{ieh-\sqrt{f^2g^2-e^2}}\right.}{h\sqrt{g-hx}\sqrt{g+hx}}$$

Mathematica [B] time = 4.63, size = 1083, normalized size = 2.09

$$\frac{\tan^{-1}\left(\frac{hx}{\sqrt{g-hx}\sqrt{g+hx}}\right)\left(a-bpq\log(e+fx)+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h}-\frac{ibpq\sqrt{g-hx}\sqrt{\frac{g+hx}{g-hx}}\left(\log^2\left(i-\sqrt{\frac{g+hx}{g-hx}}\right)\cdot\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])/(Sqrt[g - h*x]*Sqrt[g + h*x]),x]
```

```
[Out] (ArcTan[(h*x)/(Sqrt[g - h*x]*Sqrt[g + h*x])]*(a - b*p*q*Log[e + f*x] + b*Lo
g[c*(d*(e + f*x)^p)^q]))/h - ((I/2)*b*p*q*Sqrt[g - h*x]*Sqrt[(g + h*x)/(g -
 h*x)]*(2*Log[e + f*x]*Log[I - Sqrt[(g + h*x)/(g - h*x)]] + Log[I - Sqrt[(g
 + h*x)/(g - h*x)]]^2 + 2*Log[I - Sqrt[(g + h*x)/(g - h*x)]]*Log[(1 - I*Sqr
t[(g + h*x)/(g - h*x)])/2] - 2*Log[e + f*x]*Log[I + Sqrt[(g + h*x)/(g - h*x
)]] - 2*Log[(1 + I*Sqrt[(g + h*x)/(g - h*x)])/2]*Log[I + Sqrt[(g + h*x)/(g
- h*x)]] - Log[I + Sqrt[(g + h*x)/(g - h*x)]]^2 - 2*Log[I - Sqrt[(g + h*x)/
(g - h*x)]]*Log[(Sqrt[f*g - e*h] - Sqrt[f*g + e*h]*Sqrt[(g + h*x)/(g - h*x)
])/(Sqrt[f*g - e*h] - I*Sqrt[f*g + e*h])] + 2*Log[I + Sqrt[(g + h*x)/(g - h
*x)]]*Log[(Sqrt[f*g - e*h] - Sqrt[f*g + e*h]*Sqrt[(g + h*x)/(g - h*x)])/(Sq
rt[f*g - e*h] + I*Sqrt[f*g + e*h])] + 2*Log[I + Sqrt[(g + h*x)/(g - h*x)]]*
Log[(Sqrt[f*g - e*h] + Sqrt[f*g + e*h]*Sqrt[(g + h*x)/(g - h*x)])/(Sqrt[f*g
 - e*h] - I*Sqrt[f*g + e*h])] - 2*Log[I - Sqrt[(g + h*x)/(g - h*x)]]*Log[(S
qrt[f*g - e*h] + Sqrt[f*g + e*h]*Sqrt[(g + h*x)/(g - h*x)])/(Sqrt[f*g - e*h
] + I*Sqrt[f*g + e*h])] - 2*PolyLog[2, 1/2 - (I/2)*Sqrt[(g + h*x)/(g - h*x)
]] + 2*PolyLog[2, 1/2 + (I/2)*Sqrt[(g + h*x)/(g - h*x)]] + 2*PolyLog[2, (Sq
rt[f*g + e*h]*(1 - I*Sqrt[(g + h*x)/(g - h*x)]))/(I*Sqrt[f*g - e*h] + Sqrt[
f*g + e*h])] - 2*PolyLog[2, (Sqrt[f*g + e*h]*(1 + I*Sqrt[(g + h*x)/(g - h*x
)]))/((-I)*Sqrt[f*g - e*h] + Sqrt[f*g + e*h])] - 2*PolyLog[2, (Sqrt[f*g + e
*h]*(1 + I*Sqrt[(g + h*x)/(g - h*x)]))/(I*Sqrt[f*g - e*h] + Sqrt[f*g + e*h]
)] + 2*PolyLog[2, (Sqrt[f*g + e*h]*(I + Sqrt[(g + h*x)/(g - h*x)]))/(Sqrt[f
*g - e*h] + I*Sqrt[f*g + e*h])]))/(h*Sqrt[g + h*x])
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{hx+g}\sqrt{-hx+g}\,b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+\sqrt{hx+g}\sqrt{-hx+g}\,a}{h^2x^2-g^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(-h*x+g)^(1/2)/(h*x+g)^(1/2),x, algo
rithm="fricas")
```

```
[Out] integral(-(sqrt(h*x + g)*sqrt(-h*x + g)*b*log(((f*x + e)^p*d)^q*c) + sqrt(h
*x + g)*sqrt(-h*x + g)*a)/(h^2*x^2 - g^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a}{\sqrt{hx+g}\sqrt{-hx+g}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(-h*x+g)^(1/2)/(h*x+g)^(1/2),x, algo
rithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)/(sqrt(h*x + g)*sqrt(-h*x + g)),
x)
```

maple [F] time = 0.54, size = 0, normalized size = 0.00

$$\int \frac{b \ln \left(c \left(d \left(fx+e\right)^{p}\right)^{q}\right)+a}{\sqrt{-hx+g}\,\sqrt{hx+g}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(d*(f*x+e)^p)^q)+a)/(-h*x+g)^(1/2)/(h*x+g)^(1/2),x)
[Out] int((b*ln(c*(d*(f*x+e)^p)^q)+a)/(-h*x+g)^(1/2)/(h*x+g)^(1/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$b \int \frac{q \log(d) + \log\left(\left(\left(fx+e\right)^{p}\right)^{q}\right) + \log(c)}{\sqrt{hx+g}\,\sqrt{-hx+g}}\,dx + \frac{a \arcsin\left(\frac{hx}{g}\right)}{h}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(-h*x+g)^(1/2)/(h*x+g)^(1/2),x, algo
rithm="maxima")
[Out] b*integrate((q*log(d) + log(((f*x + e)^p)^q) + log(c))/(sqrt(h*x + g)*sqrt(
-h*x + g)), x) + a*arcsin(h*x/g)/h
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,\ln\left(c\,\left(d\,\left(e+f\,x\right)^{p}\right)^{q}\right)}{\sqrt{g+h\,x}\,\sqrt{g-h\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))/((g + h*x)^(1/2)*(g - h*x)^(1/2)),x)
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))/((g + h*x)^(1/2)*(g - h*x)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a + b \log\left(c \left(d \left(e + fx\right)^{p}\right)^{q}\right)}{\sqrt{g - hx}\,\sqrt{g + hx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))/(-h*x+g)**(1/2)/(h*x+g)**(1/2),x)
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))/(sqrt(g - h*x)*sqrt(g + h*x)),
x)
```

3.523 $\int \frac{(i+jx)^3\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{g+hx}\,dx$

Optimal. Leaf size=427

$$\frac{(hi-gj)^3\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h^4}+\frac{(i+jx)^2(hi-gj)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{2h^2}+\frac{(i+jx)^3\,(}{}$$

```
[Out] a*j*(-g*j+h*i)^2*x/h^3-1/3*b*j*(-e*j+f*i)^2*p*q*x/f^2/h-1/2*b*j*(-e*j+f*i)*
(-g*j+h*i)*p*q*x/f/h^2-b*j*(-g*j+h*i)^2*p*q*x/h^3-1/6*b*(-e*j+f*i)*p*q*(j*x
+i)^2/f/h-1/4*b*(-g*j+h*i)*p*q*(j*x+i)^2/h^2-1/9*b*p*q*(j*x+i)^3/h-1/3*b*(-
e*j+f*i)^3*p*q*ln(f*x+e)/f^3/h-1/2*b*(-e*j+f*i)^2*(-g*j+h*i)*p*q*ln(f*x+e)/
f^2/h^2+b*j*(-g*j+h*i)^2*(f*x+e)*ln(c*(d*(f*x+e)^p)^q)/f/h^3+1/2*(-g*j+h*i)
*(j*x+i)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))/h^2+1/3*(j*x+i)^3*(a+b*ln(c*(d*(f*x+
e)^p)^q))/h+(-g*j+h*i)^3*(a+b*ln(c*(d*(f*x+e)^p)^q))*ln(f*(h*x+g)/(-e*h+f*g
))/h^4+b*(-g*j+h*i)^3*p*q*polylog(2,-h*(f*x+e)/(-e*h+f*g))/h^4
```

Rubi [A] time = 0.82, antiderivative size = 427, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 9, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273, Rules used = {2418, 2389, 2295, 2394, 2393, 2391, 2395, 43, 2445}

$$\frac{bpq(hi-gj)^3\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)}{h^4}+\frac{(i+jx)^2(hi-gj)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{2h^2}+\frac{(hi-gj)^3\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a\right.}{h}$$

Antiderivative was successfully verified.

```
[In] Int[((i + j*x)^3*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(g + h*x),x]
```

```
[Out] (a*j*(h*i - g*j)^2*x)/h^3 - (b*j*(f*i - e*j)^2*p*q*x)/(3*f^2*h) - (b*j*(f*i
 - e*j)*(h*i - g*j)*p*q*x)/(2*f*h^2) - (b*j*(h*i - g*j)^2*p*q*x)/h^3 - (b*(
f*i - e*j)*p*q*(i + j*x)^2)/(6*f*h) - (b*(h*i - g*j)*p*q*(i + j*x)^2)/(4*h^
2) - (b*p*q*(i + j*x)^3)/(9*h) - (b*(f*i - e*j)^3*p*q*Log[e + f*x])/(3*f^3*
h) - (b*(f*i - e*j)^2*(h*i - g*j)*p*q*Log[e + f*x])/(2*f^2*h^2) + (b*j*(h*i
 - g*j)^2*(e + f*x)*Log[c*(d*(e + f*x)^p)^q])/(f*h^3) + ((h*i - g*j)*(i + j
*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(2*h^2) + ((i + j*x)^3*(a + b*Log[c
*(d*(e + f*x)^p)^q]))/(3*h) + ((h*i - g*j)^3*(a + b*Log[c*(d*(e + f*x)^p)^q
])*Log[(f*(g + h*x))/(f*g - e*h)])/h^4 + (b*(h*i - g*j)^3*p*q*PolyLog[2, -(
(h*(e + f*x))/(f*g - e*h))])/h^4
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{(523+jx)^3\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{g+hx}\,dx = \mathrm{Subst}\left(\int \frac{(523+jx)^3\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)}{g+hx}\,dx, cd^q(e+\right.$$

$$= \mathrm{Subst}\left(\int\left(\frac{j(523h-gj)^2\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)}{h^3}+\frac{(523h\right.\right.$$

$$= \mathrm{Subst}\left(\frac{j\int(523+jx)^2\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)dx}{h}, cd^q(e+\right.$$

$$= \frac{aj(523h-gj)^2x}{h^3}+\frac{(523h-gj)(523+jx)^2\left(a+b\log\left(c\left(d(e+\right.\right.\right.}{2h^2}$$

$$= \frac{aj(523h-gj)^2x}{h^3}+\frac{(523h-gj)(523+jx)^2\left(a+b\log\left(c\left(d(e+\right.\right.\right.}{2h^2}$$

$$= \frac{aj(523h-gj)^2x}{h^3}-\frac{bj(523f-ej)^2pqx}{3f^2h}-\frac{bj(523f-ej)(523h-}{2fh^2}$$

Mathematica [A] time = 0.71, size = 386, normalized size = 0.90

$$\frac{f\left(hjx\left(6af^2\left(6g^2j^2-3ghj(6i+jx)+h^2\left(18i^2+9ijx+2j^2x^2\right)\right)-bpq\left(12e^2h^2j^2-6efhj(-3gj+9hi+hjx)+f^2\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((i + j*x)^3*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(g + h*x),x]
```

```
[Out] (6*b*e^2*h^2*j^2*(-9*f*h*i + 3*f*g*j + 2*e*h*j)*p*q*Log[e + f*x] + f*(h*j*x
*(6*a*f^2*(6*g^2*j^2 - 3*g*h*j*(6*i + j*x) + h^2*(18*i^2 + 9*i*j*x + 2*j^2*
x^2)) - b*p*q*(12*e^2*h^2*j^2 - 6*e*f*h*j*(9*h*i - 3*g*j + h*j*x) + f^2*(36
*g^2*j^2 - 9*g*h*j*(12*i + j*x) + h^2*(108*i^2 + 27*i*j*x + 4*j^2*x^2)))) +
 36*a*f^2*(h*i - g*j)^3*Log[(f*(g + h*x))/(f*g - e*h)] + 6*b*f*Log[c*(d*(e
+ f*x)^p)^q]*(h*j*(6*e*(3*h^2*i^2 - 3*g*h*i*j + g^2*j^2) + f*x*(6*g^2*j^2 -
 3*g*h*j*(6*i + j*x) + h^2*(18*i^2 + 9*i*j*x + 2*j^2*x^2))) + 6*f*(h*i - g*
j)^3*Log[(f*(g + h*x))/(f*g - e*h)])) + 36*b*f^3*(h*i - g*j)^3*p*q*PolyLog[
2, (h*(e + f*x))/(-(f*g) + e*h)])/(36*f^3*h^4)
```

fricas [F] time = 0.47, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{aj^3x^3+3\,aij^2x^2+3\,ai^2jx+ai^3+\left(bj^3x^3+3\,bij^2x^2+3\,bi^2jx+bi^3\right)\log\left(\left(\left(fx+e\right)^pd\right)^qc\right)}{hx+g}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)^3*(a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g),x, algorithm="fric
as")
```

```
[Out] integral((a*j^3*x^3 + 3*a*i*j^2*x^2 + 3*a*i^2*j*x + a*i^3 + (b*j^3*x^3 + 3*
b*i*j^2*x^2 + 3*b*i^2*j*x + b*i^3)*log(((f*x + e)^p*d)^q*c))/(h*x + g), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(jx+i)^3 \left(b \log \left(\left(\left(fx+e\right)^p d\right)^q c\right) + a\right)}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)^3*(a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g),x, algorithm="giac
")
```

```
[Out] integrate((j*x + i)^3*(b*log(((f*x + e)^p*d)^q*c) + a)/(h*x + g), x)
```

maple [F] time = 0.51, size = 0, normalized size = 0.00

$$\int \frac{(jx+i)^3 \left(b \ln \left(c \left(d \left(fx+e\right)^p\right)^q\right) + a\right)}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((j*x+i)^3*(b*ln(c*(d*(f*x+e)^p)^q)+a)/(h*x+g),x)
```

```
[Out] int((j*x+i)^3*(b*ln(c*(d*(f*x+e)^p)^q)+a)/(h*x+g),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$3\,ai^2 j\left(\frac{x}{h} - \frac{g\log\left(hx+g\right)}{h^2}\right) - \frac{1}{6}\,aj^3\left(\frac{6\,g^3\log\left(hx+g\right)}{h^4} - \frac{2\,h^2x^3 - 3\,ghx^2 + 6\,g^2x}{h^3}\right) + \frac{3}{2}\,aij^2\left(\frac{2\,g^2\log\left(hx+g\right)}{h^3} + \frac{hx^2 -}{h^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)^3*(a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g),x, algorithm="maxi
ma")
```

```
[Out] 3*a*i^2*j*(x/h - g*log(h*x + g)/h^2) - 1/6*a*j^3*(6*g^3*log(h*x + g)/h^4 -
(2*h^2*x^3 - 3*g*h*x^2 + 6*g^2*x)/h^3) + 3/2*a*i*j^2*(2*g^2*log(h*x + g)/h^
3 + (h*x^2 - 2*g*x)/h^2) + a*i^3*log(h*x + g)/h + integrate(((j^3*q*log(d)
+ j^3*log(c))*b*x^3 + 3*(i*j^2*q*log(d) + i*j^2*log(c))*b*x^2 + 3*(i^2*j*q*
log(d) + i^2*j*log(c))*b*x + (i^3*q*log(d) + i^3*log(c))*b + (b*j^3*x^3 + 3
*b*i*j^2*x^2 + 3*b*i^2*j*x + b*i^3)*log(((f*x + e)^p)^q))/(h*x + g), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(i+j\,x)^3\,\left(a+b\,\ln\left(c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right)\right)}{g+h\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((i + j*x)^3*(a + b*log(c*(d*(e + f*x)^p)^q)))/(g + h*x),x)
```

```
[Out] int(((i + j*x)^3*(a + b*log(c*(d*(e + f*x)^p)^q)))/(g + h*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a + b\log\left(c\left(d\left(e+fx\right)^p\right)^q\right)\right)\left(i+jx\right)^3}{g+hx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)**3*(a+b*ln(c*(d*(f*x+e)**p)**q))/(h*x+g),x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))*(i + j*x)**3/(g + h*x), x)
```

3.524 $\int \frac{(i+jx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{g+hx}\,dx$

Optimal. Leaf size=258

$$\frac{(hi-gj)^2\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h^3}+\frac{(i+jx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{2h}+\frac{ajx(hi-gj)}{h^2}+\frac{bj(e}{}$$

```
[Out] a*j*(-g*j+h*i)*x/h^2-1/2*b*j*(-e*j+f*i)*p*q*x/f/h-b*j*(-g*j+h*i)*p*q*x/h^2-
1/4*b*p*q*(j*x+i)^2/h-1/2*b*(-e*j+f*i)^2*p*q*ln(f*x+e)/f^2/h+b*j*(-g*j+h*i)
*(f*x+e)*ln(c*(d*(f*x+e)^p)^q)/f/h^2+1/2*(j*x+i)^2*(a+b*ln(c*(d*(f*x+e)^p)^
q))/h+(-g*j+h*i)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))*ln(f*(h*x+g)/(-e*h+f*g))/h^3
+b*(-g*j+h*i)^2*p*q*polylog(2,-h*(f*x+e)/(-e*h+f*g))/h^3
```

Rubi [A] time = 0.54, antiderivative size = 258, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 9, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273, Rules used = {2418, 2389, 2295, 2394, 2393, 2391, 2395, 43, 2445}

$$\frac{bpq(hi-gj)^2\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)}{h^3}+\frac{(hi-gj)^2\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h^3}+\frac{(i+jx)^2\left(a+b\log\left(\right.\right.}{2h}$$

Antiderivative was successfully verified.

```
[In] Int[((i + j*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(g + h*x),x]
```

```
[Out] (a*j*(h*i - g*j)*x)/h^2 - (b*j*(f*i - e*j)*p*q*x)/(2*f*h) - (b*j*(h*i - g*j
)*p*q*x)/h^2 - (b*p*q*(i + j*x)^2)/(4*h) - (b*(f*i - e*j)^2*p*q*Log[e + f*x
])/(2*f^2*h) + (b*j*(h*i - g*j)*(e + f*x)*Log[c*(d*(e + f*x)^p)^q])/(f*h^2)
 + ((i + j*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(2*h) + ((h*i - g*j)^2*(a
 + b*Log[c*(d*(e + f*x)^p)^q])*Log[(f*(g + h*x))/(f*g - e*h)])/h^3 + (b*(h*
i - g*j)^2*p*q*PolyLog[2, -((h*(e + f*x))/(f*g - e*h))])/h^3
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
```

```
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{(524+jx)^2 \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{g+hx}\,dx = \text{Subst}\left(\int \frac{(524+jx)^2\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)}{g+hx}\,dx, cd^q(e+\right.$$

$$= \text{Subst}\left(\int \left(\frac{j(524h-gj)\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)}{h^2} + \frac{(524h\right.\right.$$

$$= \text{Subst}\left(\frac{j\int(524+jx)\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)dx}{h}, cd^q(e+\right.$$

$$= \frac{aj(524h-gj)x}{h^2} + \frac{(524+jx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{2h} +$$

$$= \frac{aj(524h-gj)x}{h^2} + \frac{(524+jx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{2h} +$$

$$= \frac{aj(524h-gj)x}{h^2} - \frac{bj(524f-ej)pqx}{2fh} - \frac{bj(524h-gj)pqx}{h^2} - \frac{bpq}{}$$

Mathematica [A] time = 0.31, size = 231, normalized size = 0.90

$$\frac{f\left(hjx(2af(-2gj+4hi+hjx)+bpq(2ehj-f(-4gj+8hi+hjx)))+4af(hi-gj)^2\log\left(\frac{f(g+hx)}{fg-eh}\right)+2b\log\left(c\left(d(e\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((i + j*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(g + h*x),x]
```

```
[Out] (-2*b*e^2*h^2*j^2*p*q*Log[e + f*x] + f*(h*j*x*(2*a*f*(4*h*i - 2*g*j + h*j*x
) + b*p*q*(2*e*h*j - f*(8*h*i - 4*g*j + h*j*x))) + 4*a*f*(h*i - g*j)^2*Log[
(f*(g + h*x))/(f*g - e*h)] + 2*b*Log[c*(d*(e + f*x)^p)^q]*(h*j*(e*(4*h*i -
2*g*j) + f*x*(4*h*i - 2*g*j + h*j*x)) + 2*f*(h*i - g*j)^2*Log[(f*(g + h*x))
/(f*g - e*h)])) + 4*b*f^2*(h*i - g*j)^2*p*q*PolyLog[2, (h*(e + f*x))/(-(f*g
) + e*h)])/(4*f^2*h^3)
```

fricas [F] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{aj^2x^2 + 2\,aijx + ai^2 + \left(bj^2x^2 + 2\,bijx + bi^2\right)\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)}{hx+g}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)^2*(a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g),x, algorithm="fric
as")
```

```
[Out] integral((a*j^2*x^2 + 2*a*i*j*x + a*i^2 + (b*j^2*x^2 + 2*b*i*j*x + b*i^2)*l
og(((f*x + e)^p*d)^q*c))/(h*x + g), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(jx+i)^2\left(b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a\right)}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)^2*(a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g),x, algorithm="giac
")
```

```
[Out] integrate((j*x + i)^2*(b*log(((f*x + e)^p*d)^q*c) + a)/(h*x + g), x)
```

maple [F] time = 0.52, size = 0, normalized size = 0.00

$$\int \frac{(jx+i)^2\left(b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)+a\right)}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((j*x+i)^2*(b*ln(c*(d*(f*x+e)^p)^q)+a)/(h*x+g),x)
```

```
[Out] int((j*x+i)^2*(b*ln(c*(d*(f*x+e)^p)^q)+a)/(h*x+g),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$2\,aij\left(\frac{x}{h}-\frac{g\log\left(hx+g\right)}{h^2}\right)+\frac{1}{2}\,aj^2\left(\frac{2\,g^2\log\left(hx+g\right)}{h^3}+\frac{hx^2-2\,gx}{h^2}\right)+\frac{ai^2\log\left(hx+g\right)}{h}+\int \frac{\left(j^2q\log(d)+j^2\log(c)\right)bx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)^2*(a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g),x, algorithm="maxi
ma")
```

```
[Out] 2*a*i*j*(x/h - g*log(h*x + g)/h^2) + 1/2*a*j^2*(2*g^2*log(h*x + g)/h^3 + (h
*x^2 - 2*g*x)/h^2) + a*i^2*log(h*x + g)/h + integrate((((j^2*q*log(d) + j^2*
log(c))*b*x^2 + 2*(i*j*q*log(d) + i*j*log(c))*b*x + (i^2*q*log(d) + i^2*log
(c))*b + (b*j^2*x^2 + 2*b*i*j*x + b*i^2)*log(((f*x + e)^p)^q))/(h*x + g), x
)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(i+j\,x\right)}^2\,\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}{g+h\,x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((i + j*x)^2*(a + b*log(c*(d*(e + f*x)^p)^q)))/(g + h*x),x)
```

```
[Out] int(((i + j*x)^2*(a + b*log(c*(d*(e + f*x)^p)^q)))/(g + h*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\log\left(c\left(d\left(e+fx\right)^p\right)^q\right)\right)\left(i+jx\right)^2}{g+hx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)**2*(a+b*ln(c*(d*(f*x+e)**p)**q))/(h*x+g),x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))*(i + j*x)**2/(g + h*x), x)
```

3.525 $\int \frac{(i+jx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{g+hx}\,dx$

Optimal. Leaf size=129

$$\frac{(hi-gj)\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h^2}+\frac{ajx}{h}+\frac{bj(e+fx)\log\left(c\left(d(e+fx)^p\right)^q\right)}{fh}+\frac{bpq(hi-gj)\mathrm{Li}_2\left(-\frac{h}{}\right.}{h^2}$$

```
[Out] a*j*x/h-b*j*p*q*x/h+b*j*(f*x+e)*ln(c*(d*(f*x+e)^p)^q)/f/h+(-g*j+h*i)*(a+b*l
n(c*(d*(f*x+e)^p)^q))*ln(f*(h*x+g)/(-e*h+f*g))/h^2+b*(-g*j+h*i)*p*q*polylog
(2,-h*(f*x+e)/(-e*h+f*g))/h^2
```

Rubi [A] time = 0.33, antiderivative size = 129, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.226, Rules used = {2418, 2389, 2295, 2394, 2393, 2391, 2445}

$$\frac{bpq(hi-gj)\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)}{h^2}+\frac{(hi-gj)\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h^2}+\frac{ajx}{h}+\frac{bj(e+fx)\log\left(c\right.}{fh}$$

Antiderivative was successfully verified.

```
[In] Int[((i + j*x)*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(g + h*x),x]
```

```
[Out] (a*j*x)/h - (b*j*p*q*x)/h + (b*j*(e + f*x)*Log[c*(d*(e + f*x)^p)^q])/(f*h)
+ ((h*i - g*j)*(a + b*Log[c*(d*(e + f*x)^p)^q])*Log[(f*(g + h*x))/(f*g - e*
h)])/h^2 + (b*(h*i - g*j)*p*q*PolyLog[2, -((h*(e + f*x))/(f*g - e*h))])/h^2
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{(525+jx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{g+hx}\,dx = \text{Subst}\left(\int \frac{(525+jx)\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)}{g+hx}\,dx, cd^q(e+fx)^{pq}\right.$$

$$= \text{Subst}\left(\int\left(\frac{j\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)}{h}+\frac{(525h-gj)\left(a+b\log\right.}{h(g+h}\right.\right.$$

$$= \text{Subst}\left(\frac{j\int\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)\,dx}{h}, cd^q(e+fx)^{pq}, c\left(d(e+\right.\right.$$

$$= \frac{ajx}{h}+\frac{(525h-gj)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h^2}+\text{S}$$

$$= \frac{ajx}{h}+\frac{(525h-gj)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h^2}+\text{S}$$

$$= \frac{ajx}{h}-\frac{bjpqx}{h}+\frac{bj(e+fx)\log\left(c\left(d(e+fx)^p\right)^q\right)}{fh}+\frac{(525h-gj)\left(a\right.}{}$$

Mathematica [A] time = 0.12, size = 120, normalized size = 0.93

$$\frac{(hi-gj)\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)+ahjx+\frac{bhj(e+fx)\log\left(c\left(d(e+fx)^p\right)^q\right)}{f}+bpq(hi-gj)\text{Li}_2\left(\frac{h(e+fx)}{eh-fg}\right)-b}{h^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((i + j*x)*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(g + h*x),x]
```

```
[Out] (a*h*j*x - b*h*j*p*q*x + (b*h*j*(e + f*x)*Log[c*(d*(e + f*x)^p)^q])/f + (h*
i - g*j)*(a + b*Log[c*(d*(e + f*x)^p)^q])*Log[(f*(g + h*x))/(f*g - e*h)] +
b*(h*i - g*j)*p*q*PolyLog[2, (h*(e + f*x))/(-(f*g) + e*h)])/h^2
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{ajx+ai+\left(bjx+bi\right)\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)}{hx+g}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)*(a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g),x, algorithm="fricas
")
```

```
[Out] integral((a*j*x + a*i + (b*j*x + b*i)*log(((f*x + e)^p*d)^q*c))/(h*x + g),
x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(jx+i)\left(b\log\left(\left((fx+e)^p d\right)^q c\right)+a\right)}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)*(a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g),x, algorithm="giac")
```

```
[Out] integrate((j*x + i)*(b*log(((f*x + e)^p*d)^q*c) + a)/(h*x + g), x)
```

maple [F] time = 0.36, size = 0, normalized size = 0.00

$$\int \frac{(jx+i)\left(b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)+a\right)}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((j*x+i)*(b*ln(c*(d*(f*x+e)^p)^q)+a)/(h*x+g),x)
```

```
[Out] int((j*x+i)*(b*ln(c*(d*(f*x+e)^p)^q)+a)/(h*x+g),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$aj\left(\frac{x}{h}-\frac{g\log\left(hx+g\right)}{h^2}\right)+\frac{ai\log\left(hx+g\right)}{h}+\int \frac{\left(jq\log(d)+j\log(c)\right)bx+\left(iq\log(d)+i\log(c)\right)b+\left(bjx+bi\right)\log\left(\right.}{hx+g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)*(a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g),x, algorithm="maxima
")
```

```
[Out] a*j*(x/h - g*log(h*x + g)/h^2) + a*i*log(h*x + g)/h + integrate(((j*q*log(d
) + j*log(c))*b*x + (i*q*log(d) + i*log(c))*b + (b*j*x + b*i)*log(((f*x + e
)^p)^q))/(h*x + g), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(i+j\,x)\,\left(a+b\,\ln\left(c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right)\right)}{g+h\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((i + j*x)*(a + b*log(c*(d*(e + f*x)^p)^q)))/(g + h*x),x)
```

```
[Out] int(((i + j*x)*(a + b*log(c*(d*(e + f*x)^p)^q)))/(g + h*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\log\left(c\left(d\left(e+fx\right)^p\right)^q\right)\right)\left(i+jx\right)}{g+hx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)*(a+b*ln(c*(d*(f*x+e)**p)**q))/(h*x+g),x)
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))*(i + j*x)/(g + h*x), x)
```

3.526 $\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{g+hx}\,dx$

Optimal. Leaf size=68

$$\frac{\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h}+\frac{bpq\text{Li}_2\left(-\frac{h(e+fx)}{fg-eh}\right)}{h}$$

```
[Out] (a+b*ln(c*(d*(f*x+e)^p)^q))*ln(f*(h*x+g)/(-e*h+f*g))/h+b*p*q*polylog(2,-h*(
f*x+e)/(-e*h+f*g))/h
```

Rubi [A] time = 0.11, antiderivative size = 68, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {2394, 2393, 2391, 2445}

$$\frac{bpq\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)}{h}+\frac{\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x),x]
```

```
[Out] ((a + b*Log[c*(d*(e + f*x)^p)^q])*Log[(f*(g + h*x))/(f*g - e*h)])/h + (b*p*
q*PolyLog[2, -((h*(e + f*x))/(f*g - e*h))])/h
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{g+hx}\,dx = \text{Subst}\left(\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{g+hx}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} - \text{Subst}\left(\frac{(bfpq)\int \frac{\log\left(\frac{f(g+hx)}{fg-eh}\right)}{e+fx}\,dx}{h}, c\right.$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} - \text{Subst}\left(\frac{(bpq)\,\text{Subst}\left(\int \frac{\log\left(1+\frac{hx}{fg-eh}\right)}{x}\right.}{h}\right.$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} + \frac{bpq\text{Li}_2\left(-\frac{h(e+fx)}{fg-eh}\right)}{h}$$

Mathematica [A] time = 0.01, size = 67, normalized size = 0.99

$$\frac{\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h} + \frac{bpq\text{Li}_2\left(\frac{h(e+fx)}{eh-fg}\right)}{h}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x),x]
```

```
[Out] ((a + b*Log[c*(d*(e + f*x)^p)^q])*Log[(f*(g + h*x))/(f*g - e*h)])/h + (b*p*
q*PolyLog[2, (h*(e + f*x))/(-(f*g) + e*h)])/h
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a}{hx+g}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g),x, algorithm="fricas")
```

```
[Out] integral((b*log(((f*x + e)^p*d)^q*c) + a)/(h*x + g), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)/(h*x + g), x)
```

maple [F] time = 0.04, size = 0, normalized size = 0.00

$$\int \frac{b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)+a}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(d*(f*x+e)^p)^q)+a)/(h*x+g),x)
```

```
[Out] int((b*ln(c*(d*(f*x+e)^p)^q)+a)/(h*x+g),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$b\int \frac{q\log(d) + \log\left(\left(\left(fx+e\right)^{p}\right)^{q}\right) + \log(c)}{hx+g}\,dx + \frac{a\log\left(hx+g\right)}{h}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g),x, algorithm="maxima")
```

```
[Out] b*integrate((q*log(d) + log(((f*x + e)^p)^q) + log(c))/(h*x + g), x) + a*lo
g(h*x + g)/h
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)}{g+h\,x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))/(g + h*x),x)
```

```
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))/(g + h*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a + b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)}{g+hx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))/(h*x+g),x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))/(g + h*x), x)
```

3.527 $\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{(g+hx)(i+jx)}\,dx$

Optimal. Leaf size=165

$$\frac{\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{hi-gj}-\frac{\log\left(\frac{f(i+jx)}{fi-ej}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{hi-gj}+\frac{bpq\text{Li}_2\left(-\frac{h(e+fx)}{fg-eh}\right)}{hi-gj}-\frac{bpq\text{Li}_2}{h}$$

```
[Out] (a+b*ln(c*(d*(f*x+e)^p)^q))*ln(f*(h*x+g)/(-e*h+f*g))/(-g*j+h*i)-(a+b*ln(c*(
d*(f*x+e)^p)^q))*ln(f*(j*x+i)/(-e*j+f*i))/(-g*j+h*i)+b*p*q*polylog(2,-h*(f*
x+e)/(-e*h+f*g))/(-g*j+h*i)-b*p*q*polylog(2,-j*(f*x+e)/(-e*j+f*i))/(-g*j+h*
i)
```

Rubi [A] time = 0.47, antiderivative size = 165, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.152, Rules used = {2418, 2394, 2393, 2391, 2445}

$$\frac{bpq\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)}{hi-gj}-\frac{bpq\text{PolyLog}\left(2,-\frac{j(e+fx)}{fi-ej}\right)}{hi-gj}+\frac{\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{hi-gj}-\frac{\log\left(\frac{f(i+jx)}{fi-ej}\right)\left(a\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])/((g + h*x)*(i + j*x)),x]
```

```
[Out] ((a + b*Log[c*(d*(e + f*x)^p)^q])*Log[(f*(g + h*x))/(f*g - e*h)])/(h*i - g*
j) - ((a + b*Log[c*(d*(e + f*x)^p)^q])*Log[(f*(i + j*x))/(f*i - e*j)])/(h*i
 - g*j) + (b*p*q*PolyLog[2, -((h*(e + f*x))/(f*g - e*h))])/(h*i - g*j) - (b
*p*q*PolyLog[2, -((j*(e + f*x))/(f*i - e*j))])/(h*i - g*j)
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
```

```
c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] && !IntegerQ[n] && !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{(g+hx)(527+jx)}\,dx = \text{Subst}\left(\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{(g+hx)(527+jx)}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \text{Subst}\left(\int \left(\frac{h\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)}{(527h-gj)(g+hx)} - \frac{j\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)}{(527h-gj)(527+jx)}\right) d$$

$$= \text{Subst}\left(\frac{h\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{g+hx}\,dx}{527h-gj}, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right) - \text{Subst}\left(\frac{j}{-}\right.$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\log\left(\frac{f(g+hx)}{fg-eh}\right)}{527h-gj} - \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\mathrm{l}}{527h-gj}$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\log\left(\frac{f(g+hx)}{fg-eh}\right)}{527h-gj} - \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\mathrm{l}}{527h-gj}$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\log\left(\frac{f(g+hx)}{fg-eh}\right)}{527h-gj} - \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\mathrm{l}}{527h-gj}$$

Mathematica [A] time = 0.07, size = 117, normalized size = 0.71

$$\frac{\left(\log\left(\frac{f(g+hx)}{fg-eh}\right)-\log\left(\frac{f(i+jx)}{fi-ej}\right)\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)+bpq\,\text{Li}_2\left(\frac{h(e+fx)}{eh-fg}\right)-bpq\,\text{Li}_2\left(\frac{j(e+fx)}{ej-fi}\right)}{hi-gj}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])/((g + h*x)*(i + j*x)),x]
```

```
[Out] ((a + b*Log[c*(d*(e + f*x)^p)^q])*(Log[(f*(g + h*x))/(f*g - e*h)] - Log[(f*
(i + j*x))/(f*i - e*j)]) + b*p*q*PolyLog[2, (h*(e + f*x))/(-(f*g) + e*h)] -
 b*p*q*PolyLog[2, (j*(e + f*x))/(-(f*i) + e*j)])/(h*i - g*j)
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a}{hjx^2+gi+\left(hi+gj\right)x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)/(j*x+i),x, algorithm="fricas
")
```

```
[Out] integral((b*log(((f*x + e)^p*d)^q*c) + a)/(h*j*x^2 + g*i + (h*i + g*j)*x),
x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}{\left(hx+g\right)\left(jx+i\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)/(j*x+i),x, algorithm="giac")
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)/((h*x + g)*(j*x + i)), x)
```

maple [F] time = 0.57, size = 0, normalized size = 0.00

$$\int \frac{b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)+a}{\left(hx+g\right)\left(jx+i\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(d*(f*x+e)^p)^q)+a)/(h*x+g)/(j*x+i),x)
[Out] int((b*ln(c*(d*(f*x+e)^p)^q)+a)/(h*x+g)/(j*x+i),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$a\left(\frac{\log\left(hx+g\right)}{hi-gj}-\frac{\log\left(jx+i\right)}{hi-gj}\right)+b\int \frac{q\log(d)+\log\left(\left(\left(fx+e\right)^{p}\right)^{q}\right)+\log(c)}{hjx^{2}+gi+\left(hi+gj\right)x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)/(j*x+i),x, algorithm="maxima
")
[Out] a*(log(h*x + g)/(h*i - g*j) - log(j*x + i)/(h*i - g*j)) + b*integrate((q*lo
g(d) + log(((f*x + e)^p)^q) + log(c))/(h*j*x^2 + g*i + (h*i + g*j)*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^{p}\right)}^{q}\right)}{\left(g+h\,x\right)\,\left(i+j\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))/((g + h*x)*(i + j*x)),x)
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))/((g + h*x)*(i + j*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)}{\left(g+hx\right)\left(i+jx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))/(h*x+g)/(j*x+i),x)
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))/((g + h*x)*(i + j*x)), x)
```

3.528 $\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{(g+hx)(i+jx)^2}\,dx$

Optimal. Leaf size=268

$$\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{(i+jx)(hi-gj)}+\frac{h\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{(hi-gj)^2}-\frac{h\log\left(\frac{f(i+jx)}{fi-ej}\right)\left(a+b\log\left(c\left(d(e+fx\right.\right.\right.}{(hi-gj)^2}$$

```
[Out] -b*f*p*q*ln(f*x+e)/(-e*j+f*i)/(-g*j+h*i)+(a+b*ln(c*(d*(f*x+e)^p)^q))/(-g*j+
h*i)/(j*x+i)+h*(a+b*ln(c*(d*(f*x+e)^p)^q))*ln(f*(h*x+g)/(-e*h+f*g))/(-g*j+h
*i)^2+b*f*p*q*ln(j*x+i)/(-e*j+f*i)/(-g*j+h*i)-h*(a+b*ln(c*(d*(f*x+e)^p)^q))
*ln(f*(j*x+i)/(-e*j+f*i))/(-g*j+h*i)^2+b*h*p*q*polylog(2,-h*(f*x+e)/(-e*h+f
*g))/(-g*j+h*i)^2-b*h*p*q*polylog(2,-j*(f*x+e)/(-e*j+f*i))/(-g*j+h*i)^2
```

Rubi [A] time = 0.60, antiderivative size = 268, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 8, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.242, Rules used = {2418, 2394, 2393, 2391, 2395, 36, 31, 2445}

$$\frac{bhpq\,\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)}{(hi-gj)^2}-\frac{bhpq\,\text{PolyLog}\left(2,-\frac{j(e+fx)}{fi-ej}\right)}{(hi-gj)^2}+\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{(i+jx)(hi-gj)}+\frac{h\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\right.}{(hi-g}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])/((g + h*x)*(i + j*x)^2),x]
```

```
[Out] -((b*f*p*q*Log[e + f*x])/((f*i - e*j)*(h*i - g*j))) + (a + b*Log[c*(d*(e +
f*x)^p)^q])/((h*i - g*j)*(i + j*x)) + (h*(a + b*Log[c*(d*(e + f*x)^p)^q])*L
og[(f*(g + h*x))/(f*g - e*h)])/(h*i - g*j)^2 + (b*f*p*q*Log[i + j*x])/((f*i
 - e*j)*(h*i - g*j)) - (h*(a + b*Log[c*(d*(e + f*x)^p)^q])*Log[(f*(i + j*x)
)/(f*i - e*j)])/(h*i - g*j)^2 + (b*h*p*q*PolyLog[2, -((h*(e + f*x))/(f*g -
e*h))])/(h*i - g*j)^2 - (b*h*p*q*PolyLog[2, -((j*(e + f*x))/(f*i - e*j))])/
(h*i - g*j)^2
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{(g+hx)(528+jx)^2}\,dx = \text{Subst}\left(\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{(g+hx)(528+jx)^2}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \text{Subst}\left(\int\left(\frac{h^2\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)}{(528h-gj)^2(g+hx)} - \frac{j\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)}{(528h-gj)(528+jx)^2} - \frac{hj\ldots}{\ldots}\right.\right.$$

$$= \text{Subst}\left(\frac{h^2\int\frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{g+hx}\,dx}{(528h-gj)^2}, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right) - \text{Subst}\left(\frac{(hj)\ldots}{\ldots}\right.$$

$$= \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{(528h-gj)(528+jx)} + \frac{h\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\log\left(\frac{f(g+hx)}{fg-eh}\right)}{(528h-gj)^2} - \ldots$$

$$= \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{(528h-gj)(528+jx)} + \frac{h\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\log\left(\frac{f(g+hx)}{fg-eh}\right)}{(528h-gj)^2} - \ldots$$

$$= -\frac{bfpq\log(e+fx)}{(528f-ej)(528h-gj)} + \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{(528h-gj)(528+jx)} + \frac{h\left(a+b\log\left(c\left(d(e+\ldots\right.\right.\right.}{(528\ldots}$$

Mathematica [A] time = 0.25, size = 225, normalized size = 0.84

$$\frac{h\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)-h\log\left(\frac{f(i+jx)}{fi-ej}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)+\frac{a(hi-gj)}{i+jx}+\frac{b(hi-gj)\log}{i}}{(hi-gj)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])/((g + h*x)*(i + j*x)^2),x]
```

```
[Out] ((a*(h*i - g*j))/(i + j*x) + (b*(h*i - g*j)*Log[c*(d*(e + f*x)^p)^q])/(i +
j*x) + h*(a + b*Log[c*(d*(e + f*x)^p)^q])*Log[(f*(g + h*x))/(f*g - e*h)] -
(b*f*(h*i - g*j)*p*q*(Log[e + f*x] - Log[i + j*x]))/(f*i - e*j) - h*(a + b*
Log[c*(d*(e + f*x)^p)^q])*Log[(f*(i + j*x))/(f*i - e*j)] + b*h*p*q*PolyLog[
2, (h*(e + f*x))/(-(f*g) + e*h)] - b*h*p*q*PolyLog[2, (j*(e + f*x))/(-(f*i)
 + e*j)])/(h*i - g*j)^2
```

fricas [F] time = 0.47, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}{hj^{2}x^{3}+gi^{2}+\left(2\,hij+gj^{2}\right)x^{2}+\left(hi^{2}+2\,gij\right)x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)/(j*x+i)^2,x, algorithm="fric
as")
```

```
[Out] integral((b*log(((f*x + e)^p*d)^q*c) + a)/(h*j^2*x^3 + g*i^2 + (2*h*i*j + g
*j^2)*x^2 + (h*i^2 + 2*g*i*j)*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}{\left(hx+g\right)\left(jx+i\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)/(j*x+i)^2,x, algorithm="giac
")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)/((h*x + g)*(j*x + i)^2), x)
```

maple [F] time = 0.53, size = 0, normalized size = 0.00

$$\int\frac{b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)+a}{\left(hx+g\right)\left(jx+i\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(d*(f*x+e)^p)^q)+a)/(h*x+g)/(j*x+i)^2,x)
```

```
[Out] int((b*ln(c*(d*(f*x+e)^p)^q)+a)/(h*x+g)/(j*x+i)^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$a\left(\frac{h\log\left(hx+g\right)}{h^{2}i^{2}-2\,ghij+g^{2}j^{2}}-\frac{h\log\left(jx+i\right)}{h^{2}i^{2}-2\,ghij+g^{2}j^{2}}+\frac{1}{hi^{2}-gij+\left(hij-gj^{2}\right)x}\right)+b\int\frac{q\log(d)+\log\left(\left(\left(fx+e\right)^{p}\right)^{q}\right)}{hj^{2}x^{3}+gi^{2}+\left(2\,hij+gj^{2}\right)x^{2}+\left(h\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)/(j*x+i)^2,x, algorithm="maxi
ma")
```

```
[Out] a*(h*log(h*x + g)/(h^2*i^2 - 2*g*h*i*j + g^2*j^2) - h*log(j*x + i)/(h^2*i^2
 - 2*g*h*i*j + g^2*j^2) + 1/(h*i^2 - g*i*j + (h*i*j - g*j^2)*x)) + b*integr
ate((q*log(d) + log(((f*x + e)^p)^q) + log(c))/(h*j^2*x^3 + g*i^2 + (2*h*i*
j + g*j^2)*x^2 + (h*i^2 + 2*g*i*j)*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a + b \ln\left(c \left(d \left(e + f x\right)^{p}\right)^{q}\right)}{\left(g + h x\right) \left(i + j x\right)^{2}} \,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))/((g + h*x)*(i + j*x)^2),x)
```

```
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))/((g + h*x)*(i + j*x)^2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a + b \log{\left(c \left(d \left(e + f x\right)^{p}\right)^{q} \right)}}{\left(g + h x\right) \left(i + j x\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))/(h*x+g)/(j*x+i)**2,x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))/((g + h*x)*(i + j*x)**2), x)
```

3.529 $\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{(g+hx)(i+jx)^3}\,dx$

Optimal. Leaf size=425

$$\frac{h^2\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{(hi-gj)^3}-\frac{h^2\log\left(\frac{f(i+jx)}{fi-ej}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{(hi-gj)^3}+\frac{h\left(a+b\log\left(c\left(d(\cdots\right.\right.\right.}{(i+jx)(hi\cdots}$$

```
[Out] -1/2*b*f*p*q/(-e*j+f*i)/(-g*j+h*i)/(j*x+i)-b*f*h*p*q*ln(f*x+e)/(-e*j+f*i)/(
-g*j+h*i)^2-1/2*b*f^2*p*q*ln(f*x+e)/(-e*j+f*i)^2/(-g*j+h*i)+1/2*(a+b*ln(c*(
d*(f*x+e)^p)^q))/(-g*j+h*i)/(j*x+i)^2+h*(a+b*ln(c*(d*(f*x+e)^p)^q))/(-g*j+h
*i)^2/(j*x+i)+h^2*(a+b*ln(c*(d*(f*x+e)^p)^q))*ln(f*(h*x+g)/(-e*h+f*g))/(-g*
j+h*i)^3+b*f*h*p*q*ln(j*x+i)/(-e*j+f*i)/(-g*j+h*i)^2+1/2*b*f^2*p*q*ln(j*x+i
)/(-e*j+f*i)^2/(-g*j+h*i)-h^2*(a+b*ln(c*(d*(f*x+e)^p)^q))*ln(f*(j*x+i)/(-e*
j+f*i))/(-g*j+h*i)^3+b*h^2*p*q*polylog(2,-h*(f*x+e)/(-e*h+f*g))/(-g*j+h*i)^
3-b*h^2*p*q*polylog(2,-j*(f*x+e)/(-e*j+f*i))/(-g*j+h*i)^3
```

Rubi [A] time = 0.84, antiderivative size = 425, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 9, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273, Rules used = {2418, 2394, 2393, 2391, 2395, 44, 36, 31, 2445}

$$\frac{bh^2pq\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)}{(hi-gj)^3}-\frac{bh^2pq\text{PolyLog}\left(2,-\frac{j(e+fx)}{fi-ej}\right)}{(hi-gj)^3}+\frac{h^2\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{(hi-gj)^3}-\frac{h^2\log\cdots}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])/((g + h*x)*(i + j*x)^3),x]
```

```
[Out] -(b*f*p*q)/(2*(f*i - e*j)*(h*i - g*j)*(i + j*x)) - (b*f*h*p*q*Log[e + f*x])
/((f*i - e*j)*(h*i - g*j)^2) - (b*f^2*p*q*Log[e + f*x])/(2*(f*i - e*j)^2*(h
*i - g*j)) + (a + b*Log[c*(d*(e + f*x)^p)^q])/(2*(h*i - g*j)*(i + j*x)^2) +
 (h*(a + b*Log[c*(d*(e + f*x)^p)^q]))/((h*i - g*j)^2*(i + j*x)) + (h^2*(a +
 b*Log[c*(d*(e + f*x)^p)^q])*Log[(f*(g + h*x))/(f*g - e*h)])/(h*i - g*j)^3
+ (b*f*h*p*q*Log[i + j*x])/((f*i - e*j)*(h*i - g*j)^2) + (b*f^2*p*q*Log[i +
 j*x])/(2*(f*i - e*j)^2*(h*i - g*j)) - (h^2*(a + b*Log[c*(d*(e + f*x)^p)^q]
)*Log[(f*(i + j*x))/(f*i - e*j)])/(h*i - g*j)^3 + (b*h^2*p*q*PolyLog[2, -((
h*(e + f*x))/(f*g - e*h))])/(h*i - g*j)^3 - (b*h^2*p*q*PolyLog[2, -((j*(e +
 f*x))/(f*i - e*j))])/(h*i - g*j)^3
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{(g+hx)(529+jx)^3}dx = \text{Subst}\left(\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{(g+hx)(529+jx)^3}dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \text{Subst}\left(\int\left(\frac{h^3\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)}{(529h-gj)^3(g+hx)} - \frac{j\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)}{(529h-gj)(529+jx)^3} -\right.\right.$$

$$= \text{Subst}\left(\frac{h^3\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{g+hx}dx}{(529h-gj)^3}, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right) - \text{Subst}\left(\right.$$

$$= \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{2(529h-gj)(529+jx)^2} + \frac{h\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{(529h-gj)^2(529+jx)} + \frac{h^2\left(a+b\,\text{lo}\right.}{}$$

$$= \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{2(529h-gj)(529+jx)^2} + \frac{h\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{(529h-gj)^2(529+jx)} + \frac{h^2\left(a+b\,\text{lo}\right.}{}$$

$$= -\frac{bfpq}{2(529f-ej)(529h-gj)(529+jx)} - \frac{bfhpq\log(e+fx)}{(529f-ej)(529h-gj)^2} - \frac{bf^2pq}{2(529f-}$$

Mathematica [A] time = 0.48, size = 363, normalized size = 0.85

$$\frac{2h^2\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right) - 2h^2\log\left(\frac{f(i+jx)}{fi-ej}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right) + \frac{2ah(hi-gj)}{i+jx} + \frac{a(h}{(i+}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])/((g + h*x)*(i + j*x)^3),x]
```

```
[Out] ((a*(h*i - g*j)^2)/(i + j*x)^2 + (2*a*h*(h*i - g*j))/(i + j*x) + (b*(h*i -
g*j)^2*Log[c*(d*(e + f*x)^p)^q])/(i + j*x)^2 + (2*b*h*(h*i - g*j)*Log[c*(d*
(e + f*x)^p)^q])/(i + j*x) + 2*h^2*(a + b*Log[c*(d*(e + f*x)^p)^q])*Log[(f*
(g + h*x))/(f*g - e*h)] - (2*b*f*h*(h*i - g*j)*p*q*(Log[e + f*x] - Log[i +
j*x]))/(f*i - e*j) - (b*f*(h*i - g*j)^2*p*q*(f*i - e*j + f*(i + j*x)*Log[e
+ f*x] - f*(i + j*x)*Log[i + j*x]))/((f*i - e*j)^2*(i + j*x)) - 2*h^2*(a +
b*Log[c*(d*(e + f*x)^p)^q])*Log[(f*(i + j*x))/(f*i - e*j)] + 2*b*h^2*p*q*Po
lyLog[2, (h*(e + f*x))/(-(f*g) + e*h)] - 2*b*h^2*p*q*PolyLog[2, (j*(e + f*x
))/(-(f*i) + e*j)])/(2*(h*i - g*j)^3)
```

fricas [F] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a}{hj^3x^4+gi^3+\left(3\,hij^2+gj^3\right)x^3+3\left(hi^2j+gij^2\right)x^2+\left(hi^3+3\,gi^2j\right)x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)/(j*x+i)^3,x, algorithm="fric
as")
```

```
[Out] integral((b*log(((f*x + e)^p*d)^q*c) + a)/(h*j^3*x^4 + g*i^3 + (3*h*i*j^2 +
 g*j^3)*x^3 + 3*(h*i^2*j + g*i*j^2)*x^2 + (h*i^3 + 3*g*i^2*j)*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b \log\left(\left(\left(fx+e\right)^{p} d\right)^{q} c\right) + a}{\left(hx+g\right)\left(jx+i\right)^{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)/(j*x+i)^3,x, algorithm="giac
")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)/((h*x + g)*(j*x + i)^3), x)
```

maple [F] time = 0.52, size = 0, normalized size = 0.00

$$\int \frac{b \ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right) + a}{\left(hx+g\right)\left(jx+i\right)^{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(d*(f*x+e)^p)^q)+a)/(h*x+g)/(j*x+i)^3,x)
```

```
[Out] int((b*ln(c*(d*(f*x+e)^p)^q)+a)/(h*x+g)/(j*x+i)^3,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{2}\left(\frac{2\,h^{2}\log\left(hx+g\right)}{h^{3}i^{3}-3\,gh^{2}i^{2}j+3\,g^{2}hij^{2}-g^{3}j^{3}} - \frac{2\,h^{2}\log\left(jx+i\right)}{h^{3}i^{3}-3\,gh^{2}i^{2}j+3\,g^{2}hij^{2}-g^{3}j^{3}} + \frac{2\,hjx+3}{h^{2}i^{4}-2\,ghi^{3}j+g^{2}i^{2}j^{2}+\left(h^{2}i^{2}j^{2}-2\,ghij^{3}\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)/(j*x+i)^3,x, algorithm="maxi
ma")
```

```
[Out] 1/2*(2*h^2*log(h*x + g)/(h^3*i^3 - 3*g*h^2*i^2*j + 3*g^2*h*i*j^2 - g^3*j^3)
 - 2*h^2*log(j*x + i)/(h^3*i^3 - 3*g*h^2*i^2*j + 3*g^2*h*i*j^2 - g^3*j^3) +
 (2*h*j*x + 3*h*i - g*j)/(h^2*i^4 - 2*g*h*i^3*j + g^2*i^2*j^2 + (h^2*i^2*j^
2 - 2*g*h*i*j^3 + g^2*j^4)*x^2 + 2*(h^2*i^3*j - 2*g*h*i^2*j^2 + g^2*i*j^3)*
x))*a + b*integrate((q*log(d) + log(((f*x + e)^p)^q) + log(c))/(h*j^3*x^4 +
 g*i^3 + (3*h*i*j^2 + g*j^3)*x^3 + 3*(h*i^2*j + g*i*j^2)*x^2 + (h*i^3 + 3*g
*i^2*j)*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^{p}\right)}^{q}\right)}{\left(g+h\,x\right)\,{\left(i+j\,x\right)}^{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))/((g + h*x)*(i + j*x)^3),x)
```

```
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))/((g + h*x)*(i + j*x)^3), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a + b \log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)}{\left(g+hx\right)\left(i+jx\right)^{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))/(h*x+g)/(j*x+i)**3,x)
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))/((g + h*x)*(i + j*x)**3), x)
```

3.530 $\int \frac{(i+jx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{g+hx}\,dx$

Optimal. Leaf size=519

$$\frac{j(e+fx)(fi-ej)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{f^2h}-\frac{bj^2pq(e+fx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{2f^2h}+\frac{j^2(e+fx)^2\left(a+b\log\right.}{2}$$

```
[Out] -2*a*b*j*(-e*j+f*i)*p*q*x/f/h-2*a*b*j*(-g*j+h*i)*p*q*x/h^2+2*b^2*j*(-e*j+f*
i)*p^2*q^2*x/f/h+2*b^2*j*(-g*j+h*i)*p^2*q^2*x/h^2+1/4*b^2*j^2*p^2*q^2*(f*x+
e)^2/f^2/h-2*b^2*j*(-e*j+f*i)*p*q*(f*x+e)*ln(c*(d*(f*x+e)^p)^q)/f^2/h-2*b^2
*j*(-g*j+h*i)*p*q*(f*x+e)*ln(c*(d*(f*x+e)^p)^q)/f/h^2-1/2*b*j^2*p*q*(f*x+e)
^2*(a+b*ln(c*(d*(f*x+e)^p)^q))/f^2/h+j*(-e*j+f*i)*(f*x+e)*(a+b*ln(c*(d*(f*x
+e)^p)^q))^2/f^2/h+j*(-g*j+h*i)*(f*x+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))^2/f/h^2
+1/2*j^2*(f*x+e)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))^2/f^2/h+(-g*j+h*i)^2*(a+b*ln
(c*(d*(f*x+e)^p)^q))^2*ln(f*(h*x+g)/(-e*h+f*g))/h^3+2*b*(-g*j+h*i)^2*p*q*(a
+b*ln(c*(d*(f*x+e)^p)^q))*polylog(2,-h*(f*x+e)/(-e*h+f*g))/h^3-2*b^2*(-g*j+
h*i)^2*p^2*q^2*polylog(3,-h*(f*x+e)/(-e*h+f*g))/h^3
```

Rubi [A] time = 1.34, antiderivative size = 519, normalized size of antiderivative = 1.00, number of steps used = 20, number of rules used = 13, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.371, Rules used = {2418, 2389, 2296, 2295, 2396, 2433, 2374, 6589, 2401, 2390, 2305, 2304, 2445}

$$\frac{2bpq(hi-gj)^2\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h^3}-\frac{2b^2p^2q^2(hi-gj)^2\text{PolyLog}\left(3,-\frac{h(e+fx)}{fg-eh}\right)}{h^3}+\frac{j(e+}{}$$

Antiderivative was successfully verified.

```
[In] Int[((i + j*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/(g + h*x),x]
```

```
[Out] (-2*a*b*j*(f*i - e*j)*p*q*x)/(f*h) - (2*a*b*j*(h*i - g*j)*p*q*x)/h^2 + (2*b
^2*j*(f*i - e*j)*p^2*q^2*x)/(f*h) + (2*b^2*j*(h*i - g*j)*p^2*q^2*x)/h^2 + (
b^2*j^2*p^2*q^2*(e + f*x)^2)/(4*f^2*h) - (2*b^2*j*(f*i - e*j)*p*q*(e + f*x)
*Log[c*(d*(e + f*x)^p)^q])/(f^2*h) - (2*b^2*j*(h*i - g*j)*p*q*(e + f*x)*Log
[c*(d*(e + f*x)^p)^q])/(f*h^2) - (b*j^2*p*q*(e + f*x)^2*(a + b*Log[c*(d*(e
+ f*x)^p)^q]))/(2*f^2*h) + (j*(f*i - e*j)*(e + f*x)*(a + b*Log[c*(d*(e + f*
x)^p)^q])^2)/(f^2*h) + (j*(h*i - g*j)*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p
)^q])^2)/(f*h^2) + (j^2*(e + f*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/(2*
f^2*h) + ((h*i - g*j)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*Log[(f*(g + h*x)
)/(f*g - e*h)])/h^3 + (2*b*(h*i - g*j)^2*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q
])*PolyLog[2, -((h*(e + f*x))/(f*g - e*h))])/h^3 - (2*b^2*(h*i - g*j)^2*p^2
*q^2*PolyLog[3, -((h*(e + f*x))/(f*g - e*h))])/h^3
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
```

```
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(530+jx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{g+hx}\,dx = \text{Subst}\left(\int \frac{(530+jx)^2\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}{g+hx}\,dx, cd^q(e\right.$$

$$= \text{Subst}\left(\int\left(\frac{j(530h-gj)\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}{h^2}+\frac{(530\right.\right.$$

$$= \text{Subst}\left(\frac{j\int(530+jx)\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2\,dx}{h}, cd^q(e\right.$$

$$= \frac{(530h-gj)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h^3} + \text{S}$$

$$= \frac{j(530h-gj)(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{fh^2} + \frac{(530h}{}$$

$$= -\frac{2abj(530h-gj)pqx}{h^2} + \frac{j(530h-gj)(e+fx)\left(a+b\log\left(c\left(d\right.\right.\right.}{fh^2}$$

$$= -\frac{2abj(530h-gj)pqx}{h^2} + \frac{2b^2j(530h-gj)p^2q^2x}{h^2} - \frac{2b^2j(530h-}{}$$

$$= -\frac{2abj(530f-ej)pqx}{fh} - \frac{2abj(530h-gj)pqx}{h^2} + \frac{2b^2j(530h-g}{h^2}$$

$$= -\frac{2abj(530f-ej)pqx}{fh} - \frac{2abj(530h-gj)pqx}{h^2} + \frac{2b^2j(530f-e}{fh}$$

Mathematica [A] time = 0.75, size = 927, normalized size = 1.79

$$\frac{-8bf^2h^2pq\left(-a+bpq\log(e+fx)-b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\left(\log(e+fx)\log\left(\frac{f(g+hx)}{fg-eh}\right)+\text{Li}_2\left(\frac{h(e+fx)}{eh-fg}\right)\right)i^2+4b^2}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((i + j*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/(g + h*x),x]
```

```
[Out] (4*f^2*h*j*(2*h*i - g*j)*x*(a - b*p*q*Log[e + f*x] + b*Log[c*(d*(e + f*x)^p
)^q])^2 + 2*f^2*h^2*j^2*x^2*(a - b*p*q*Log[e + f*x] + b*Log[c*(d*(e + f*x)^
```

```
p)^q])^2 + 4*f^2*(h*i - g*j)^2*(a - b*p*q*Log[e + f*x] + b*Log[c*(d*(e + f*
x)^p)^q])^2*Log[g + h*x] - 8*b*f^2*h^2*i^2*p*q*(-a + b*p*q*Log[e + f*x] - b
*Log[c*(d*(e + f*x)^p)^q])*(Log[e + f*x]*Log[(f*(g + h*x))/(f*g - e*h)] + P
olyLog[2, (h*(e + f*x))/(-(f*g) + e*h)]) - 16*b*f*h*i*j*p*q*(-a + b*p*q*Log
[e + f*x] - b*Log[c*(d*(e + f*x)^p)^q])*(-(h*(e + f*x)) + Log[e + f*x]*(e*h
 + f*h*x - f*g*Log[(f*(g + h*x))/(f*g - e*h)]) - f*g*PolyLog[2, (h*(e + f*x
))/(-(f*g) + e*h)]) + 2*b*j^2*p*q*(-a + b*p*q*Log[e + f*x] - b*Log[c*(d*(e
+ f*x)^p)^q])*(f*h*(f*x*(-4*g + h*x) - 2*e*(2*g + h*x)) + 2*Log[e + f*x]*(h
*(e + f*x)*(2*f*g + e*h - f*h*x) - 2*f^2*g^2*Log[(f*(g + h*x))/(f*g - e*h)]
) - 4*f^2*g^2*PolyLog[2, (h*(e + f*x))/(-(f*g) + e*h)]) + 8*b^2*f*h*i*j*p^2
*q^2*(h*(2*f*x - 2*(e + f*x)*Log[e + f*x] + (e + f*x)*Log[e + f*x]^2) - f*g
*(Log[e + f*x]^2*Log[(f*(g + h*x))/(f*g - e*h)] + 2*Log[e + f*x]*PolyLog[2,
 (h*(e + f*x))/(-(f*g) + e*h)] - 2*PolyLog[3, (h*(e + f*x))/(-(f*g) + e*h)]
)) - b^2*j^2*p^2*q^2*(4*f*g*h*(2*f*x - 2*(e + f*x)*Log[e + f*x] + (e + f*x)
*Log[e + f*x]^2) + h^2*(f*x*(6*e - f*x) + (-6*e^2 - 4*e*f*x + 2*f^2*x^2)*Lo
g[e + f*x] + 2*(e^2 - f^2*x^2)*Log[e + f*x]^2) - 4*f^2*g^2*(Log[e + f*x]^2*
Log[(f*(g + h*x))/(f*g - e*h)] + 2*Log[e + f*x]*PolyLog[2, (h*(e + f*x))/(-
(f*g) + e*h)] - 2*PolyLog[3, (h*(e + f*x))/(-(f*g) + e*h)])) + 4*b^2*f^2*h^
2*i^2*p^2*q^2*(Log[e + f*x]^2*Log[(f*(g + h*x))/(f*g - e*h)] + 2*Log[e + f*
x]*PolyLog[2, (h*(e + f*x))/(-(f*g) + e*h)] - 2*PolyLog[3, (h*(e + f*x))/(-
(f*g) + e*h)]))/(4*f^2*h^3)
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{a^2j^2x^2 + 2\,a^2ijx + a^2i^2 + \left(b^2j^2x^2 + 2\,b^2ijx + b^2i^2\right)\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^2 + 2\left(abj^2x^2 + 2\,abijx + abi^2\right)\text{lo}}{hx+g}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g),x, algorithm="fr
icas")
```

```
[Out] integral((a^2*j^2*x^2 + 2*a^2*i*j*x + a^2*i^2 + (b^2*j^2*x^2 + 2*b^2*i*j*x
+ b^2*i^2)*log(((f*x + e)^p*d)^q*c)^2 + 2*(a*b*j^2*x^2 + 2*a*b*i*j*x + a*b*
i^2)*log(((f*x + e)^p*d)^q*c))/(h*x + g), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(jx+i\right)^2\left(b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a\right)^2}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g),x, algorithm="gi
ac")
```

```
[Out] integrate((j*x + i)^2*(b*log(((f*x + e)^p*d)^q*c) + a)^2/(h*x + g), x)
```

maple [F] time = 0.52, size = 0, normalized size = 0.00

$$\int \frac{\left(jx+i\right)^2\left(b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)+a\right)^2}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((j*x+i)^2*(b*ln(c*(d*(f*x+e)^p)^q)+a)^2/(h*x+g),x)
```

```
[Out] int((j*x+i)^2*(b*ln(c*(d*(f*x+e)^p)^q)+a)^2/(h*x+g),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$2\,a^{2}ij\left(\frac{x}{h}-\frac{g\log\left(hx+g\right)}{h^{2}}\right)+\frac{1}{2}\,a^{2}j^{2}\left(\frac{2\,g^{2}\log\left(hx+g\right)}{h^{3}}+\frac{hx^{2}-2\,gx}{h^{2}}\right)+\frac{a^{2}i^{2}\log\left(hx+g\right)}{h}+\int\frac{2\left(i^{2}q\log(d)+i^{2}\,\mathrm{lo}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g),x, algorithm="ma
xima")
```

```
[Out] 2*a^2*i*j*(x/h - g*log(h*x + g)/h^2) + 1/2*a^2*j^2*(2*g^2*log(h*x + g)/h^3
+ (h*x^2 - 2*g*x)/h^2) + a^2*i^2*log(h*x + g)/h + integrate((2*(i^2*q*log(d
) + i^2*log(c))*a*b + (i^2*q^2*log(d)^2 + 2*i^2*q*log(c)*log(d) + i^2*log(c
)^2)*b^2 + (2*(j^2*q*log(d) + j^2*log(c))*a*b + (j^2*q^2*log(d)^2 + 2*j^2*q
*log(c)*log(d) + j^2*log(c)^2)*b^2)*x^2 + (b^2*j^2*x^2 + 2*b^2*i*j*x + b^2*
i^2)*log(((f*x + e)^p)^q)^2 + 2*(2*(i*j*q*log(d) + i*j*log(c))*a*b + (i*j*q
^2*log(d)^2 + 2*i*j*q*log(c)*log(d) + i*j*log(c)^2)*b^2)*x + 2*(a*b*i^2 + (
i^2*q*log(d) + i^2*log(c))*b^2 + (a*b*j^2 + (j^2*q*log(d) + j^2*log(c))*b^2
)*x^2 + 2*(a*b*i*j + (i*j*q*log(d) + i*j*log(c))*b^2)*x)*log(((f*x + e)^p)^
q))/(h*x + g), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{{\left(i+j\,x\right)}^2\,{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}^2}{g+h\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((i + j*x)^2*(a + b*log(c*(d*(e + f*x)^p)^q))^2)/(g + h*x),x)
```

```
[Out] int(((i + j*x)^2*(a + b*log(c*(d*(e + f*x)^p)^q))^2)/(g + h*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)\right)^{2}\left(i+jx\right)^{2}}{g+hx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)**2*(a+b*ln(c*(d*(f*x+e)**p)**q))**2/(h*x+g),x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**2*(i + j*x)**2/(g + h*x), x)
```

3.531 $\int \frac{(i+jx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{g+hx}\,dx$

Optimal. Leaf size=240

$$\frac{2bpq(hi-gj)\text{Li}_2\left(-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h^2}+\frac{(hi-gj)\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{h^2}+\frac{j(\cdots}{\cdots}$$

```
[Out] -2*a*b*j*p*q*x/h+2*b^2*j*p^2*q^2*x/h-2*b^2*j*p*q*(f*x+e)*ln(c*(d*(f*x+e)^p)
^q)/f/h+j*(f*x+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))^2/f/h+(-g*j+h*i)*(a+b*ln(c*(d
*(f*x+e)^p)^q))^2*ln(f*(h*x+g)/(-e*h+f*g))/h^2+2*b*(-g*j+h*i)*p*q*(a+b*ln(c
*(d*(f*x+e)^p)^q))*polylog(2,-h*(f*x+e)/(-e*h+f*g))/h^2-2*b^2*(-g*j+h*i)*p^
2*q^2*polylog(3,-h*(f*x+e)/(-e*h+f*g))/h^2
```

Rubi [A] time = 0.65, antiderivative size = 240, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 9, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273, Rules used = {2418, 2389, 2296, 2295, 2396, 2433, 2374, 6589, 2445}

$$\frac{2bpq(hi-gj)\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h^2}-\frac{2b^2p^2q^2(hi-gj)\text{PolyLog}\left(3,-\frac{h(e+fx)}{fg-eh}\right)}{h^2}+\frac{(hi-g\cdots}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Int[((i + j*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/(g + h*x),x]
```

```
[Out] (-2*a*b*j*p*q*x)/h + (2*b^2*j*p^2*q^2*x)/h - (2*b^2*j*p*q*(e + f*x)*Log[c*(
d*(e + f*x)^p)^q])/(f*h) + (j*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)
/(f*h) + ((h*i - g*j)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*Log[(f*(g + h*x))/
(f*g - e*h)])/h^2 + (2*b*(h*i - g*j)*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])*P
olyLog[2, -((h*(e + f*x))/(f*g - e*h))])/h^2 - (2*b^2*(h*i - g*j)*p^2*q^2*P
olyLog[3, -((h*(e + f*x))/(f*g - e*h))])/h^2
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(531+jx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{g+hx}\,dx = \text{Subst}\left(\int \frac{(531+jx)\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}{g+hx}\,dx, cd^q(e+fx\right.$$

$$= \text{Subst}\left(\int \left(\frac{j\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}{h} + \frac{(531h-gj)\left(a+b\log\right.}{h(g+}\right.\right.$$

$$= \text{Subst}\left(\frac{j\int\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2 dx}{h}, cd^q(e+fx)^{pq}, c\left(d(e\right.\right.$$

$$= \frac{(531h-gj)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h^2} + \text{Subst}$$

$$= \frac{j(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{fh} + \frac{(531h-gj)\left(a+b\log\right.}{}$$

$$= -\frac{2abjpqx}{h} + \frac{j(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{fh} + \frac{(531h-g}{}$$

$$= -\frac{2abjpqx}{h} + \frac{2b^2jp^2q^2x}{h} - \frac{2b^2jpq(e+fx)\log\left(c\left(d(e+fx)^p\right)^q\right)}{fh} +$$

Mathematica [B] time = 0.39, size = 852, normalized size = 3.55

$$\frac{fhjxa^2 + fhi\log(g+hx)a^2 - fgj\log(g+hx)a^2 - 2behjpqa - 2bfhjpqxa + 2behjpq\log(e+fx)a + 2bfhjx\log\left(c\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((i + j*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/(g + h*x),x]
```

```
[Out] (-2*a*b*e*h*j*p*q + a^2*f*h*j*x - 2*a*b*f*h*j*p*q*x + 2*b^2*f*h*j*p^2*q^2*x
 + 2*a*b*e*h*j*p*q*Log[e + f*x] - b^2*e*h*j*p^2*q^2*Log[e + f*x]^2 - 2*b^2*
e*h*j*p*q*Log[c*(d*(e + f*x)^p)^q] + 2*a*b*f*h*j*x*Log[c*(d*(e + f*x)^p)^q]
 - 2*b^2*f*h*j*p*q*x*Log[c*(d*(e + f*x)^p)^q] + 2*b^2*e*h*j*p*q*Log[e + f*x
]*Log[c*(d*(e + f*x)^p)^q] + b^2*f*h*j*x*Log[c*(d*(e + f*x)^p)^q]^2 + a^2*f
*h*i*Log[g + h*x] - a^2*f*g*j*Log[g + h*x] - 2*a*b*f*h*i*p*q*Log[e + f*x]*L
og[g + h*x] + 2*a*b*f*g*j*p*q*Log[e + f*x]*Log[g + h*x] + b^2*f*h*i*p^2*q^2
*Log[e + f*x]^2*Log[g + h*x] - b^2*f*g*j*p^2*q^2*Log[e + f*x]^2*Log[g + h*x
] + 2*a*b*f*h*i*Log[c*(d*(e + f*x)^p)^q]*Log[g + h*x] - 2*a*b*f*g*j*Log[c*(
d*(e + f*x)^p)^q]*Log[g + h*x] - 2*b^2*f*h*i*p*q*Log[e + f*x]*Log[c*(d*(e +
```

```
f*x)^p)^q]*Log[g + h*x] + 2*b^2*f*g*j*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^
p)^q]*Log[g + h*x] + b^2*f*h*i*Log[c*(d*(e + f*x)^p)^q]^2*Log[g + h*x] - b^
2*f*g*j*Log[c*(d*(e + f*x)^p)^q]^2*Log[g + h*x] + 2*a*b*f*h*i*p*q*Log[e + f
*x]*Log[(f*(g + h*x))/(f*g - e*h)] - 2*a*b*f*g*j*p*q*Log[e + f*x]*Log[(f*(g
 + h*x))/(f*g - e*h)] - b^2*f*h*i*p^2*q^2*Log[e + f*x]^2*Log[(f*(g + h*x))/
(f*g - e*h)] + b^2*f*g*j*p^2*q^2*Log[e + f*x]^2*Log[(f*(g + h*x))/(f*g - e*
h)] + 2*b^2*f*h*i*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log[(f*(g + h*x
))/(f*g - e*h)] - 2*b^2*f*g*j*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log
[(f*(g + h*x))/(f*g - e*h)] + 2*b*f*(h*i - g*j)*p*q*(a + b*Log[c*(d*(e + f*
x)^p)^q])*PolyLog[2, (h*(e + f*x))/(-(f*g) + e*h)] + 2*b^2*f*(-(h*i) + g*j)
*p^2*q^2*PolyLog[3, (h*(e + f*x))/(-(f*g) + e*h)])/(f*h^2)
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{a^2jx + a^2i + \left(b^2jx + b^2i\right)\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^2 + 2\left(abjx + abi\right)\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)}{hx+g}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)*(a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g),x, algorithm="fric
as")
```

```
[Out] integral((a^2*j*x + a^2*i + (b^2*j*x + b^2*i)*log(((f*x + e)^p*d)^q*c)^2 +
2*(a*b*j*x + a*b*i)*log(((f*x + e)^p*d)^q*c))/(h*x + g), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(jx+i\right)\left(b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a\right)^2}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)*(a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g),x, algorithm="giac
")
```

```
[Out] integrate((j*x + i)*(b*log(((f*x + e)^p*d)^q*c) + a)^2/(h*x + g), x)
```

maple [F] time = 0.37, size = 0, normalized size = 0.00

$$\int \frac{\left(jx+i\right)\left(b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)+a\right)^2}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((j*x+i)*(b*ln(c*(d*(f*x+e)^p)^q)+a)^2/(h*x+g),x)
```

```
[Out] int((j*x+i)*(b*ln(c*(d*(f*x+e)^p)^q)+a)^2/(h*x+g),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$a^2j\left(\frac{x}{h} - \frac{g\log\left(hx+g\right)}{h^2}\right) + \frac{a^2i\log\left(hx+g\right)}{h} + \int \frac{2\left(iq\log(d) + i\log(c)\right)ab + \left(iq^2\log(d)^2 + 2\,iq\log(c)\log(d) + i\,\mathrm{l}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)*(a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g),x, algorithm="maxi
ma")
```

```
[Out] a^2*j*(x/h - g*log(h*x + g)/h^2) + a^2*i*log(h*x + g)/h + integrate((2*(i*q
*log(d) + i*log(c))*a*b + (i*q^2*log(d)^2 + 2*i*q*log(c)*log(d) + i*log(c)^
2)*b^2 + (b^2*j*x + b^2*i)*log(((f*x + e)^p)^q)^2 + (2*(j*q*log(d) + j*log(
c))*a*b + (j*q^2*log(d)^2 + 2*j*q*log(c)*log(d) + j*log(c)^2)*b^2)*x + 2*((
i*q*log(d) + i*log(c))*b^2 + a*b*i + ((j*q*log(d) + j*log(c))*b^2 + a*b*j)*
x)*log(((f*x + e)^p)^q))/(h*x + g), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(i+j\,x\right)\,{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}^2}{g+h\,x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((i + j*x)*(a + b*log(c*(d*(e + f*x)^p)^q))^2)/(g + h*x),x)
```

```
[Out] int(((i + j*x)*(a + b*log(c*(d*(e + f*x)^p)^q))^2)/(g + h*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a + b \log{\left(c \left(d \left(e + f x\right)^{p}\right)^{q} \right)}\right)^{2} \left(i + j x\right)}{g + h x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)*(a+b*ln(c*(d*(f*x+e)**p)**q))**2/(h*x+g),x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**2*(i + j*x)/(g + h*x), x)
```

3.532 $\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{g+hx}\,dx$

Optimal. Leaf size=123

$$\frac{2bpq\text{Li}_2\left(-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h}+\frac{\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{h}-\frac{2b^2p^2q^2\text{Li}_3\left(-\frac{h}{\ldots}\right.}{h}$$

```
[Out] (a+b*ln(c*(d*(f*x+e)^p)^q))^2*ln(f*(h*x+g)/(-e*h+f*g))/h+2*b*p*q*(a+b*ln(c*
(d*(f*x+e)^p)^q))*polylog(2,-h*(f*x+e)/(-e*h+f*g))/h-2*b^2*p^2*q^2*polylog(
3,-h*(f*x+e)/(-e*h+f*g))/h
```

Rubi [A] time = 0.28, antiderivative size = 123, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {2396, 2433, 2374, 6589, 2445}

$$\frac{2bpq\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h}-\frac{2b^2p^2q^2\text{PolyLog}\left(3,-\frac{h(e+fx)}{fg-eh}\right)}{h}+\frac{\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\ldots\right.}{\ldots}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/(g + h*x),x]
```

```
[Out] ((a + b*Log[c*(d*(e + f*x)^p)^q])^2*Log[(f*(g + h*x))/(f*g - e*h)])/h + (2*
b*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLog[2, -((h*(e + f*x))/(f*g - e*
h))])/h - (2*b^2*p^2*q^2*PolyLog[3, -((h*(e + f*x))/(f*g - e*h))])/h
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
```

```
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{g+hx}\,dx = \text{Subst}\left(\int \frac{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}{g+hx}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} - \text{Subst}\left(\frac{(2bfpq)\int \frac{\left(a+b\log\left(cd^q\right.\right.}{}}{h}\right.$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} - \text{Subst}\left(\frac{(2bpq)\,\text{Subst}\left(\int \frac{\left(a+b\right.}{}\right.}{}\right.$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} + \frac{2bpq\left(a+b\log\left(c\left(d(e+fx\right.\right.\right.}{h}$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} + \frac{2bpq\left(a+b\log\left(c\left(d(e+fx\right.\right.\right.}{h}$$

Mathematica [B] time = 0.30, size = 313, normalized size = 2.54

$$\frac{a^2\log(g+hx)}{h} + \frac{b\left(2pq\,\text{Li}_2\left(\frac{h(e+fx)}{eh-fg}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)+2a\log(g+hx)\log\left(c\left(d(e+fx)^p\right)^q\right)-2apq\log\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/(g + h*x),x]
```

```
[Out] (a^2*Log[g + h*x])/h + (b*(-2*a*p*q*Log[e + f*x]*Log[g + h*x] + b*p^2*q^2*L
og[e + f*x]^2*Log[g + h*x] + 2*a*Log[c*(d*(e + f*x)^p)^q]*Log[g + h*x] - 2*
b*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log[g + h*x] + b*Log[c*(d*(e +
f*x)^p)^q]^2*Log[g + h*x] + 2*a*p*q*Log[e + f*x]*Log[(f*(g + h*x))/(f*g - e
*h)] - b*p^2*q^2*Log[e + f*x]^2*Log[(f*(g + h*x))/(f*g - e*h)] + 2*b*p*q*Lo
g[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log[(f*(g + h*x))/(f*g - e*h)] + 2*p*q*
(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLog[2, (h*(e + f*x))/(-(f*g) + e*h)] -
 2*b*p^2*q^2*PolyLog[3, (h*(e + f*x))/(-(f*g) + e*h)]))/h
```

fricas [F] time = 0.49, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b^2\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^2+2\,ab\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a^2}{hx+g},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g),x, algorithm="fricas")
```

```
[Out] integral((b^2*log(((f*x + e)^p*d)^q*c)^2 + 2*a*b*log(((f*x + e)^p*d)^q*c) +
 a^2)/(h*x + g), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a\right)^2}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^2/(h*x + g), x)
```

maple [F] time = 0.04, size = 0, normalized size = 0.00

$$\int \frac{\left(b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)+a\right)^2}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^2/(h*x+g),x)
```

```
[Out] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^2/(h*x+g),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{a^2\log\left(hx+g\right)}{h}+\int \frac{b^2\log\left(\left(\left(fx+e\right)^p\right)^q\right)^2+2\left(q\log(d)+\log(c)\right)ab+\left(q^2\log(d)^2+2\,q\log(c)\log(d)+\log(c)\right.}{hx+g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g),x, algorithm="maxima")
```

```
[Out] a^2*log(h*x + g)/h + integrate((b^2*log(((f*x + e)^p)^q)^2 + 2*(q*log(d) +
log(c))*a*b + (q^2*log(d)^2 + 2*q*log(c)*log(d) + log(c)^2)*b^2 + 2*((q*log
(d) + log(c))*b^2 + a*b)*log(((f*x + e)^p)^q))/(h*x + g), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}^2}{g+h\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^2/(g + h*x),x)
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))^2/(g + h*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a + b \log \left(c \left(d \left(e + f x\right)^{p}\right)^{q}\right)\right)^{2}}{g + h x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**2/(h*x+g),x)
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**2/(g + h*x), x)
```

3.533 $\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{(g+hx)(i+jx)}\,dx$

Optimal. Leaf size=288

$$\frac{2bpq\text{Li}_2\left(-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{hi-gj}-\frac{2bpq\text{Li}_2\left(-\frac{j(e+fx)}{fi-ej}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{hi-gj}+\frac{\log\left(\frac{f(g+hx}{fg-eh}\right.}{}$$

```
[Out] (a+b*ln(c*(d*(f*x+e)^p)^q))^2*ln(f*(h*x+g)/(-e*h+f*g))/(-g*j+h*i)-(a+b*ln(c
*(d*(f*x+e)^p)^q))^2*ln(f*(j*x+i)/(-e*j+f*i))/(-g*j+h*i)+2*b*p*q*(a+b*ln(c*
(d*(f*x+e)^p)^q))*polylog(2,-h*(f*x+e)/(-e*h+f*g))/(-g*j+h*i)-2*b*p*q*(a+b*
ln(c*(d*(f*x+e)^p)^q))*polylog(2,-j*(f*x+e)/(-e*j+f*i))/(-g*j+h*i)-2*b^2*p^
2*q^2*polylog(3,-h*(f*x+e)/(-e*h+f*g))/(-g*j+h*i)+2*b^2*p^2*q^2*polylog(3,-
j*(f*x+e)/(-e*j+f*i))/(-g*j+h*i)
```

Rubi [A] time = 0.90, antiderivative size = 288, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 6, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.171, Rules used = {2418, 2396, 2433, 2374, 6589, 2445}

$$\frac{2bpq\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{hi-gj}-\frac{2bpq\text{PolyLog}\left(2,-\frac{j(e+fx)}{fi-ej}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right.\right.\right.}{hi-gj}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/((g + h*x)*(i + j*x)),x]
```

```
[Out] ((a + b*Log[c*(d*(e + f*x)^p)^q])^2*Log[(f*(g + h*x))/(f*g - e*h)])/(h*i -
g*j) - ((a + b*Log[c*(d*(e + f*x)^p)^q])^2*Log[(f*(i + j*x))/(f*i - e*j)])/
(h*i - g*j) + (2*b*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLog[2, -((h*(e
+ f*x))/(f*g - e*h))])/(h*i - g*j) - (2*b*p*q*(a + b*Log[c*(d*(e + f*x)^p)^
q])*PolyLog[2, -((j*(e + f*x))/(f*i - e*j))])/(h*i - g*j) - (2*b^2*p^2*q^2*
PolyLog[3, -((h*(e + f*x))/(f*g - e*h))])/(h*i - g*j) + (2*b^2*p^2*q^2*Poly
Log[3, -((j*(e + f*x))/(f*i - e*j))])/(h*i - g*j)
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{(g+hx)(533+jx)}\,dx = \text{Subst}\left(\int \frac{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}{(g+hx)(533+jx)}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right.$$

$$= \text{Subst}\left(\int \left(\frac{h\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}{(533h-gj)(g+hx)} - \frac{j\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right.}{(533h-gj)(533+jx)}\right.\right.$$

$$= \text{Subst}\left(\frac{h\int \frac{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}{g+hx}\,dx}{533h-gj}, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right) - \text{Sub}$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2\log\left(\frac{f(g+hx)}{fg-eh}\right)}{533h-gj} - \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right.\right.\right.}{533h-}$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2\log\left(\frac{f(g+hx)}{fg-eh}\right)}{533h-gj} - \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right.\right.\right.}{533h-}$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2\log\left(\frac{f(g+hx)}{fg-eh}\right)}{533h-gj} - \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right.\right.\right.}{533h-}$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2\log\left(\frac{f(g+hx)}{fg-eh}\right)}{533h-gj} - \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right.\right.\right.}{533h-}$$

Mathematica [B] time = 0.40, size = 652, normalized size = 2.26

$$\frac{a^2\log(g+hx) - a^2\log(i+jx) + 2bpq\text{Li}_2\left(\frac{h(e+fx)}{eh-fg}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right) + 2ab\log(g+hx)\log\left(c\left(d(e+\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/((g + h*x)*(i + j*x)),x]
```

```
[Out] (a^2*Log[g + h*x] - 2*a*b*p*q*Log[e + f*x]*Log[g + h*x] + b^2*p^2*q^2*Log[e
 + f*x]^2*Log[g + h*x] + 2*a*b*Log[c*(d*(e + f*x)^p)^q]*Log[g + h*x] - 2*b^
2*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log[g + h*x] + b^2*Log[c*(d*(e
+ f*x)^p)^q]^2*Log[g + h*x] + 2*a*b*p*q*Log[e + f*x]*Log[(f*(g + h*x))/(f*g
 - e*h)] - b^2*p^2*q^2*Log[e + f*x]^2*Log[(f*(g + h*x))/(f*g - e*h)] + 2*b^
2*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log[(f*(g + h*x))/(f*g - e*h)]
- a^2*Log[i + j*x] + 2*a*b*p*q*Log[e + f*x]*Log[i + j*x] - b^2*p^2*q^2*Log[
e + f*x]^2*Log[i + j*x] - 2*a*b*Log[c*(d*(e + f*x)^p)^q]*Log[i + j*x] + 2*b
^2*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log[i + j*x] - b^2*Log[c*(d*(e
 + f*x)^p)^q]^2*Log[i + j*x] - 2*a*b*p*q*Log[e + f*x]*Log[(f*(i + j*x))/(f*
```

```
i - e*j)] + b^2*p^2*q^2*Log[e + f*x]^2*Log[(f*(i + j*x))/(f*i - e*j)] - 2*b
^2*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log[(f*(i + j*x))/(f*i - e*j)]
 + 2*b*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLog[2, (h*(e + f*x))/(-(f*g
) + e*h)] - 2*b*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLog[2, (j*(e + f*x
))/(-(f*i) + e*j)] - 2*b^2*p^2*q^2*PolyLog[3, (h*(e + f*x))/(-(f*g) + e*h)]
 + 2*b^2*p^2*q^2*PolyLog[3, (j*(e + f*x))/(-(f*i) + e*j)])/(h*i - g*j)
```

fricas [F] time = 0.48, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{b^2\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^2+2\,ab\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a^2}{hjx^2+gi+\left(hi+gj\right)x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)/(j*x+i),x, algorithm="fric
as")
```

```
[Out] integral((b^2*log(((f*x + e)^p*d)^q*c)^2 + 2*a*b*log(((f*x + e)^p*d)^q*c) +
 a^2)/(h*j*x^2 + g*i + (h*i + g*j)*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a\right)^2}{\left(hx+g\right)\left(jx+i\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)/(j*x+i),x, algorithm="giac
")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^2/((h*x + g)*(j*x + i)), x)
```

maple [F] time = 0.55, size = 0, normalized size = 0.00

$$\int \frac{\left(b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)+a\right)^2}{\left(hx+g\right)\left(jx+i\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^2/(h*x+g)/(j*x+i),x)
```

```
[Out] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^2/(h*x+g)/(j*x+i),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$a^2\left(\frac{\log\left(hx+g\right)}{hi-gj}-\frac{\log\left(jx+i\right)}{hi-gj}\right)+\int \frac{b^2\log\left(\left(\left(fx+e\right)^p\right)^q\right)^2+2\left(q\log(d)+\log(c)\right)ab+\left(q^2\log(d)^2+2\,q\log(c)\mathrm{lo}\right.}{hjx^2+gi+\left(hi\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)/(j*x+i),x, algorithm="maxi
ma")
```

```
[Out] a^2*(log(h*x + g)/(h*i - g*j) - log(j*x + i)/(h*i - g*j)) + integrate((b^2*
log(((f*x + e)^p)^q)^2 + 2*(q*log(d) + log(c))*a*b + (q^2*log(d)^2 + 2*q*lo
```

```
g(c)*log(d) + log(c)^2)*b^2 + 2*((q*log(d) + log(c))*b^2 + a*b)*log(((f*x +
 e)^p)^q))/(h*j*x^2 + g*i + (h*i + g*j)*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a+b\,\ln\left(c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right)\right)^2}{\left(g+h\,x\right)\,\left(i+j\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^2/((g + h*x)*(i + j*x)),x)
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))^2/((g + h*x)*(i + j*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\log\left(c\left(d\left(e+fx\right)^p\right)^q\right)\right)^2}{\left(g+hx\right)\left(i+jx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**2/(h*x+g)/(j*x+i),x)
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**2/((g + h*x)*(i + j*x)), x)
```

3.534 $\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{(g+hx)(i+jx)^2}\,dx$

Optimal. Leaf size=463

$$\frac{2bhpq\mathrm{Li}_2\left(-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{(hi-gj)^2}-\frac{2bhpq\mathrm{Li}_2\left(-\frac{j(e+fx)}{fi-ej}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{(hi-gj)^2}+\frac{2bfpq\log\left(\right.}{}$$

```
[Out] -j*(f*x+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))^2/(-e*j+f*i)/(-g*j+h*i)/(j*x+i)+h*(a
+b*ln(c*(d*(f*x+e)^p)^q))^2*ln(f*(h*x+g)/(-e*h+f*g))/(-g*j+h*i)^2+2*b*f*p*q
*(a+b*ln(c*(d*(f*x+e)^p)^q))*ln(f*(j*x+i)/(-e*j+f*i))/(-e*j+f*i)/(-g*j+h*i)
-h*(a+b*ln(c*(d*(f*x+e)^p)^q))^2*ln(f*(j*x+i)/(-e*j+f*i))/(-g*j+h*i)^2+2*b*
h*p*q*(a+b*ln(c*(d*(f*x+e)^p)^q))*polylog(2,-h*(f*x+e)/(-e*h+f*g))/(-g*j+h*
i)^2+2*b^2*f*p^2*q^2*polylog(2,-j*(f*x+e)/(-e*j+f*i))/(-e*j+f*i)/(-g*j+h*i)
-2*b*h*p*q*(a+b*ln(c*(d*(f*x+e)^p)^q))*polylog(2,-j*(f*x+e)/(-e*j+f*i))/(-g
*j+h*i)^2-2*b^2*h*p^2*q^2*polylog(3,-h*(f*x+e)/(-e*h+f*g))/(-g*j+h*i)^2+2*b
^2*h*p^2*q^2*polylog(3,-j*(f*x+e)/(-e*j+f*i))/(-g*j+h*i)^2
```

Rubi [A] time = 1.18, antiderivative size = 463, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 10, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.286$, Rules used = {2418, 2396, 2433, 2374, 6589, 2397, 2394, 2393, 2391, 2445}

$$\frac{2bhpq\mathrm{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{(hi-gj)^2}-\frac{2bhpq\mathrm{PolyLog}\left(2,-\frac{j(e+fx)}{fi-ej}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^{q}\right.\right.}{(hi-gj)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/((g + h*x)*(i + j*x)^2),x]
```

```
[Out] -((j*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/((f*i - e*j)*(h*i - g*j)
*(i + j*x))) + (h*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*Log[(f*(g + h*x))/(f*g
 - e*h)])/(h*i - g*j)^2 + (2*b*f*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])*Log[(
f*(i + j*x))/(f*i - e*j)])/((f*i - e*j)*(h*i - g*j)) - (h*(a + b*Log[c*(d*(
e + f*x)^p)^q])^2*Log[(f*(i + j*x))/(f*i - e*j)])/(h*i - g*j)^2 + (2*b*h*p*
q*(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLog[2, -((h*(e + f*x))/(f*g - e*h))]
)/(h*i - g*j)^2 + (2*b^2*f*p^2*q^2*PolyLog[2, -((j*(e + f*x))/(f*i - e*j))]
)/((f*i - e*j)*(h*i - g*j)) - (2*b*h*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])*P
olyLog[2, -((j*(e + f*x))/(f*i - e*j))])/(h*i - g*j)^2 - (2*b^2*h*p^2*q^2*P
olyLog[3, -((h*(e + f*x))/(f*g - e*h))])/(h*i - g*j)^2 + (2*b^2*h*p^2*q^2*P
olyLog[3, -((j*(e + f*x))/(f*i - e*j))])/(h*i - g*j)^2
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2397

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_))^2, x_Symbol] :> Simp[((d + e*x)*(a + b*Log[c*(d + e*x)^n])^p)/((e*f
 - d*g)*(f + g*x)), x] - Dist[(b*e*n*p)/(e*f - d*g), Int[(a + b*Log[c*(d +
e*x)^n])^(p - 1)/(f + g*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] &&
 NeQ[e*f - d*g, 0] && GtQ[p, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{(g+hx)(534+jx)^2}\,dx = \text{Subst}\left(\int \frac{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}{(g+hx)(534+jx)^2}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \text{Subst}\left(\int\left(\frac{h^2\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}{(534h-gj)^2(g+hx)} - \frac{j\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}{(534h-gj)(534+jx)^2}\right.\right.$$

$$= \text{Subst}\left(\frac{h^2\int\frac{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}{g+hx}\,dx}{(534h-gj)^2}, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right) - \text{Subst}$$

$$= -\frac{j(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{(534f-ej)(534h-gj)(534+jx)} + \frac{h\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{(534h-gj)^2}$$

$$= -\frac{j(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{(534f-ej)(534h-gj)(534+jx)} + \frac{h\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{(534h-gj)^2}$$

$$= -\frac{j(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{(534f-ej)(534h-gj)(534+jx)} + \frac{h\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{(534h-gj)^2}$$

$$= -\frac{j(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{(534f-ej)(534h-gj)(534+jx)} + \frac{h\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{(534h-gj)^2}$$

Mathematica [A] time = 0.96, size = 654, normalized size = 1.41

$$\frac{-2bpq\left(-h(i+jx)(fi-ej)\left(\text{Li}_2\left(\frac{h(e+fx)}{eh-fg}\right)+\log(e+fx)\log\left(\frac{f(g+hx)}{fg-eh}\right)\right)+(hi-gj)(j(e+fx)\log(e+fx)-f(i+jx)\log\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/((g + h*x)*(i + j*x)^2),x]
```

```
[Out] ((f*i - e*j)*(h*i - g*j)*(a - b*p*q*Log[e + f*x] + b*Log[c*(d*(e + f*x)^p)^
q])^2 + h*(f*i - e*j)*(i + j*x)*(a - b*p*q*Log[e + f*x] + b*Log[c*(d*(e + f
*x)^p)^q])^2*Log[g + h*x] - h*(f*i - e*j)*(i + j*x)*(a - b*p*q*Log[e + f*x]
 + b*Log[c*(d*(e + f*x)^p)^q])^2*Log[i + j*x] - 2*b*p*q*(a - b*p*q*Log[e +
f*x] + b*Log[c*(d*(e + f*x)^p)^q])*((h*i - g*j)*(j*(e + f*x)*Log[e + f*x] -
 f*(i + j*x)*Log[i + j*x]) - h*(f*i - e*j)*(i + j*x)*(Log[e + f*x]*Log[(f*(
g + h*x))/(f*g - e*h)] + PolyLog[2, (h*(e + f*x))/(-(f*g) + e*h)]) + h*(f*i
 - e*j)*(i + j*x)*(Log[e + f*x]*Log[(f*(i + j*x))/(f*i - e*j)] + PolyLog[2,
 (j*(e + f*x))/(-(f*i) + e*j)])) - b^2*p^2*q^2*((h*i - g*j)*(Log[e + f*x]*(
j*(e + f*x)*Log[e + f*x] - 2*f*(i + j*x)*Log[(f*(i + j*x))/(f*i - e*j)]) -
```

```
2*f*(i + j*x)*PolyLog[2, (j*(e + f*x))/(-(f*i) + e*j)]) - h*(f*i - e*j)*(i
+ j*x)*(Log[e + f*x]^2*Log[(f*(g + h*x))/(f*g - e*h)] + 2*Log[e + f*x]*Poly
Log[2, (h*(e + f*x))/(-(f*g) + e*h)] - 2*PolyLog[3, (h*(e + f*x))/(-(f*g) +
 e*h)]) + h*(f*i - e*j)*(i + j*x)*(Log[e + f*x]^2*Log[(f*(i + j*x))/(f*i -
e*j)] + 2*Log[e + f*x]*PolyLog[2, (j*(e + f*x))/(-(f*i) + e*j)] - 2*PolyLog
[3, (j*(e + f*x))/(-(f*i) + e*j)])))/((f*i - e*j)*(h*i - g*j)^2*(i + j*x))
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b^2\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^2 + 2\,ab\log\left(\left(\left(fx+e\right)^p d\right)^q c\right) + a^2}{hj^2x^3 + gi^2 + \left(2\,hij + gj^2\right)x^2 + \left(hi^2 + 2\,gij\right)x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)/(j*x+i)^2,x, algorithm="fr
icas")
```

```
[Out] integral((b^2*log(((f*x + e)^p*d)^q*c)^2 + 2*a*b*log(((f*x + e)^p*d)^q*c) +
 a^2)/(h*j^2*x^3 + g*i^2 + (2*h*i*j + g*j^2)*x^2 + (h*i^2 + 2*g*i*j)*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right) + a\right)^2}{\left(hx+g\right)\left(jx+i\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)/(j*x+i)^2,x, algorithm="gi
ac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^2/((h*x + g)*(j*x + i)^2), x)
```

maple [F] time = 0.53, size = 0, normalized size = 0.00

$$\int \frac{\left(b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right) + a\right)^2}{\left(hx+g\right)\left(jx+i\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^2/(h*x+g)/(j*x+i)^2,x)
```

```
[Out] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^2/(h*x+g)/(j*x+i)^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$a^2\left(\frac{h\log\left(hx+g\right)}{h^2i^2 - 2\,ghij + g^2j^2} - \frac{h\log\left(jx+i\right)}{h^2i^2 - 2\,ghij + g^2j^2} + \frac{1}{hi^2 - gij + \left(hij - gj^2\right)x}\right) + \int \frac{b^2\log\left(\left(\left(fx+e\right)^p\right)^q\right)^2 + 2\left(q\log(\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)/(j*x+i)^2,x, algorithm="ma
xima")
```

```
[Out] a^2*(h*log(h*x + g)/(h^2*i^2 - 2*g*h*i*j + g^2*j^2) - h*log(j*x + i)/(h^2*i
^2 - 2*g*h*i*j + g^2*j^2) + 1/(h*i^2 - g*i*j + (h*i*j - g*j^2)*x)) + integr
```

```
ate((b^2*log(((f*x + e)^p)^q)^2 + 2*(q*log(d) + log(c))*a*b + (q^2*log(d)^2
 + 2*q*log(c)*log(d) + log(c)^2)*b^2 + 2*((q*log(d) + log(c))*b^2 + a*b)*lo
g(((f*x + e)^p)^q))/(h*j^2*x^3 + g*i^2 + (2*h*i*j + g*j^2)*x^2 + (h*i^2 + 2
*g*i*j)*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a+b\,\ln\left(c\left(d\left(e+f\,x\right)^p\right)^q\right)\right)^2}{\left(g+h\,x\right)\,\left(i+j\,x\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^2/((g + h*x)*(i + j*x)^2),x)
```

```
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))^2/((g + h*x)*(i + j*x)^2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\log\left(c\left(d\left(e+fx\right)^p\right)^q\right)\right)^2}{\left(g+hx\right)\left(i+jx\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**2/(h*x+g)/(j*x+i)**2,x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**2/((g + h*x)*(i + j*x)**2), x)
```

3.535 $\int \frac{(i+jx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{g+hx}\,dx$

Optimal. Leaf size=742

$$\frac{3b^2j^2p^2q^2(e+fx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{4f^2h}-\frac{6b^2p^2q^2(hi-gj)^2\text{Li}_3\left(-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h^3}$$

```
[Out] 6*a*b^2*j*(-e*j+f*i)*p^2*q^2*x/f/h+6*a*b^2*j*(-g*j+h*i)*p^2*q^2*x/h^2-6*b^3
*j*(-e*j+f*i)*p^3*q^3*x/f/h-6*b^3*j*(-g*j+h*i)*p^3*q^3*x/h^2-3/8*b^3*j^2*p^
3*q^3*(f*x+e)^2/f^2/h+6*b^3*j*(-e*j+f*i)*p^2*q^2*(f*x+e)*ln(c*(d*(f*x+e)^p)
^q)/f^2/h+6*b^3*j*(-g*j+h*i)*p^2*q^2*(f*x+e)*ln(c*(d*(f*x+e)^p)^q)/f/h^2+3/
4*b^2*j^2*p^2*q^2*(f*x+e)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))/f^2/h-3*b*j*(-e*j+f
*i)*p*q*(f*x+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))^2/f^2/h-3*b*j*(-g*j+h*i)*p*q*(f
*x+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))^2/f/h^2-3/4*b*j^2*p*q*(f*x+e)^2*(a+b*ln(c
*(d*(f*x+e)^p)^q))^2/f^2/h+j*(-e*j+f*i)*(f*x+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))
^3/f^2/h+j*(-g*j+h*i)*(f*x+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))^3/f/h^2+1/2*j^2*(
f*x+e)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))^3/f^2/h+(-g*j+h*i)^2*(a+b*ln(c*(d*(f*x
+e)^p)^q))^3*ln(f*(h*x+g)/(-e*h+f*g))/h^3+3*b*(-g*j+h*i)^2*p*q*(a+b*ln(c*(d
*(f*x+e)^p)^q))^2*polylog(2,-h*(f*x+e)/(-e*h+f*g))/h^3-6*b^2*(-g*j+h*i)^2*p
^2*q^2*(a+b*ln(c*(d*(f*x+e)^p)^q))*polylog(3,-h*(f*x+e)/(-e*h+f*g))/h^3+6*b
^3*(-g*j+h*i)^2*p^3*q^3*polylog(4,-h*(f*x+e)/(-e*h+f*g))/h^3
```

Rubi [A] time = 1.83, antiderivative size = 742, normalized size of antiderivative = 1.00, number of steps used = 24, number of rules used = 14, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {2418, 2389, 2296, 2295, 2396, 2433, 2374, 2383, 6589, 2401, 2390, 2305, 2304, 2445}

$$-\frac{6b^2p^2q^2(hi-gj)^2\text{PolyLog}\left(3,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h^3}+\frac{3bpq(hi-gj)^2\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)\left(a\right.}{h^3}$$

Antiderivative was successfully verified.

```
[In] Int[((i + j*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^3)/(g + h*x),x]
```

```
[Out] (6*a*b^2*j*(f*i - e*j)*p^2*q^2*x)/(f*h) + (6*a*b^2*j*(h*i - g*j)*p^2*q^2*x)
/h^2 - (6*b^3*j*(f*i - e*j)*p^3*q^3*x)/(f*h) - (6*b^3*j*(h*i - g*j)*p^3*q^3
*x)/h^2 - (3*b^3*j^2*p^3*q^3*(e + f*x)^2)/(8*f^2*h) + (6*b^3*j*(f*i - e*j)*
p^2*q^2*(e + f*x)*Log[c*(d*(e + f*x)^p)^q])/(f^2*h) + (6*b^3*j*(h*i - g*j)*
p^2*q^2*(e + f*x)*Log[c*(d*(e + f*x)^p)^q])/(f*h^2) + (3*b^2*j^2*p^2*q^2*(e
 + f*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(4*f^2*h) - (3*b*j*(f*i - e*j)*
p*q*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/(f^2*h) - (3*b*j*(h*i - g
*j)*p*q*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/(f*h^2) - (3*b*j^2*p*
q*(e + f*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/(4*f^2*h) + (j*(f*i - e*j
)*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3)/(f^2*h) + (j*(h*i - g*j)*(e
 + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3)/(f*h^2) + (j^2*(e + f*x)^2*(a +
 b*Log[c*(d*(e + f*x)^p)^q])^3)/(2*f^2*h) + ((h*i - g*j)^2*(a + b*Log[c*(d*
(e + f*x)^p)^q])^3*Log[(f*(g + h*x))/(f*g - e*h)])/h^3 + (3*b*(h*i - g*j)^2
*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*PolyLog[2, -((h*(e + f*x))/(f*g - e
*h))])/h^3 - (6*b^2*(h*i - g*j)^2*p^2*q^2*(a + b*Log[c*(d*(e + f*x)^p)^q])*
PolyLog[3, -((h*(e + f*x))/(f*g - e*h))])/h^3 + (6*b^3*(h*i - g*j)^2*p^3*q^
3*PolyLog[4, -((h*(e + f*x))/(f*g - e*h))])/h^3
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2383

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^p)/q
, x] - Dist[(b*n*p)/q, Int[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^(p - 1
))/x, x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
```

```
d*g, 0] && IGtQ[q, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(535+jx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{g+hx}\,dx = \text{Subst}\left(\int \frac{(535+jx)^2\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3}{g+hx}\,dx, cd^q(e+\right.$$

$$= \text{Subst}\left(\int\left(\frac{j(535h-gj)\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3}{h^2}+\frac{(535h-}{}\right.\right.$$

$$= \text{Subst}\left(\frac{j\int(535+jx)\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3\,dx}{h}, cd^q(e+f\right.$$

$$= \frac{(535h-gj)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h^3}+\text{Sub}$$

$$= \frac{j(535h-gj)(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{fh^2}+\frac{(535h-g}{}$$

$$= -\frac{3bj(535h-gj)pq(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{fh^2}+\frac{j(5}{}$$

$$= \frac{6ab^2j(535h-gj)p^2q^2x}{h^2}-\frac{3bj(535h-gj)pq(e+fx)\left(a+b\log\left(\right.\right.}{fh^2}$$

$$= \frac{6ab^2j(535h-gj)p^2q^2x}{h^2}-\frac{6b^3j(535h-gj)p^3q^3x}{h^2}+\frac{6b^3j(535h-}{}$$

$$= \frac{6ab^2j(535f-ej)p^2q^2x}{fh}+\frac{6ab^2j(535h-gj)p^2q^2x}{h^2}-\frac{6b^3j(535h-}{h^2}$$

$$= \frac{6ab^2j(535f-ej)p^2q^2x}{fh}+\frac{6ab^2j(535h-gj)p^2q^2x}{h^2}-\frac{6b^3j(535f-}{fh}$$

Mathematica [B] time = 1.61, size = 4056, normalized size = 5.47

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[((i + j*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^3)/(g + h*x),x]
```

```
[Out] (-48*a^2*b*e*f*h^2*i*j*p*q + 24*a^2*b*e*f*g*h*j^2*p*q + 16*a^3*f^2*h^2*i*j*
x - 8*a^3*f^2*g*h*j^2*x - 48*a^2*b*f^2*h^2*i*j*p*q*x + 24*a^2*b*f^2*g*h*j^2
*p*q*x + 12*a^2*b*e*f*h^2*j^2*p*q*x + 96*a*b^2*f^2*h^2*i*j*p^2*q^2*x - 48*a
*b^2*f^2*g*h*j^2*p^2*q^2*x - 36*a*b^2*e*f*h^2*j^2*p^2*q^2*x - 96*b^3*f^2*h^
2*i*j*p^3*q^3*x + 48*b^3*f^2*g*h*j^2*p^3*q^3*x + 42*b^3*e*f*h^2*j^2*p^3*q^3
*x + 4*a^3*f^2*h^2*j^2*x^2 - 6*a^2*b*f^2*h^2*j^2*p*q*x^2 + 6*a*b^2*f^2*h^2*
j^2*p^2*q^2*x^2 - 3*b^3*f^2*h^2*j^2*p^3*q^3*x^2 + 48*a^2*b*e*f*h^2*i*j*p*q*
Log[e + f*x] - 24*a^2*b*e*f*g*h*j^2*p*q*Log[e + f*x] - 12*a^2*b*e^2*h^2*j^2
*p*q*Log[e + f*x] + 36*a*b^2*e^2*h^2*j^2*p^2*q^2*Log[e + f*x] + 96*b^3*e*f*
h^2*i*j*p^3*q^3*Log[e + f*x] - 48*b^3*e*f*g*h*j^2*p^3*q^3*Log[e + f*x] - 42
*b^3*e^2*h^2*j^2*p^3*q^3*Log[e + f*x] - 48*a*b^2*e*f*h^2*i*j*p^2*q^2*Log[e
+ f*x]^2 + 24*a*b^2*e*f*g*h*j^2*p^2*q^2*Log[e + f*x]^2 + 12*a*b^2*e^2*h^2*j
^2*p^2*q^2*Log[e + f*x]^2 - 18*b^3*e^2*h^2*j^2*p^3*q^3*Log[e + f*x]^2 + 16*
b^3*e*f*h^2*i*j*p^3*q^3*Log[e + f*x]^3 - 8*b^3*e*f*g*h*j^2*p^3*q^3*Log[e +
f*x]^3 - 4*b^3*e^2*h^2*j^2*p^3*q^3*Log[e + f*x]^3 - 96*a*b^2*e*f*h^2*i*j*p*
q*Log[c*(d*(e + f*x)^p)^q] + 48*a*b^2*e*f*g*h*j^2*p*q*Log[c*(d*(e + f*x)^p)
^q] + 48*a^2*b*f^2*h^2*i*j*x*Log[c*(d*(e + f*x)^p)^q] - 24*a^2*b*f^2*g*h*j^
2*x*Log[c*(d*(e + f*x)^p)^q] - 96*a*b^2*f^2*h^2*i*j*p*q*x*Log[c*(d*(e + f*x
)^p)^q] + 48*a*b^2*f^2*g*h*j^2*p*q*x*Log[c*(d*(e + f*x)^p)^q] + 24*a*b^2*e*
f*h^2*j^2*p*q*x*Log[c*(d*(e + f*x)^p)^q] + 96*b^3*f^2*h^2*i*j*p^2*q^2*x*Log
[c*(d*(e + f*x)^p)^q] - 48*b^3*f^2*g*h*j^2*p^2*q^2*x*Log[c*(d*(e + f*x)^p)^
q] - 36*b^3*e*f*h^2*j^2*p^2*q^2*x*Log[c*(d*(e + f*x)^p)^q] + 12*a^2*b*f^2*h
^2*j^2*x^2*Log[c*(d*(e + f*x)^p)^q] - 12*a*b^2*f^2*h^2*j^2*p*q*x^2*Log[c*(d
*(e + f*x)^p)^q] + 6*b^3*f^2*h^2*j^2*p^2*q^2*x^2*Log[c*(d*(e + f*x)^p)^q] +
 96*a*b^2*e*f*h^2*i*j*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q] - 48*a*b^2*
e*f*g*h*j^2*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q] - 24*a*b^2*e^2*h^2*j^
2*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q] + 36*b^3*e^2*h^2*j^2*p^2*q^2*Lo
g[e + f*x]*Log[c*(d*(e + f*x)^p)^q] - 48*b^3*e*f*h^2*i*j*p^2*q^2*Log[e + f*
x]^2*Log[c*(d*(e + f*x)^p)^q] + 24*b^3*e*f*g*h*j^2*p^2*q^2*Log[e + f*x]^2*L
og[c*(d*(e + f*x)^p)^q] + 12*b^3*e^2*h^2*j^2*p^2*q^2*Log[e + f*x]^2*Log[c*(
d*(e + f*x)^p)^q] - 48*b^3*e*f*h^2*i*j*p*q*Log[c*(d*(e + f*x)^p)^q]^2 + 24*
b^3*e*f*g*h*j^2*p*q*Log[c*(d*(e + f*x)^p)^q]^2 + 48*a*b^2*f^2*h^2*i*j*x*Log
[c*(d*(e + f*x)^p)^q]^2 - 24*a*b^2*f^2*g*h*j^2*x*Log[c*(d*(e + f*x)^p)^q]^2
 - 48*b^3*f^2*h^2*i*j*p*q*x*Log[c*(d*(e + f*x)^p)^q]^2 + 24*b^3*f^2*g*h*j^2
*p*q*x*Log[c*(d*(e + f*x)^p)^q]^2 + 12*b^3*e*f*h^2*j^2*p*q*x*Log[c*(d*(e +
f*x)^p)^q]^2 + 12*a*b^2*f^2*h^2*j^2*x^2*Log[c*(d*(e + f*x)^p)^q]^2 - 6*b^3*
f^2*h^2*j^2*p*q*x^2*Log[c*(d*(e + f*x)^p)^q]^2 + 48*b^3*e*f*h^2*i*j*p*q*Log
[e + f*x]*Log[c*(d*(e + f*x)^p)^q]^2 - 24*b^3*e*f*g*h*j^2*p*q*Log[e + f*x]*
Log[c*(d*(e + f*x)^p)^q]^2 - 12*b^3*e^2*h^2*j^2*p*q*Log[e + f*x]*Log[c*(d*(
e + f*x)^p)^q]^2 + 16*b^3*f^2*h^2*i*j*x*Log[c*(d*(e + f*x)^p)^q]^3 - 8*b^3*
f^2*g*h*j^2*x*Log[c*(d*(e + f*x)^p)^q]^3 + 4*b^3*f^2*h^2*j^2*x^2*Log[c*(d*(
e + f*x)^p)^q]^3 + 8*a^3*f^2*h^2*i^2*Log[g + h*x] - 16*a^3*f^2*g*h*i*j*Log[
g + h*x] + 8*a^3*f^2*g^2*j^2*Log[g + h*x] - 24*a^2*b*f^2*h^2*i^2*p*q*Log[e
+ f*x]*Log[g + h*x] + 48*a^2*b*f^2*g*h*i*j*p*q*Log[e + f*x]*Log[g + h*x] -
24*a^2*b*f^2*g^2*j^2*p*q*Log[e + f*x]*Log[g + h*x] + 24*a*b^2*f^2*h^2*i^2*p
^2*q^2*Log[e + f*x]^2*Log[g + h*x] - 48*a*b^2*f^2*g*h*i*j*p^2*q^2*Log[e + f
*x]^2*Log[g + h*x] + 24*a*b^2*f^2*g^2*j^2*p^2*q^2*Log[e + f*x]^2*Log[g + h*
x] - 8*b^3*f^2*h^2*i^2*p^3*q^3*Log[e + f*x]^3*Log[g + h*x] + 16*b^3*f^2*g*h
*i*j*p^3*q^3*Log[e + f*x]^3*Log[g + h*x] - 8*b^3*f^2*g^2*j^2*p^3*q^3*Log[e
+ f*x]^3*Log[g + h*x] + 24*a^2*b*f^2*h^2*i^2*Log[c*(d*(e + f*x)^p)^q]*Log[g
 + h*x] - 48*a^2*b*f^2*g*h*i*j*Log[c*(d*(e + f*x)^p)^q]*Log[g + h*x] + 24*a
^2*b*f^2*g^2*j^2*Log[c*(d*(e + f*x)^p)^q]*Log[g + h*x] - 48*a*b^2*f^2*h^2*i
^2*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log[g + h*x] + 96*a*b^2*f^2*g*
h*i*j*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log[g + h*x] - 48*a*b^2*f^2
*g^2*j^2*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log[g + h*x] + 24*b^3*f^
2*h^2*i^2*p^2*q^2*Log[e + f*x]^2*Log[c*(d*(e + f*x)^p)^q]*Log[g + h*x] - 48
*b^3*f^2*g*h*i*j*p^2*q^2*Log[e + f*x]^2*Log[c*(d*(e + f*x)^p)^q]*Log[g + h*
x] + 24*b^3*f^2*g^2*j^2*p^2*q^2*Log[e + f*x]^2*Log[c*(d*(e + f*x)^p)^q]*Log
[g + h*x] + 24*a*b^2*f^2*h^2*i^2*Log[c*(d*(e + f*x)^p)^q]^2*Log[g + h*x] -
```

```
48*a*b^2*f^2*g*h*i*j*Log[c*(d*(e + f*x)^p)^q]^2*Log[g + h*x] + 24*a*b^2*f^2
*g^2*j^2*Log[c*(d*(e + f*x)^p)^q]^2*Log[g + h*x] - 24*b^3*f^2*h^2*i^2*p*q*L
og[e + f*x]*Log[c*(d*(e + f*x)^p)^q]^2*Log[g + h*x] + 48*b^3*f^2*g*h*i*j*p*
q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]^2*Log[g + h*x] - 24*b^3*f^2*g^2*j^2
*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]^2*Log[g + h*x] + 8*b^3*f^2*h^2*i
^2*Log[c*(d*(e + f*x)^p)^q]^3*Log[g + h*x] - 16*b^3*f^2*g*h*i*j*Log[c*(d*(e
 + f*x)^p)^q]^3*Log[g + h*x] + 8*b^3*f^2*g^2*j^2*Log[c*(d*(e + f*x)^p)^q]^3
*Log[g + h*x] + 24*a^2*b*f^2*h^2*i^2*p*q*Log[e + f*x]*Log[(f*(g + h*x))/(f*
g - e*h)] - 48*a^2*b*f^2*g*h*i*j*p*q*Log[e + f*x]*Log[(f*(g + h*x))/(f*g -
e*h)] + 24*a^2*b*f^2*g^2*j^2*p*q*Log[e + f*x]*Log[(f*(g + h*x))/(f*g - e*h)
] - 24*a*b^2*f^2*h^2*i^2*p^2*q^2*Log[e + f*x]^2*Log[(f*(g + h*x))/(f*g - e*
h)] + 48*a*b^2*f^2*g*h*i*j*p^2*q^2*Log[e + f*x]^2*Log[(f*(g + h*x))/(f*g -
e*h)] - 24*a*b^2*f^2*g^2*j^2*p^2*q^2*Log[e + f*x]^2*Log[(f*(g + h*x))/(f*g
- e*h)] + 8*b^3*f^2*h^2*i^2*p^3*q^3*Log[e + f*x]^3*Log[(f*(g + h*x))/(f*g -
 e*h)] - 16*b^3*f^2*g*h*i*j*p^3*q^3*Log[e + f*x]^3*Log[(f*(g + h*x))/(f*g -
 e*h)] + 8*b^3*f^2*g^2*j^2*p^3*q^3*Log[e + f*x]^3*Log[(f*(g + h*x))/(f*g -
e*h)] + 48*a*b^2*f^2*h^2*i^2*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log[
(f*(g + h*x))/(f*g - e*h)] - 96*a*b^2*f^2*g*h*i*j*p*q*Log[e + f*x]*Log[c*(d
*(e + f*x)^p)^q]*Log[(f*(g + h*x))/(f*g - e*h)] + 48*a*b^2*f^2*g^2*j^2*p*q*
Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log[(f*(g + h*x))/(f*g - e*h)] - 24*b
^3*f^2*h^2*i^2*p^2*q^2*Log[e + f*x]^2*Log[c*(d*(e + f*x)^p)^q]*Log[(f*(g +
h*x))/(f*g - e*h)] + 48*b^3*f^2*g*h*i*j*p^2*q^2*Log[e + f*x]^2*Log[c*(d*(e
+ f*x)^p)^q]*Log[(f*(g + h*x))/(f*g - e*h)] - 24*b^3*f^2*g^2*j^2*p^2*q^2*Lo
g[e + f*x]^2*Log[c*(d*(e + f*x)^p)^q]*Log[(f*(g + h*x))/(f*g - e*h)] + 24*b
^3*f^2*h^2*i^2*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]^2*Log[(f*(g + h*x)
)/(f*g - e*h)] - 48*b^3*f^2*g*h*i*j*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^
q]^2*Log[(f*(g + h*x))/(f*g - e*h)] + 24*b^3*f^2*g^2*j^2*p*q*Log[e + f*x]*L
og[c*(d*(e + f*x)^p)^q]^2*Log[(f*(g + h*x))/(f*g - e*h)] + 24*b*f^2*(h*i -
g*j)^2*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*PolyLog[2, (h*(e + f*x))/(-(f
*g) + e*h)] - 48*b^2*f^2*(h*i - g*j)^2*p^2*q^2*(a + b*Log[c*(d*(e + f*x)^p)
^q])*PolyLog[3, (h*(e + f*x))/(-(f*g) + e*h)] + 48*b^3*f^2*h^2*i^2*p^3*q^3*
PolyLog[4, (h*(e + f*x))/(-(f*g) + e*h)] - 96*b^3*f^2*g*h*i*j*p^3*q^3*PolyL
og[4, (h*(e + f*x))/(-(f*g) + e*h)] + 48*b^3*f^2*g^2*j^2*p^3*q^3*PolyLog[4,
 (h*(e + f*x))/(-(f*g) + e*h)])/(8*f^2*h^3)
```

fricas [F] time = 0.48, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{a^3j^2x^2 + 2\,a^3ijx + a^3i^2 + \left(b^3j^2x^2 + 2\,b^3ijx + b^3i^2\right)\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^3 + 3\left(ab^2j^2x^2 + 2\,ab^2ijx + ab^2i^2\right.}{hx+g}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g),x, algorithm="fr
icas")
```

```
[Out] integral((a^3*j^2*x^2 + 2*a^3*i*j*x + a^3*i^2 + (b^3*j^2*x^2 + 2*b^3*i*j*x
+ b^3*i^2)*log(((f*x + e)^p*d)^q*c)^3 + 3*(a*b^2*j^2*x^2 + 2*a*b^2*i*j*x +
a*b^2*i^2)*log(((f*x + e)^p*d)^q*c)^2 + 3*(a^2*b*j^2*x^2 + 2*a^2*b*i*j*x +
a^2*b*i^2)*log(((f*x + e)^p*d)^q*c))/(h*x + g), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(jx+i\right)^2\left(b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a\right)^3}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g),x, algorithm="gi
ac")
```

```
[Out] integrate((j*x + i)^2*(b*log(((f*x + e)^p*d)^q*c) + a)^3/(h*x + g), x)
```

maple [F] time = 0.50, size = 0, normalized size = 0.00

$$\int \frac{(jx+i)^2 \left(b \ln \left(c \left(d \left(fx+e\right)^p\right)^q\right)+a\right)^3}{hx+g}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((j*x+i)^2*(b*ln(c*(d*(f*x+e)^p)^q)+a)^3/(h*x+g),x)
```

```
[Out] int((j*x+i)^2*(b*ln(c*(d*(f*x+e)^p)^q)+a)^3/(h*x+g),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g),x, algorithm="ma
xima")
```

```
[Out] 2*a^3*i*j*(x/h - g*log(h*x + g)/h^2) + 1/2*a^3*j^2*(2*g^2*log(h*x + g)/h^3
+ (h*x^2 - 2*g*x)/h^2) + a^3*i^2*log(h*x + g)/h + integrate((3*(i^2*q*log(d
) + i^2*log(c))*a^2*b + 3*(i^2*q^2*log(d)^2 + 2*i^2*q*log(c)*log(d) + i^2*l
og(c)^2)*a*b^2 + (i^2*q^3*log(d)^3 + 3*i^2*q^2*log(c)*log(d)^2 + 3*i^2*q*lo
g(c)^2*log(d) + i^2*log(c)^3)*b^3 + (b^3*j^2*x^2 + 2*b^3*i*j*x + b^3*i^2)*l
og(((f*x + e)^p)^q)^3 + (3*(j^2*q*log(d) + j^2*log(c))*a^2*b + 3*(j^2*q^2*l
og(d)^2 + 2*j^2*q*log(c)*log(d) + j^2*log(c)^2)*a*b^2 + (j^2*q^3*log(d)^3 +
 3*j^2*q^2*log(c)*log(d)^2 + 3*j^2*q*log(c)^2*log(d) + j^2*log(c)^3)*b^3)*x
^2 + 3*(a*b^2*i^2 + (i^2*q*log(d) + i^2*log(c))*b^3 + (a*b^2*j^2 + (j^2*q*l
og(d) + j^2*log(c))*b^3)*x^2 + 2*(a*b^2*i*j + (i*j*q*log(d) + i*j*log(c))*b
^3)*x)*log(((f*x + e)^p)^q)^2 + 2*(3*(i*j*q*log(d) + i*j*log(c))*a^2*b + 3*
(i*j*q^2*log(d)^2 + 2*i*j*q*log(c)*log(d) + i*j*log(c)^2)*a*b^2 + (i*j*q^3*
log(d)^3 + 3*i*j*q^2*log(c)*log(d)^2 + 3*i*j*q*log(c)^2*log(d) + i*j*log(c)
^3)*b^3)*x + 3*(a^2*b*i^2 + 2*(i^2*q*log(d) + i^2*log(c))*a*b^2 + (i^2*q^2*
log(d)^2 + 2*i^2*q*log(c)*log(d) + i^2*log(c)^2)*b^3 + (a^2*b*j^2 + 2*(j^2*
q*log(d) + j^2*log(c))*a*b^2 + (j^2*q^2*log(d)^2 + 2*j^2*q*log(c)*log(d) +
j^2*log(c)^2)*b^3)*x^2 + 2*(a^2*b*i*j + 2*(i*j*q*log(d) + i*j*log(c))*a*b^2
 + (i*j*q^2*log(d)^2 + 2*i*j*q*log(c)*log(d) + i*j*log(c)^2)*b^3)*x)*log(((
f*x + e)^p)^q))/(h*x + g), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(i+j\,x\right)}^2\,{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}^3}{g+h\,x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((i + j*x)^2*(a + b*log(c*(d*(e + f*x)^p)^q))^3)/(g + h*x),x)
```

```
[Out] int(((i + j*x)^2*(a + b*log(c*(d*(e + f*x)^p)^q))^3)/(g + h*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a + b \log{\left(c \left(d \left(e + f x\right)^{p}\right)^{q} \right)}\right)^{3} \left(i + j x\right)^{2}}{g + h x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)**2*(a+b*ln(c*(d*(f*x+e)**p)**q))**3/(h*x+g),x)
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**3*(i + j*x)**2/(g + h*x), x)
```

3.536 $\int \frac{(i+jx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{g+hx}\,dx$

Optimal. Leaf size=349

$$-\frac{6b^2p^2q^2(hi-gj)\text{Li}_3\left(-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h^2}+\frac{6ab^2jp^2q^2x}{h}+\frac{3bpq(hi-gj)\text{Li}_2\left(-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\right.}{h^2}$$

```
[Out] 6*a*b^2*j*p^2*q^2*x/h-6*b^3*j*p^3*q^3*x/h+6*b^3*j*p^2*q^2*(f*x+e)*ln(c*(d*(
f*x+e)^p)^q)/f/h-3*b*j*p*q*(f*x+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))^2/f/h+j*(f*x
+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))^3/f/h+(-g*j+h*i)*(a+b*ln(c*(d*(f*x+e)^p)^q)
)^3*ln(f*(h*x+g)/(-e*h+f*g))/h^2+3*b*(-g*j+h*i)*p*q*(a+b*ln(c*(d*(f*x+e)^p)
^q))^2*polylog(2,-h*(f*x+e)/(-e*h+f*g))/h^2-6*b^2*(-g*j+h*i)*p^2*q^2*(a+b*l
n(c*(d*(f*x+e)^p)^q))*polylog(3,-h*(f*x+e)/(-e*h+f*g))/h^2+6*b^3*(-g*j+h*i)
*p^3*q^3*polylog(4,-h*(f*x+e)/(-e*h+f*g))/h^2
```

Rubi [A] time = 0.89, antiderivative size = 349, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 10, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.303, Rules used = {2418, 2389, 2296, 2295, 2396, 2433, 2374, 2383, 6589, 2445}

$$-\frac{6b^2p^2q^2(hi-gj)\text{PolyLog}\left(3,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h^2}+\frac{3bpq(hi-gj)\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)\left(a+\right.}{h^2}$$

Antiderivative was successfully verified.

```
[In] Int[((i + j*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3)/(g + h*x),x]
```

```
[Out] (6*a*b^2*j*p^2*q^2*x)/h - (6*b^3*j*p^3*q^3*x)/h + (6*b^3*j*p^2*q^2*(e + f*x
)*Log[c*(d*(e + f*x)^p)^q])/(f*h) - (3*b*j*p*q*(e + f*x)*(a + b*Log[c*(d*(e
 + f*x)^p)^q])^2)/(f*h) + (j*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3)/
(f*h) + ((h*i - g*j)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3*Log[(f*(g + h*x))/(
f*g - e*h)])/h^2 + (3*b*(h*i - g*j)*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*
PolyLog[2, -((h*(e + f*x))/(f*g - e*h))])/h^2 - (6*b^2*(h*i - g*j)*p^2*q^2*
(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLog[3, -((h*(e + f*x))/(f*g - e*h))])/
h^2 + (6*b^3*(h*i - g*j)*p^3*q^3*PolyLog[4, -((h*(e + f*x))/(f*g - e*h))])/
h^2
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2383

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^p)/q
, x] - Dist[(b*n*p)/q, Int[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^(p - 1
))/x, x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(536+jx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{g+hx}\,dx = \text{Subst}\left(\int \frac{(536+jx)\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3}{g+hx}\,dx, cd^q(e+\right.$$

$$= \text{Subst}\left(\int\left(\frac{j\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3}{h} + \frac{(536h-gj)\left(a+\right.}{h(}\right.\right.$$

$$= \text{Subst}\left(\frac{j\int\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3 dx}{h}, cd^q(e+fx)^{pq}, c\left(\right.\right.$$

$$= \frac{(536h-gj)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h^2} + \text{Sul}$$

$$= \frac{j(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{fh} + \frac{(536h-gj)\left(a+b\right.}{}$$

$$= -\frac{3bjpq(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{fh} + \frac{j(e+fx)\left(a\right.}{}$$

$$= \frac{6ab^2jp^2q^2x}{h} - \frac{3bjpq(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{fh} +$$

$$= \frac{6ab^2jp^2q^2x}{h} - \frac{6b^3jp^3q^3x}{h} + \frac{6b^3jp^2q^2(e+fx)\log\left(c\left(d(e+fx\right.\right.}{fh}$$

<u>**Mathematica**</u> **[B]** time = 0.79, size = 1769, normalized size = 5.07

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[((i + j*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3)/(g + h*x),x]
```

```
[Out] (-3*a^2*b*e*h*j*p*q + a^3*f*h*j*x - 3*a^2*b*f*h*j*p*q*x + 6*a*b^2*f*h*j*p^2
*q^2*x - 6*b^3*f*h*j*p^3*q^3*x + 3*a^2*b*e*h*j*p*q*Log[e + f*x] + 6*b^3*e*h
*j*p^3*q^3*Log[e + f*x] - 3*a*b^2*e*h*j*p^2*q^2*Log[e + f*x]^2 + b^3*e*h*j*
p^3*q^3*Log[e + f*x]^3 - 6*a*b^2*e*h*j*p*q*Log[c*(d*(e + f*x)^p)^q] + 3*a^2
*b*f*h*j*x*Log[c*(d*(e + f*x)^p)^q] - 6*a*b^2*f*h*j*p*q*x*Log[c*(d*(e + f*x
)^p)^q] + 6*b^3*f*h*j*p^2*q^2*x*Log[c*(d*(e + f*x)^p)^q] + 6*a*b^2*e*h*j*p*
```

```
q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q] - 3*b^3*e*h*j*p^2*q^2*Log[e + f*x]^
2*Log[c*(d*(e + f*x)^p)^q] - 3*b^3*e*h*j*p*q*Log[c*(d*(e + f*x)^p)^q]^2 + 3
*a*b^2*f*h*j*x*Log[c*(d*(e + f*x)^p)^q]^2 - 3*b^3*f*h*j*p*q*x*Log[c*(d*(e +
 f*x)^p)^q]^2 + 3*b^3*e*h*j*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]^2 + b
^3*f*h*j*x*Log[c*(d*(e + f*x)^p)^q]^3 + a^3*f*h*i*Log[g + h*x] - a^3*f*g*j*
Log[g + h*x] - 3*a^2*b*f*h*i*p*q*Log[e + f*x]*Log[g + h*x] + 3*a^2*b*f*g*j*
p*q*Log[e + f*x]*Log[g + h*x] + 3*a*b^2*f*h*i*p^2*q^2*Log[e + f*x]^2*Log[g
+ h*x] - 3*a*b^2*f*g*j*p^2*q^2*Log[e + f*x]^2*Log[g + h*x] - b^3*f*h*i*p^3*
q^3*Log[e + f*x]^3*Log[g + h*x] + b^3*f*g*j*p^3*q^3*Log[e + f*x]^3*Log[g +
h*x] + 3*a^2*b*f*h*i*Log[c*(d*(e + f*x)^p)^q]*Log[g + h*x] - 3*a^2*b*f*g*j*
Log[c*(d*(e + f*x)^p)^q]*Log[g + h*x] - 6*a*b^2*f*h*i*p*q*Log[e + f*x]*Log[
c*(d*(e + f*x)^p)^q]*Log[g + h*x] + 6*a*b^2*f*g*j*p*q*Log[e + f*x]*Log[c*(d
*(e + f*x)^p)^q]*Log[g + h*x] + 3*b^3*f*h*i*p^2*q^2*Log[e + f*x]^2*Log[c*(d
*(e + f*x)^p)^q]*Log[g + h*x] - 3*b^3*f*g*j*p^2*q^2*Log[e + f*x]^2*Log[c*(d
*(e + f*x)^p)^q]*Log[g + h*x] + 3*a*b^2*f*h*i*Log[c*(d*(e + f*x)^p)^q]^2*Lo
g[g + h*x] - 3*a*b^2*f*g*j*Log[c*(d*(e + f*x)^p)^q]^2*Log[g + h*x] - 3*b^3*
f*h*i*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]^2*Log[g + h*x] + 3*b^3*f*g*
j*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]^2*Log[g + h*x] + b^3*f*h*i*Log[
c*(d*(e + f*x)^p)^q]^3*Log[g + h*x] - b^3*f*g*j*Log[c*(d*(e + f*x)^p)^q]^3*
Log[g + h*x] + 3*a^2*b*f*h*i*p*q*Log[e + f*x]*Log[(f*(g + h*x))/(f*g - e*h)
] - 3*a^2*b*f*g*j*p*q*Log[e + f*x]*Log[(f*(g + h*x))/(f*g - e*h)] - 3*a*b^2
*f*h*i*p^2*q^2*Log[e + f*x]^2*Log[(f*(g + h*x))/(f*g - e*h)] + 3*a*b^2*f*g*
j*p^2*q^2*Log[e + f*x]^2*Log[(f*(g + h*x))/(f*g - e*h)] + b^3*f*h*i*p^3*q^3
*Log[e + f*x]^3*Log[(f*(g + h*x))/(f*g - e*h)] - b^3*f*g*j*p^3*q^3*Log[e +
f*x]^3*Log[(f*(g + h*x))/(f*g - e*h)] + 6*a*b^2*f*h*i*p*q*Log[e + f*x]*Log[
c*(d*(e + f*x)^p)^q]*Log[(f*(g + h*x))/(f*g - e*h)] - 6*a*b^2*f*g*j*p*q*Log
[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log[(f*(g + h*x))/(f*g - e*h)] - 3*b^3*f
*h*i*p^2*q^2*Log[e + f*x]^2*Log[c*(d*(e + f*x)^p)^q]*Log[(f*(g + h*x))/(f*g
 - e*h)] + 3*b^3*f*g*j*p^2*q^2*Log[e + f*x]^2*Log[c*(d*(e + f*x)^p)^q]*Log[
(f*(g + h*x))/(f*g - e*h)] + 3*b^3*f*h*i*p*q*Log[e + f*x]*Log[c*(d*(e + f*x
)^p)^q]^2*Log[(f*(g + h*x))/(f*g - e*h)] - 3*b^3*f*g*j*p*q*Log[e + f*x]*Log
[c*(d*(e + f*x)^p)^q]^2*Log[(f*(g + h*x))/(f*g - e*h)] + 3*b*f*(h*i - g*j)*
p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*PolyLog[2, (h*(e + f*x))/(-(f*g) + e
*h)] - 6*b^2*f*(h*i - g*j)*p^2*q^2*(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLog
[3, (h*(e + f*x))/(-(f*g) + e*h)] + 6*b^3*f*h*i*p^3*q^3*PolyLog[4, (h*(e +
f*x))/(-(f*g) + e*h)] - 6*b^3*f*g*j*p^3*q^3*PolyLog[4, (h*(e + f*x))/(-(f*g
) + e*h)])/(f*h^2)
```

fricas [F] time = 1.17, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{a^3jx + a^3i + \left(b^3jx + b^3i\right)\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^3 + 3\left(ab^2jx + ab^2i\right)\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^2 + 3\left(a^2bjx + a\right.}{hx+g}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)*(a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g),x, algorithm="fric
as")
```

```
[Out] integral((a^3*j*x + a^3*i + (b^3*j*x + b^3*i)*log(((f*x + e)^p*d)^q*c)^3 +
3*(a*b^2*j*x + a*b^2*i)*log(((f*x + e)^p*d)^q*c)^2 + 3*(a^2*b*j*x + a^2*b*i
)*log(((f*x + e)^p*d)^q*c))/(h*x + g), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(jx+i)\left(b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a\right)^3}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)*(a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g),x, algorithm="giac
")
```

```
[Out] integrate((j*x + i)*(b*log(((f*x + e)^p*d)^q*c) + a)^3/(h*x + g), x)
```

maple [F] time = 0.36, size = 0, normalized size = 0.00

$$\int \frac{\left(jx+i\right)\left(b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)+a\right)^{3}}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((j*x+i)*(b*ln(c*(d*(f*x+e)^p)^q)+a)^3/(h*x+g),x)
```

```
[Out] int((j*x+i)*(b*ln(c*(d*(f*x+e)^p)^q)+a)^3/(h*x+g),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$a^{3}j\left(\frac{x}{h}-\frac{g\log\left(hx+g\right)}{h^{2}}\right)+\frac{a^{3}i\log\left(hx+g\right)}{h}+\int\frac{3\left(iq\log(d)+i\log(c)\right)a^{2}b+3\left(iq^{2}\log(d)^{2}+2\,iq\log(c)\log(d)+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)*(a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g),x, algorithm="maxi
ma")
```

```
[Out] a^3*j*(x/h - g*log(h*x + g)/h^2) + a^3*i*log(h*x + g)/h + integrate((3*(i*q
*log(d) + i*log(c))*a^2*b + 3*(i*q^2*log(d)^2 + 2*i*q*log(c)*log(d) + i*log
(c)^2)*a*b^2 + (i*q^3*log(d)^3 + 3*i*q^2*log(c)*log(d)^2 + 3*i*q*log(c)^2*l
og(d) + i*log(c)^3)*b^3 + (b^3*j*x + b^3*i)*log(((f*x + e)^p)^q)^3 + 3*((i*
q*log(d) + i*log(c))*b^3 + a*b^2*i + ((j*q*log(d) + j*log(c))*b^3 + a*b^2*j
)*x)*log(((f*x + e)^p)^q)^2 + (3*(j*q*log(d) + j*log(c))*a^2*b + 3*(j*q^2*l
og(d)^2 + 2*j*q*log(c)*log(d) + j*log(c)^2)*a*b^2 + (j*q^3*log(d)^3 + 3*j*q
^2*log(c)*log(d)^2 + 3*j*q*log(c)^2*log(d) + j*log(c)^3)*b^3)*x + 3*(2*(i*q
*log(d) + i*log(c))*a*b^2 + (i*q^2*log(d)^2 + 2*i*q*log(c)*log(d) + i*log(c
)^2)*b^3 + a^2*b*i + (2*(j*q*log(d) + j*log(c))*a*b^2 + (j*q^2*log(d)^2 + 2
*j*q*log(c)*log(d) + j*log(c)^2)*b^3 + a^2*b*j)*x)*log(((f*x + e)^p)^q))/(h
*x + g), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(i+j\,x\right)\,{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}^3}{g+h\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((i + j*x)*(a + b*log(c*(d*(e + f*x)^p)^q))^3)/(g + h*x),x)
```

```
[Out] int(((i + j*x)*(a + b*log(c*(d*(e + f*x)^p)^q))^3)/(g + h*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)\right)^{3}\left(i+jx\right)}{g+hx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)*(a+b*ln(c*(d*(f*x+e)**p)**q))**3/(h*x+g),x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**3*(i + j*x)/(g + h*x), x)
```

3.537 $\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{g+hx}\,dx$

Optimal. Leaf size=177

$$-\frac{6b^2p^2q^2\text{Li}_3\left(-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h}+\frac{3bpq\text{Li}_2\left(-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{h}+\frac{\log\left(\frac{f(g}{fg}\right.}{}$$

```
[Out] (a+b*ln(c*(d*(f*x+e)^p)^q))^3*ln(f*(h*x+g)/(-e*h+f*g))/h+3*b*p*q*(a+b*ln(c*
(d*(f*x+e)^p)^q))^2*polylog(2,-h*(f*x+e)/(-e*h+f*g))/h-6*b^2*p^2*q^2*(a+b*l
n(c*(d*(f*x+e)^p)^q))*polylog(3,-h*(f*x+e)/(-e*h+f*g))/h+6*b^3*p^3*q^3*poly
log(4,-h*(f*x+e)/(-e*h+f*g))/h
```

Rubi [A] time = 0.43, antiderivative size = 177, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {2396, 2433, 2374, 2383, 6589, 2445}

$$-\frac{6b^2p^2q^2\text{PolyLog}\left(3,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h}+\frac{3bpq\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx\right.\right.\right.}{h}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^3/(g + h*x),x]
```

```
[Out] ((a + b*Log[c*(d*(e + f*x)^p)^q])^3*Log[(f*(g + h*x))/(f*g - e*h)])/h + (3*
b*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*PolyLog[2, -((h*(e + f*x))/(f*g -
e*h))])/h - (6*b^2*p^2*q^2*(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLog[3, -((h
*(e + f*x))/(f*g - e*h))])/h + (6*b^3*p^3*q^3*PolyLog[4, -((h*(e + f*x))/(f
*g - e*h))])/h
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2383

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^p)/q
, x] - Dist[(b*n*p)/q, Int[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^(p - 1
))/x, x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
```

```
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{g+hx}\,dx = \text{Subst}\left(\int \frac{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3}{g+hx}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right.$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} - \text{Subst}\left(\frac{(3bfpq)\int \frac{(a+b\log(}{}}{}\right.$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} - \text{Subst}\left(\frac{(3bpq)\,\text{Subst}\left(\int\right.}{}\right.$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} + \frac{3bpq\left(a+b\log\left(c\left(d(e+\right.\right.\right.}{h}$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} + \frac{3bpq\left(a+b\log\left(c\left(d(e+\right.\right.\right.}{h}$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} + \frac{3bpq\left(a+b\log\left(c\left(d(e+\right.\right.\right.}{h}$$

Mathematica [B] time = 0.26, size = 646, normalized size = 3.65

$$\frac{a^3\log(g+hx)+3a^2b\log(g+hx)\log\left(c\left(d(e+fx)^p\right)^q\right)-3a^2bpq\log(e+fx)\log(g+hx)+3a^2bpq\log(e+fx)\log}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^3/(g + h*x),x]
```

```
[Out] (a^3*Log[g + h*x] - 3*a^2*b*p*q*Log[e + f*x]*Log[g + h*x] + 3*a*b^2*p^2*q^2
*Log[e + f*x]^2*Log[g + h*x] - b^3*p^3*q^3*Log[e + f*x]^3*Log[g + h*x] + 3*
a^2*b*Log[c*(d*(e + f*x)^p)^q]*Log[g + h*x] - 6*a*b^2*p*q*Log[e + f*x]*Log[
c*(d*(e + f*x)^p)^q]*Log[g + h*x] + 3*b^3*p^2*q^2*Log[e + f*x]^2*Log[c*(d*(
e + f*x)^p)^q]*Log[g + h*x] + 3*a*b^2*Log[c*(d*(e + f*x)^p)^q]^2*Log[g + h*
x] - 3*b^3*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]^2*Log[g + h*x] + b^3*L
og[c*(d*(e + f*x)^p)^q]^3*Log[g + h*x] + 3*a^2*b*p*q*Log[e + f*x]*Log[(f*(g
 + h*x))/(f*g - e*h)] - 3*a*b^2*p^2*q^2*Log[e + f*x]^2*Log[(f*(g + h*x))/(f
*g - e*h)] + b^3*p^3*q^3*Log[e + f*x]^3*Log[(f*(g + h*x))/(f*g - e*h)] + 6*
a*b^2*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log[(f*(g + h*x))/(f*g - e*
h)] - 3*b^3*p^2*q^2*Log[e + f*x]^2*Log[c*(d*(e + f*x)^p)^q]*Log[(f*(g + h*x
))/(f*g - e*h)] + 3*b^3*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]^2*Log[(f*
(g + h*x))/(f*g - e*h)] + 3*b*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*PolyLo
g[2, (h*(e + f*x))/(-(f*g) + e*h)] - 6*b^2*p^2*q^2*(a + b*Log[c*(d*(e + f*x
)^p)^q])*PolyLog[3, (h*(e + f*x))/(-(f*g) + e*h)] + 6*b^3*p^3*q^3*PolyLog[4
, (h*(e + f*x))/(-(f*g) + e*h)])/h
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b^3\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^3+3\,ab^2\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^2+3\,a^2b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a^3}{hx+g},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g),x, algorithm="fricas")
```

```
[Out] integral((b^3*log(((f*x + e)^p*d)^q*c)^3 + 3*a*b^2*log(((f*x + e)^p*d)^q*c)
^2 + 3*a^2*b*log(((f*x + e)^p*d)^q*c) + a^3)/(h*x + g), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a\right)^3}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^3/(h*x + g), x)
```

maple [F] time = 0.04, size = 0, normalized size = 0.00

$$\int \frac{\left(b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)+a\right)^3}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^3/(h*x+g),x)
```

```
[Out] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^3/(h*x+g),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{a^3\log\left(hx+g\right)}{h}+\int\frac{b^3\log\left(\left(\left(fx+e\right)^p\right)^q\right)^3+3\left(q\log(d)+\log(c)\right)a^2b+3\left(q^2\log(d)^2+2\,q\log(c)\log(d)+\log\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g),x, algorithm="maxima")
```

```
[Out] a^3*log(h*x + g)/h + integrate((b^3*log(((f*x + e)^p)^q)^3 + 3*(q*log(d) +
log(c))*a^2*b + 3*(q^2*log(d)^2 + 2*q*log(c)*log(d) + log(c)^2)*a*b^2 + (q^
3*log(d)^3 + 3*q^2*log(c)*log(d)^2 + 3*q*log(c)^2*log(d) + log(c)^3)*b^3 +
3*((q*log(d) + log(c))*b^3 + a*b^2)*log(((f*x + e)^p)^q)^2 + 3*(2*(q*log(d)
 + log(c))*a*b^2 + (q^2*log(d)^2 + 2*q*log(c)*log(d) + log(c)^2)*b^3 + a^2*
b)*log(((f*x + e)^p)^q))/(h*x + g), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int\frac{\left(a+b\,\ln\left(c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right)\right)^3}{g+h\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^3/(g + h*x),x)
```

```
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))^3/(g + h*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(a+b\log\left(c\left(d\left(e+fx\right)^p\right)^q\right)\right)^3}{g+hx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**3/(h*x+g),x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**3/(g + h*x), x)
```

3.538 $\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{(g+hx)(i+jx)}\,dx$

Optimal. Leaf size=410

$$-\frac{6b^2p^2q^2\text{Li}_3\left(-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{hi-gj}+\frac{6b^2p^2q^2\text{Li}_3\left(-\frac{j(e+fx)}{fi-ej}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{hi-gj}+\frac{3bpq\text{L}}{}$$

```
[Out] (a+b*ln(c*(d*(f*x+e)^p)^q))^3*ln(f*(h*x+g)/(-e*h+f*g))/(-g*j+h*i)-(a+b*ln(c
*(d*(f*x+e)^p)^q))^3*ln(f*(j*x+i)/(-e*j+f*i))/(-g*j+h*i)+3*b*p*q*(a+b*ln(c*
(d*(f*x+e)^p)^q))^2*polylog(2,-h*(f*x+e)/(-e*h+f*g))/(-g*j+h*i)-3*b*p*q*(a+
b*ln(c*(d*(f*x+e)^p)^q))^2*polylog(2,-j*(f*x+e)/(-e*j+f*i))/(-g*j+h*i)-6*b^
2*p^2*q^2*(a+b*ln(c*(d*(f*x+e)^p)^q))*polylog(3,-h*(f*x+e)/(-e*h+f*g))/(-g*
j+h*i)+6*b^2*p^2*q^2*(a+b*ln(c*(d*(f*x+e)^p)^q))*polylog(3,-j*(f*x+e)/(-e*j
+f*i))/(-g*j+h*i)+6*b^3*p^3*q^3*polylog(4,-h*(f*x+e)/(-e*h+f*g))/(-g*j+h*i)
-6*b^3*p^3*q^3*polylog(4,-j*(f*x+e)/(-e*j+f*i))/(-g*j+h*i)
```

Rubi [A] time = 1.26, antiderivative size = 410, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 7, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {2418, 2396, 2433, 2374, 2383, 6589, 2445}

$$-\frac{6b^2p^2q^2\text{PolyLog}\left(3,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{hi-gj}+\frac{6b^2p^2q^2\text{PolyLog}\left(3,-\frac{j(e+fx)}{fi-ej}\right)\left(a+b\log\left(c\left(d(e+\right.\right.\right.}{hi-gj}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^3/((g + h*x)*(i + j*x)),x]
```

```
[Out] ((a + b*Log[c*(d*(e + f*x)^p)^q])^3*Log[(f*(g + h*x))/(f*g - e*h)])/(h*i -
g*j) - ((a + b*Log[c*(d*(e + f*x)^p)^q])^3*Log[(f*(i + j*x))/(f*i - e*j)])/
(h*i - g*j) + (3*b*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*PolyLog[2, -((h*(
e + f*x))/(f*g - e*h))])/(h*i - g*j) - (3*b*p*q*(a + b*Log[c*(d*(e + f*x)^p
)^q])^2*PolyLog[2, -((j*(e + f*x))/(f*i - e*j))])/(h*i - g*j) - (6*b^2*p^2*
q^2*(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLog[3, -((h*(e + f*x))/(f*g - e*h)
)])/(h*i - g*j) + (6*b^2*p^2*q^2*(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLog[3
, -((j*(e + f*x))/(f*i - e*j))])/(h*i - g*j) + (6*b^3*p^3*q^3*PolyLog[4, -(
(h*(e + f*x))/(f*g - e*h))])/(h*i - g*j) - (6*b^3*p^3*q^3*PolyLog[4, -((j*(
e + f*x))/(f*i - e*j))])/(h*i - g*j)
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2383

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^p)/q
, x] - Dist[(b*n*p)/q, Int[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^(p - 1
))/x, x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
```

```
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{(g+hx)(538+jx)}\,dx = \text{Subst}\left(\int \frac{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3}{(g+hx)(538+jx)}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \text{Subst}\left(\int\left(\frac{h\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3}{(538h-gj)(g+hx)} - \frac{j\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3}{(538h-gj)(538+jx)}\right)\right.$$

$$= \text{Subst}\left(\frac{h\int\frac{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3}{g+hx}dx}{538h-gj}, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right) - \text{Subst}$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3\log\left(\frac{f(g+hx)}{fg-eh}\right)}{538h-gj} - \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{538h-gj}$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3\log\left(\frac{f(g+hx)}{fg-eh}\right)}{538h-gj} - \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{538h-gj}$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3\log\left(\frac{f(g+hx)}{fg-eh}\right)}{538h-gj} - \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{538h-gj}$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3\log\left(\frac{f(g+hx)}{fg-eh}\right)}{538h-gj} - \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{538h-gj}$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3\log\left(\frac{f(g+hx)}{fg-eh}\right)}{538h-gj} - \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{538h-gj}$$

Mathematica [B] time = 0.56, size = 1350, normalized size = 3.29

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^3/((g + h*x)*(i + j*x)),x]
```

```
[Out] (a^3*Log[g + h*x] - 3*a^2*b*p*q*Log[e + f*x]*Log[g + h*x] + 3*a*b^2*p^2*q^2
*Log[e + f*x]^2*Log[g + h*x] - b^3*p^3*q^3*Log[e + f*x]^3*Log[g + h*x] + 3*
a^2*b*Log[c*(d*(e + f*x)^p)^q]*Log[g + h*x] - 6*a*b^2*p*q*Log[e + f*x]*Log[
c*(d*(e + f*x)^p)^q]*Log[g + h*x] + 3*b^3*p^2*q^2*Log[e + f*x]^2*Log[c*(d*(
e + f*x)^p)^q]*Log[g + h*x] + 3*a*b^2*Log[c*(d*(e + f*x)^p)^q]^2*Log[g + h*
x] - 3*b^3*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]^2*Log[g + h*x] + b^3*L
```

```
og[c*(d*(e + f*x)^p)^q]^3*Log[g + h*x] + 3*a^2*b*p*q*Log[e + f*x]*Log[(f*(g
 + h*x))/(f*g - e*h)] - 3*a*b^2*p^2*q^2*Log[e + f*x]^2*Log[(f*(g + h*x))/(f
*g - e*h)] + b^3*p^3*q^3*Log[e + f*x]^3*Log[(f*(g + h*x))/(f*g - e*h)] + 6*
a*b^2*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log[(f*(g + h*x))/(f*g - e*
h)] - 3*b^3*p^2*q^2*Log[e + f*x]^2*Log[c*(d*(e + f*x)^p)^q]*Log[(f*(g + h*x
))/(f*g - e*h)] + 3*b^3*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]^2*Log[(f*
(g + h*x))/(f*g - e*h)] - a^3*Log[i + j*x] + 3*a^2*b*p*q*Log[e + f*x]*Log[i
 + j*x] - 3*a*b^2*p^2*q^2*Log[e + f*x]^2*Log[i + j*x] + b^3*p^3*q^3*Log[e +
 f*x]^3*Log[i + j*x] - 3*a^2*b*Log[c*(d*(e + f*x)^p)^q]*Log[i + j*x] + 6*a*
b^2*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log[i + j*x] - 3*b^3*p^2*q^2*
Log[e + f*x]^2*Log[c*(d*(e + f*x)^p)^q]*Log[i + j*x] - 3*a*b^2*Log[c*(d*(e
+ f*x)^p)^q]^2*Log[i + j*x] + 3*b^3*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^
q]^2*Log[i + j*x] - b^3*Log[c*(d*(e + f*x)^p)^q]^3*Log[i + j*x] - 3*a^2*b*p
*q*Log[e + f*x]*Log[(f*(i + j*x))/(f*i - e*j)] + 3*a*b^2*p^2*q^2*Log[e + f*
x]^2*Log[(f*(i + j*x))/(f*i - e*j)] - b^3*p^3*q^3*Log[e + f*x]^3*Log[(f*(i
+ j*x))/(f*i - e*j)] - 6*a*b^2*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Lo
g[(f*(i + j*x))/(f*i - e*j)] + 3*b^3*p^2*q^2*Log[e + f*x]^2*Log[c*(d*(e + f
*x)^p)^q]*Log[(f*(i + j*x))/(f*i - e*j)] - 3*b^3*p*q*Log[e + f*x]*Log[c*(d*
(e + f*x)^p)^q]^2*Log[(f*(i + j*x))/(f*i - e*j)] + 3*b*p*q*(a + b*Log[c*(d*
(e + f*x)^p)^q])^2*PolyLog[2, (h*(e + f*x))/(-(f*g) + e*h)] - 3*b*p*q*(a +
b*Log[c*(d*(e + f*x)^p)^q])^2*PolyLog[2, (j*(e + f*x))/(-(f*i) + e*j)] - 6*
a*b^2*p^2*q^2*PolyLog[3, (h*(e + f*x))/(-(f*g) + e*h)] - 6*b^3*p^2*q^2*Log[
c*(d*(e + f*x)^p)^q]*PolyLog[3, (h*(e + f*x))/(-(f*g) + e*h)] + 6*a*b^2*p^2
*q^2*PolyLog[3, (j*(e + f*x))/(-(f*i) + e*j)] + 6*b^3*p^2*q^2*Log[c*(d*(e +
 f*x)^p)^q]*PolyLog[3, (j*(e + f*x))/(-(f*i) + e*j)] + 6*b^3*p^3*q^3*PolyLo
g[4, (h*(e + f*x))/(-(f*g) + e*h)] - 6*b^3*p^3*q^3*PolyLog[4, (j*(e + f*x))
/(-(f*i) + e*j)])/(h*i - g*j)
```

fricas [F] time = 0.48, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b^3\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^3+3\,ab^2\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^2+3\,a^2b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a^3}{hjx^2+gi+\left(hi+gj\right)x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g)/(j*x+i),x, algorithm="fric
as")
```

```
[Out] integral((b^3*log(((f*x + e)^p*d)^q*c)^3 + 3*a*b^2*log(((f*x + e)^p*d)^q*c)
^2 + 3*a^2*b*log(((f*x + e)^p*d)^q*c) + a^3)/(h*j*x^2 + g*i + (h*i + g*j)*x
), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a\right)^3}{\left(hx+g\right)\left(jx+i\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g)/(j*x+i),x, algorithm="giac
")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^3/((h*x + g)*(j*x + i)), x)
```

maple [F] time = 0.54, size = 0, normalized size = 0.00

$$\int \frac{\left(b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)+a\right)^{3}}{\left(hx+g\right)\left(jx+i\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^3/(h*x+g)/(j*x+i),x)
```

```
[Out] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^3/(h*x+g)/(j*x+i),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$a^{3}\left(\frac{\log\left(hx+g\right)}{hi-gj}-\frac{\log\left(jx+i\right)}{hi-gj}\right)+\int \frac{b^{3}\log\left(\left(\left(fx+e\right)^{p}\right)^{q}\right)^{3}+3\left(q\log(d)+\log(c)\right)a^{2}b+3\left(q^{2}\log(d)^{2}+2\,q\log(c)\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g)/(j*x+i),x, algorithm="maxi
ma")
```

```
[Out] a^3*(log(h*x + g)/(h*i - g*j) - log(j*x + i)/(h*i - g*j)) + integrate((b^3*
log(((f*x + e)^p)^q)^3 + 3*(q*log(d) + log(c))*a^2*b + 3*(q^2*log(d)^2 + 2*
q*log(c)*log(d) + log(c)^2)*a*b^2 + (q^3*log(d)^3 + 3*q^2*log(c)*log(d)^2 +
 3*q*log(c)^2*log(d) + log(c)^3)*b^3 + 3*((q*log(d) + log(c))*b^3 + a*b^2)*
log(((f*x + e)^p)^q)^2 + 3*(2*(q*log(d) + log(c))*a*b^2 + (q^2*log(d)^2 + 2
*q*log(c)*log(d) + log(c)^2)*b^3 + a^2*b)*log(((f*x + e)^p)^q))/(h*j*x^2 +
g*i + (h*i + g*j)*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}^3}{\left(g+h\,x\right)\,\left(i+j\,x\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^3/((g + h*x)*(i + j*x)),x)
```

```
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))^3/((g + h*x)*(i + j*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)\right)^{3}}{\left(g+hx\right)\left(i+jx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**3/(h*x+g)/(j*x+i),x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**3/((g + h*x)*(i + j*x)), x)
```

3.539 $\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{(g+hx)(i+jx)^2}\,dx$

Optimal. Leaf size=659

$$\frac{6b^2fp^2q^2\text{Li}_2\left(-\frac{j(e+fx)}{fi-ej}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{(fi-ej)(hi-gj)}-\frac{6b^2hp^2q^2\text{Li}_3\left(-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{(hi-gj)^2}+6b$$

```
[Out] -j*(f*x+e)*(a+b*ln(c*(d*(f*x+e)^p)^q))^3/(-e*j+f*i)/(-g*j+h*i)/(j*x+i)+h*(a
+b*ln(c*(d*(f*x+e)^p)^q))^3*ln(f*(h*x+g)/(-e*h+f*g))/(-g*j+h*i)^2+3*b*f*p*q
*(a+b*ln(c*(d*(f*x+e)^p)^q))^2*ln(f*(j*x+i)/(-e*j+f*i))/(-e*j+f*i)/(-g*j+h*
i)-h*(a+b*ln(c*(d*(f*x+e)^p)^q))^3*ln(f*(j*x+i)/(-e*j+f*i))/(-g*j+h*i)^2+3*
b*h*p*q*(a+b*ln(c*(d*(f*x+e)^p)^q))^2*polylog(2,-h*(f*x+e)/(-e*h+f*g))/(-g*
j+h*i)^2+6*b^2*f*p^2*q^2*(a+b*ln(c*(d*(f*x+e)^p)^q))*polylog(2,-j*(f*x+e)/(
-e*j+f*i))/(-e*j+f*i)/(-g*j+h*i)-3*b*h*p*q*(a+b*ln(c*(d*(f*x+e)^p)^q))^2*po
lylog(2,-j*(f*x+e)/(-e*j+f*i))/(-g*j+h*i)^2-6*b^2*h*p^2*q^2*(a+b*ln(c*(d*(f
*x+e)^p)^q))*polylog(3,-h*(f*x+e)/(-e*h+f*g))/(-g*j+h*i)^2-6*b^3*f*p^3*q^3*
polylog(3,-j*(f*x+e)/(-e*j+f*i))/(-e*j+f*i)/(-g*j+h*i)+6*b^2*h*p^2*q^2*(a+b
*ln(c*(d*(f*x+e)^p)^q))*polylog(3,-j*(f*x+e)/(-e*j+f*i))/(-g*j+h*i)^2+6*b^3
*h*p^3*q^3*polylog(4,-h*(f*x+e)/(-e*h+f*g))/(-g*j+h*i)^2-6*b^3*h*p^3*q^3*po
lylog(4,-j*(f*x+e)/(-e*j+f*i))/(-g*j+h*i)^2
```

Rubi [A] time = 1.72, antiderivative size = 659, normalized size of antiderivative = 1.00, number of steps used = 18, number of rules used = 8, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.229$, Rules used = {2418, 2396, 2433, 2374, 2383, 6589, 2397, 2445}

$$\frac{6b^2fp^2q^2\text{PolyLog}\left(2,-\frac{j(e+fx)}{fi-ej}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{(fi-ej)(hi-gj)}-\frac{6b^2hp^2q^2\text{PolyLog}\left(3,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e\right.\right.\right.}{(hi-gj)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^3/((g + h*x)*(i + j*x)^2),x]
```

```
[Out] -((j*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3)/((f*i - e*j)*(h*i - g*j)
*(i + j*x))) + (h*(a + b*Log[c*(d*(e + f*x)^p)^q])^3*Log[(f*(g + h*x))/(f*g
 - e*h)])/(h*i - g*j)^2 + (3*b*f*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*Log
[(f*(i + j*x))/(f*i - e*j)])/((f*i - e*j)*(h*i - g*j)) - (h*(a + b*Log[c*(d
*(e + f*x)^p)^q])^3*Log[(f*(i + j*x))/(f*i - e*j)])/(h*i - g*j)^2 + (3*b*h*
p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*PolyLog[2, -((h*(e + f*x))/(f*g - e*
h))])/(h*i - g*j)^2 + (6*b^2*f*p^2*q^2*(a + b*Log[c*(d*(e + f*x)^p)^q])*Pol
yLog[2, -((j*(e + f*x))/(f*i - e*j))])/((f*i - e*j)*(h*i - g*j)) - (3*b*h*p
*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*PolyLog[2, -((j*(e + f*x))/(f*i - e*j
))])/(h*i - g*j)^2 - (6*b^2*h*p^2*q^2*(a + b*Log[c*(d*(e + f*x)^p)^q])*Poly
Log[3, -((h*(e + f*x))/(f*g - e*h))])/(h*i - g*j)^2 - (6*b^3*f*p^3*q^3*Poly
Log[3, -((j*(e + f*x))/(f*i - e*j))])/((f*i - e*j)*(h*i - g*j)) + (6*b^2*h*
p^2*q^2*(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLog[3, -((j*(e + f*x))/(f*i -
e*j))])/(h*i - g*j)^2 + (6*b^3*h*p^3*q^3*PolyLog[4, -((h*(e + f*x))/(f*g -
e*h))])/(h*i - g*j)^2 - (6*b^3*h*p^3*q^3*PolyLog[4, -((j*(e + f*x))/(f*i -
e*j))])/(h*i - g*j)^2
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2383

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^p)/q
, x] - Dist[(b*n*p)/q, Int[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^(p - 1
))/x, x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2397

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_))^2, x_Symbol] :> Simp[((d + e*x)*(a + b*Log[c*(d + e*x)^n])^p)/((e*f
 - d*g)*(f + g*x)), x] - Dist[(b*e*n*p)/(e*f - d*g), Int[(a + b*Log[c*(d +
e*x)^n])^(p - 1)/(f + g*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] &&
 NeQ[e*f - d*g, 0] && GtQ[p, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{(g+hx)(539+jx)^2}\,dx = \text{Subst}\left(\int \frac{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3}{(g+hx)(539+jx)^2}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right.$$

$$= \text{Subst}\left(\int\left(\frac{h^2\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3}{(539h-gj)^2(g+hx)} - \frac{j\left(a+b\log\left(cd^q(e+fx)^{pq}\right.\right.}{(539h-gj)(539+jx)^2}\right.\right.$$

$$= \text{Subst}\left(\frac{h^2\int\frac{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3}{g+hx}\,dx}{(539h-gj)^2}, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right) - \text{Su}$$

$$= -\frac{j(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{(539f-ej)(539h-gj)(539+jx)} + \frac{h\left(a+b\log\left(c\left(d(e+fx)^p\right)\right.\right.}{(539h-gj)}$$

$$= -\frac{j(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{(539f-ej)(539h-gj)(539+jx)} + \frac{h\left(a+b\log\left(c\left(d(e+fx)^p\right)\right.\right.}{(539h-gj)}$$

$$= -\frac{j(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{(539f-ej)(539h-gj)(539+jx)} + \frac{h\left(a+b\log\left(c\left(d(e+fx)^p\right)\right.\right.}{(539h-gj)}$$

$$= -\frac{j(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{(539f-ej)(539h-gj)(539+jx)} + \frac{h\left(a+b\log\left(c\left(d(e+fx)^p\right)\right.\right.}{(539h-gj)}$$

$$= -\frac{j(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{(539f-ej)(539h-gj)(539+jx)} + \frac{h\left(a+b\log\left(c\left(d(e+fx)^p\right)\right.\right.}{(539h-gj)}$$

Mathematica [A] time = 1.69, size = 1057, normalized size = 1.60

$$\frac{-b^3p^3\left((hi-gj)\left(\left(j(e+fx)\log(e+fx)-3f(i+jx)\log\left(\frac{f(i+jx)}{fi-ej}\right)\right)\log^2(e+fx)-6f(i+jx)\text{Li}_2\left(\frac{j(e+fx)}{ej-fi}\right)\log(e+\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^3/((g + h*x)*(i + j*x)^2),x]
```

```
[Out] ((f*i - e*j)*(h*i - g*j)*(a - b*p*q*Log[e + f*x] + b*Log[c*(d*(e + f*x)^p)^
q])^3 + h*(f*i - e*j)*(i + j*x)*(a - b*p*q*Log[e + f*x] + b*Log[c*(d*(e + f
*x)^p)^q])^3*Log[g + h*x] - h*(f*i - e*j)*(i + j*x)*(a - b*p*q*Log[e + f*x]
 + b*Log[c*(d*(e + f*x)^p)^q])^3*Log[i + j*x] - 3*b*p*q*(a - b*p*q*Log[e +
f*x] + b*Log[c*(d*(e + f*x)^p)^q])^2*((h*i - g*j)*(j*(e + f*x)*Log[e + f*x]
 - f*(i + j*x)*Log[i + j*x]) - h*(f*i - e*j)*(i + j*x)*(Log[e + f*x]*Log[(f
*(g + h*x))/(f*g - e*h)] + PolyLog[2, (h*(e + f*x))/(-(f*g) + e*h)]) + h*(f
*i - e*j)*(i + j*x)*(Log[e + f*x]*Log[(f*(i + j*x))/(f*i - e*j)] + PolyLog[
2, (j*(e + f*x))/(-(f*i) + e*j)])) - 3*b^2*p^2*q^2*(a - b*p*q*Log[e + f*x]
+ b*Log[c*(d*(e + f*x)^p)^q])*((h*i - g*j)*(Log[e + f*x]*(j*(e + f*x)*Log[e
 + f*x] - 2*f*(i + j*x)*Log[(f*(i + j*x))/(f*i - e*j)]) - 2*f*(i + j*x)*Pol
yLog[2, (j*(e + f*x))/(-(f*i) + e*j)]) - h*(f*i - e*j)*(i + j*x)*(Log[e + f
*x]^2*Log[(f*(g + h*x))/(f*g - e*h)] + 2*Log[e + f*x]*PolyLog[2, (h*(e + f*
x))/(-(f*g) + e*h)] - 2*PolyLog[3, (h*(e + f*x))/(-(f*g) + e*h)]) + h*(f*i
- e*j)*(i + j*x)*(Log[e + f*x]^2*Log[(f*(i + j*x))/(f*i - e*j)] + 2*Log[e +
 f*x]*PolyLog[2, (j*(e + f*x))/(-(f*i) + e*j)] - 2*PolyLog[3, (j*(e + f*x))
/(-(f*i) + e*j)])) - b^3*p^3*q^3*((h*i - g*j)*(Log[e + f*x]^2*(j*(e + f*x)*
Log[e + f*x] - 3*f*(i + j*x)*Log[(f*(i + j*x))/(f*i - e*j)]) - 6*f*(i + j*x
)*Log[e + f*x]*PolyLog[2, (j*(e + f*x))/(-(f*i) + e*j)] + 6*f*(i + j*x)*Pol
yLog[3, (j*(e + f*x))/(-(f*i) + e*j)]) - h*(f*i - e*j)*(i + j*x)*(Log[e + f
*x]^3*Log[(f*(g + h*x))/(f*g - e*h)] + 3*Log[e + f*x]^2*PolyLog[2, (h*(e +
f*x))/(-(f*g) + e*h)] - 6*Log[e + f*x]*PolyLog[3, (h*(e + f*x))/(-(f*g) + e
*h)] + 6*PolyLog[4, (h*(e + f*x))/(-(f*g) + e*h)]) + h*(f*i - e*j)*(i + j*x
)*(Log[e + f*x]^3*Log[(f*(i + j*x))/(f*i - e*j)] + 3*Log[e + f*x]^2*PolyLog
[2, (j*(e + f*x))/(-(f*i) + e*j)] - 6*Log[e + f*x]*PolyLog[3, (j*(e + f*x))
/(-(f*i) + e*j)] + 6*PolyLog[4, (j*(e + f*x))/(-(f*i) + e*j)])))/((f*i - e*
j)*(h*i - g*j)^2*(i + j*x))
```

fricas [F] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b^3 \log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^3 + 3\,ab^2 \log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^2 + 3\,a^2 b \log\left(\left(\left(fx+e\right)^p d\right)^q c\right) + a^3}{hj^2x^3 + gi^2 + \left(2\,hij + gj^2\right)x^2 + \left(hi^2 + 2\,gij\right)x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g)/(j*x+i)^2,x, algorithm="fr
icas")
```

```
[Out] integral((b^3*log(((f*x + e)^p*d)^q*c)^3 + 3*a*b^2*log(((f*x + e)^p*d)^q*c)
^2 + 3*a^2*b*log(((f*x + e)^p*d)^q*c) + a^3)/(h*j^2*x^3 + g*i^2 + (2*h*i*j
+ g*j^2)*x^2 + (h*i^2 + 2*g*i*j)*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b \log\left(\left(\left(fx+e\right)^p d\right)^q c\right) + a\right)^3}{\left(hx+g\right)\left(jx+i\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g)/(j*x+i)^2,x, algorithm="gi
ac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^3/((h*x + g)*(j*x + i)^2), x)
```

maple [F] time = 0.54, size = 0, normalized size = 0.00

$$\int \frac{\left(b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)+a\right)^{3}}{\left(hx+g\right)\left(jx+i\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^3/(h*x+g)/(j*x+i)^2,x)
```

```
[Out] int((b*ln(c*(d*(f*x+e)^p)^q)+a)^3/(h*x+g)/(j*x+i)^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$a^{3}\left(\frac{h\log\left(hx+g\right)}{h^{2}i^{2}-2\,ghij+g^{2}j^{2}}-\frac{h\log\left(jx+i\right)}{h^{2}i^{2}-2\,ghij+g^{2}j^{2}}+\frac{1}{hi^{2}-gij+\left(hij-gj^{2}\right)x}\right)+\int \frac{b^{3}\log\left(\left(\left(fx+e\right)^{p}\right)^{q}\right)^{3}+3\left(q\log(\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g)/(j*x+i)^2,x, algorithm="ma
xima")
```

```
[Out] a^3*(h*log(h*x + g)/(h^2*i^2 - 2*g*h*i*j + g^2*j^2) - h*log(j*x + i)/(h^2*i
^2 - 2*g*h*i*j + g^2*j^2) + 1/(h*i^2 - g*i*j + (h*i*j - g*j^2)*x)) + integr
ate((b^3*log(((f*x + e)^p)^q)^3 + 3*(q*log(d) + log(c))*a^2*b + 3*(q^2*log(
d)^2 + 2*q*log(c)*log(d) + log(c)^2)*a*b^2 + (q^3*log(d)^3 + 3*q^2*log(c)*l
og(d)^2 + 3*q*log(c)^2*log(d) + log(c)^3)*b^3 + 3*((q*log(d) + log(c))*b^3
+ a*b^2)*log(((f*x + e)^p)^q)^2 + 3*(2*(q*log(d) + log(c))*a*b^2 + (q^2*log
(d)^2 + 2*q*log(c)*log(d) + log(c)^2)*b^3 + a^2*b)*log(((f*x + e)^p)^q))/(h
*j^2*x^3 + g*i^2 + (2*h*i*j + g*j^2)*x^2 + (h*i^2 + 2*g*i*j)*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}^3}{\left(g+h\,x\right)\,{\left(i+j\,x\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*log(c*(d*(e + f*x)^p)^q))^3/((g + h*x)*(i + j*x)^2),x)
```

```
[Out] int((a + b*log(c*(d*(e + f*x)^p)^q))^3/((g + h*x)*(i + j*x)^2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)\right)^{3}}{\left(g+hx\right)\left(i+jx\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**3/(h*x+g)/(j*x+i)**2,x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**3/((g + h*x)*(i + j*x)**2), x)
```

3.540 $\int \frac{i+jx}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$

Optimal. Leaf size=36

$$\text{Int}\left(\frac{i+jx}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)},x\right)$$

```
[Out] Unintegrable((j*x+i)/(h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

Rubi [A] time = 0.26, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{i+jx}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(i + j*x)/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])),x]
```

```
[Out] Defer[Int][(i + j*x)/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])), x]
```

Rubi steps

$$\int \frac{540+jx}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx=\int \frac{540+jx}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$$

Mathematica [A] time = 0.34, size = 0, normalized size = 0.00

$$\int \frac{i+jx}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(i + j*x)/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])),x]
```

```
[Out] Integrate[(i + j*x)/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])), x]
```

fricas [A] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{jx+i}{ahx+ag+(bhx+bg)\log\left(\left((fx+e)^p d\right)^q c\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="fricas
")
```

```
[Out] integral((j*x + i)/(a*h*x + a*g + (b*h*x + b*g)*log(((f*x + e)^p*d)^q*c)),
x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{jx+i}{(hx+g)\left(b\log\left(\left((fx+e)^{p}d\right)^{q}c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="giac")
[Out] integrate((j*x + i)/((h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

maple [A] time = 0.36, size = 0, normalized size = 0.00

$$\int \frac{jx+i}{(hx+g)\left(b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((j*x+i)/(h*x+g)/(b*ln(c*(d*(f*x+e)^p)^q)+a),x)
[Out] int((j*x+i)/(h*x+g)/(b*ln(c*(d*(f*x+e)^p)^q)+a),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{jx+i}{(hx+g)\left(b\log\left(\left((fx+e)^{p}d\right)^{q}c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="maxima
")
[Out] integrate((j*x + i)/((h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{i+j\,x}{\left(g+h\,x\right)\,\left(a+b\,\ln\left(c\,\left(d\,\left(e+f\,x\right)^{p}\right)^{q}\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i + j*x)/((g + h*x)*(a + b*log(c*(d*(e + f*x)^p)^q))),x)
[Out] int((i + j*x)/((g + h*x)*(a + b*log(c*(d*(e + f*x)^p)^q))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{i+jx}{\left(a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)\right)\left(g+hx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)/(h*x+g)/(a+b*ln(c*(d*(f*x+e)**p)**q)),x)
[Out] Integral((i + j*x)/((a + b*log(c*(d*(e + f*x)**p)**q))*(g + h*x)), x)
```

3.541 $\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)},x\right)$$

```
[Out] Unintegrable(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

Rubi [A] time = 0.07, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])),x]
[Out] Defer[Int][1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])), x]
```

Rubi steps

$$\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx=\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$$

Mathematica [A] time = 0.03, size = 0, normalized size = 0.00

$$\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])),x]
[Out] Integrate[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])), x]
```

fricas [A] time = 0.47, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{1}{ahx+ag+(bhx+bg)\log\left(\left((fx+e)^p d\right)^q c\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="fricas")
[Out] integral(1/(a*h*x + a*g + (b*h*x + b*g)*log(((f*x + e)^p*d)^q*c)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(hx+g)\left(b\log\left(\left((fx+e)^p d\right)^q c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="giac")
[Out] integrate(1/((h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

maple [A] time = 0.04, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(hx+g\right)\left(b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(h*x+g)/(b*ln(c*(d*(f*x+e)^p)^q)+a),x)
[Out] int(1/(h*x+g)/(b*ln(c*(d*(f*x+e)^p)^q)+a),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(hx+g\right)\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="maxima")
[Out] integrate(1/((h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{\left(g+h\,x\right)\,\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((g + h*x)*(a + b*log(c*(d*(e + f*x)^p)^q))),x)
[Out] int(1/((g + h*x)*(a + b*log(c*(d*(e + f*x)^p)^q))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)\right)\left(g+hx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)**p)**q)),x)
[Out] Integral(1/((a + b*log(c*(d*(e + f*x)**p)**q))*(g + h*x)), x)
```

3.542 $\int \frac{1}{(g+hx)(i+jx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)} dx$

Optimal. Leaf size=38

$$\text{Int}\left(\frac{1}{(g+hx)(i+jx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)},x\right)$$

```
[Out] Unintegrable(1/(h*x+g)/(j*x+i)/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

Rubi [A] time = 0.30, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(g+hx)(i+jx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)} dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((g + h*x)*(i + j*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])),x]
[Out] Defer[Int][1/((g + h*x)*(i + j*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])), x]
```

Rubi steps

$$\int \frac{1}{(g+hx)(542+jx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)} dx = \int \frac{1}{(g+hx)(542+jx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)} dx$$

Mathematica [A] time = 1.07, size = 0, normalized size = 0.00

$$\int \frac{1}{(g+hx)(i+jx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)} dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((g + h*x)*(i + j*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])),x]
[Out] Integrate[1/((g + h*x)*(i + j*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])), x]
```

fricas [A] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{1}{ahjx^2+agi+\left(ahi+agj\right)x+\left(bhjx^2+bgi+\left(bhi+bgj\right)x\right)\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(j*x+i)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="fric
as")
[Out] integral(1/(a*h*j*x^2 + a*g*i + (a*h*i + a*g*j)*x + (b*h*j*x^2 + b*g*i + (b
*h*i + b*g*j)*x)*log(((f*x + e)^p*d)^q*c)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(hx+g)(jx+i)\left(b\log\left(\left((fx+e)^p d\right)^q c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(j*x+i)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="giac
")
```

```
[Out] integrate(1/((h*x + g)*(j*x + i)*(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

maple [A] time = 0.54, size = 0, normalized size = 0.00

$$\int \frac{1}{(hx+g)\,(jx+i)\left(b\ln\left(c\left(d\,(fx+e)^p\right)^q\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(h*x+g)/(j*x+i)/(b*ln(c*(d*(f*x+e)^p)^q)+a),x)
```

```
[Out] int(1/(h*x+g)/(j*x+i)/(b*ln(c*(d*(f*x+e)^p)^q)+a),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(hx+g)(jx+i)\left(b\log\left(\left((fx+e)^p d\right)^q c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(j*x+i)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="maxi
ma")
```

```
[Out] integrate(1/((h*x + g)*(j*x + i)*(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{(g+h\,x)\,(i+j\,x)\left(a+b\,\ln\left(c\left(d\,(e+f\,x)^p\right)^q\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((g + h*x)*(i + j*x)*(a + b*log(c*(d*(e + f*x)^p)^q))),x)
```

```
[Out] int(1/((g + h*x)*(i + j*x)*(a + b*log(c*(d*(e + f*x)^p)^q))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\log\left(c\left(d\,(e+fx)^p\right)^q\right)\right)(g+hx)\,(i+jx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(j*x+i)/(a+b*ln(c*(d*(f*x+e)**p)**q)),x)
```

```
[Out] Integral(1/((a + b*log(c*(d*(e + f*x)**p)**q))*(g + h*x)*(i + j*x)), x)
```

3.543 $\int \frac{1}{(g+hx)(i+jx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$

Optimal. Leaf size=38

$$\text{Int}\left(\frac{1}{(g+hx)(i+jx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)},x\right)$$

```
[Out] Unintegrable(1/(h*x+g)/(j*x+i)^2/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

Rubi [A] time = 0.34, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(g+hx)(i+jx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((g + h*x)*(i + j*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])),x]
```

```
[Out] Defer[Int][1/((g + h*x)*(i + j*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])), x]
```

Rubi steps

$$\int \frac{1}{(g+hx)(543+jx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx = \int \frac{1}{(g+hx)(543+jx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$$

Mathematica [A] time = 4.27, size = 0, normalized size = 0.00

$$\int \frac{1}{(g+hx)(i+jx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((g + h*x)*(i + j*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])),x]
```

```
[Out] Integrate[1/((g + h*x)*(i + j*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])), x]
```

fricas [A] time = 0.49, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{1}{ahj^2x^3 + agi^2 + \left(2\,ahij + agj^2\right)x^2 + \left(ahi^2 + 2\,agij\right)x + \left(bhj^2x^3 + bgi^2 + \left(2\,bhij + bgj^2\right)x^2 + \left(bhi^2 + 2\,bg\right.\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(j*x+i)^2/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="fr
icas")
```

```
[Out] integral(1/(a*h*j^2*x^3 + a*g*i^2 + (2*a*h*i*j + a*g*j^2)*x^2 + (a*h*i^2 +
2*a*g*i*j)*x + (b*h*j^2*x^3 + b*g*i^2 + (2*b*h*i*j + b*g*j^2)*x^2 + (b*h*i^
2 + 2*b*g*i*j)*x)*log(((f*x + e)^p*d)^q*c)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(hx+g\right)\left(jx+i\right)^{2}\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(j*x+i)^2/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="gi
ac")
```

```
[Out] integrate(1/((h*x + g)*(j*x + i)^2*(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

maple [A] time = 0.55, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(hx+g\right)\left(jx+i\right)^{2}\left(b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(h*x+g)/(j*x+i)^2/(b*ln(c*(d*(f*x+e)^p)^q)+a),x)
```

```
[Out] int(1/(h*x+g)/(j*x+i)^2/(b*ln(c*(d*(f*x+e)^p)^q)+a),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(hx+g\right)\left(jx+i\right)^{2}\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(j*x+i)^2/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="ma
xima")
```

```
[Out] integrate(1/((h*x + g)*(j*x + i)^2*(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{\left(g+h\,x\right)\,{\left(i+j\,x\right)}^2\,\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((g + h*x)*(i + j*x)^2*(a + b*log(c*(d*(e + f*x)^p)^q))),x)
```

```
[Out] int(1/((g + h*x)*(i + j*x)^2*(a + b*log(c*(d*(e + f*x)^p)^q))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)\right)\left(g+hx\right)\left(i+jx\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(j*x+i)**2/(a+b*ln(c*(d*(f*x+e)**p)**q)),x)
```

```
[Out] Integral(1/((a + b*log(c*(d*(e + f*x)**p)**q))*(g + h*x)*(i + j*x)**2), x)
```

3.544 $\int \frac{i+jx}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$

Optimal. Leaf size=36

$$\text{Int}\left(\frac{i+jx}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2},x\right)$$

```
[Out] Unintegrable((j*x+i)/(h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

Rubi [A] time = 0.30, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{i+jx}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(i + j*x)/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2),x]
[Out] Defer[Int][(i + j*x)/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2), x]
```

Rubi steps

$$\int \frac{544+jx}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx = \int \frac{544+jx}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$$

Mathematica [A] time = 3.07, size = 0, normalized size = 0.00

$$\int \frac{i+jx}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(i + j*x)/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2),x]
[Out] Integrate[(i + j*x)/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2), x]
```

fricas [A] time = 0.49, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{jx+i}{a^2hx+a^2g+\left(b^2hx+b^2g\right)\log\left(\left(\left(fx+e\right)^pd\right)^qc\right)^2+2\left(abhx+abg\right)\log\left(\left(\left(fx+e\right)^pd\right)^qc\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="fric
as")
[Out] integral((j*x + i)/(a^2*h*x + a^2*g + (b^2*h*x + b^2*g)*log(((f*x + e)^p*d)
^q*c)^2 + 2*(a*b*h*x + a*b*g)*log(((f*x + e)^p*d)^q*c)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{jx+i}{\left(hx+g\right)\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="giac
")
```

```
[Out] integrate((j*x + i)/((h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a)^2), x)
```

maple [A] time = 0.37, size = 0, normalized size = 0.00

$$\int \frac{jx+i}{\left(hx+g\right)\left(b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)+a\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((j*x+i)/(h*x+g)/(b*ln(c*(d*(f*x+e)^p)^q)+a)^2,x)
```

```
[Out] int((j*x+i)/(h*x+g)/(b*ln(c*(d*(f*x+e)^p)^q)+a)^2,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{fjx^{2}+ei+\left(fi+ej\right)x}{abfgpq+\left(fgpq^{2}\log(d)+fgpq\log(c)\right)b^{2}+\left(abfhpq+\left(fhpq^{2}\log(d)+fhpq\log(c)\right)b^{2}\right)x+\left(b^{2}fhpqx+b^{2}f\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="maxi
ma")
```

```
[Out] -(f*j*x^2 + e*i + (f*i + e*j)*x)/(a*b*f*g*p*q + (f*g*p*q^2*log(d) + f*g*p*q
*log(c))*b^2 + (a*b*f*h*p*q + (f*h*p*q^2*log(d) + f*h*p*q*log(c))*b^2)*x +
(b^2*f*h*p*q*x + b^2*f*g*p*q)*log(((f*x + e)^p)^q)) + integrate((f*h*j*x^2
+ 2*f*g*j*x + f*g*i - (h*i - g*j)*e)/(a*b*f*g^2*p*q + (f*g^2*p*q^2*log(d) +
 f*g^2*p*q*log(c))*b^2 + (a*b*f*h^2*p*q + (f*h^2*p*q^2*log(d) + f*h^2*p*q*l
og(c))*b^2)*x^2 + 2*(a*b*f*g*h*p*q + (f*g*h*p*q^2*log(d) + f*g*h*p*q*log(c)
)*b^2)*x + (b^2*f*h^2*p*q*x^2 + 2*b^2*f*g*h*p*q*x + b^2*f*g^2*p*q)*log(((f*
x + e)^p)^q)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{i+j\,x}{\left(g+h\,x\right)\,{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i + j*x)/((g + h*x)*(a + b*log(c*(d*(e + f*x)^p)^q))^2),x)
```

```
[Out] int((i + j*x)/((g + h*x)*(a + b*log(c*(d*(e + f*x)^p)^q))^2), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{i+jx}{\left(a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)\right)^{2}\left(g+hx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)/(h*x+g)/(a+b*ln(c*(d*(f*x+e)**p)**q))**2,x)
```

```
[Out] Integral((i + j*x)/((a + b*log(c*(d*(e + f*x)**p)**q))**2*(g + h*x)), x)
```

3.545 $\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2},x\right)$$

```
[Out] Unintegrable(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

Rubi [A] time = 0.07, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2),x]
[Out] Defer[Int][1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2), x]
```

Rubi steps

$$\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx=\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$$

Mathematica [A] time = 0.18, size = 0, normalized size = 0.00

$$\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2),x]
[Out] Integrate[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2), x]
```

fricas [A] time = 0.48, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{1}{a^2hx+a^2g+\left(b^2hx+b^2g\right)\log\left(\left((fx+e)^pd\right)^qc\right)^2+2\left(abhx+abg\right)\log\left(\left((fx+e)^pd\right)^qc\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="fricas")
[Out] integral(1/(a^2*h*x + a^2*g + (b^2*h*x + b^2*g)*log(((f*x + e)^p*d)^q*c)^2
+ 2*(a*b*h*x + a*b*g)*log(((f*x + e)^p*d)^q*c)), x)
```

giac [**A**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(hx+g)\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="giac")
[Out] integrate(1/((h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a)^2), x)
```

maple [**A**] time = 0.04, size = 0, normalized size = 0.00

$$\int \frac{1}{(hx+g)\left(b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)+a\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(h*x+g)/(b*ln(c*(d*(f*x+e)^p)^q)+a)^2,x)
[Out] int(1/(h*x+g)/(b*ln(c*(d*(f*x+e)^p)^q)+a)^2,x)
```

maxima [**A**] time = 0.00, size = 0, normalized size = 0.00

$$(fg-eh)\int \frac{}{abfg^{2}pq+\left(fg^{2}pq^{2}\log(d)+fg^{2}pq\log(c)\right)b^{2}+\left(abfh^{2}pq+\left(fh^{2}pq^{2}\log(d)+fh^{2}pq\log(c)\right)b^{2}\right)x^{2}+2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="maxima")
[Out] (f*g - e*h)*integrate(1/(a*b*f*g^2*p*q + (f*g^2*p*q^2*log(d) + f*g^2*p*q*lo
g(c))*b^2 + (a*b*f*h^2*p*q + (f*h^2*p*q^2*log(d) + f*h^2*p*q*log(c))*b^2)*x
^2 + 2*(a*b*f*g*h*p*q + (f*g*h*p*q^2*log(d) + f*g*h*p*q*log(c))*b^2)*x + (b
^2*f*h^2*p*q*x^2 + 2*b^2*f*g*h*p*q*x + b^2*f*g^2*p*q)*log(((f*x + e)^p)^q))
, x) - (f*x + e)/(a*b*f*g*p*q + (f*g*p*q^2*log(d) + f*g*p*q*log(c))*b^2 + (
a*b*f*h*p*q + (f*h*p*q^2*log(d) + f*h*p*q*log(c))*b^2)*x + (b^2*f*h*p*q*x +
 b^2*f*g*p*q)*log(((f*x + e)^p)^q))
```

mupad [**A**] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{(g+h\,x)\,\left(a+b\,\ln\left(c\,\left(d\,\left(e+f\,x\right)^{p}\right)^{q}\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((g + h*x)*(a + b*log(c*(d*(e + f*x)^p)^q))^2),x)
[Out] int(1/((g + h*x)*(a + b*log(c*(d*(e + f*x)^p)^q))^2), x)
```

sympy [**A**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)\right)^{2}\left(g+hx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)**p)**q))**2,x)
[Out] Integral(1/((a + b*log(c*(d*(e + f*x)**p)**q))**2*(g + h*x)), x)
```

3.546 $\int \frac{1}{(g+hx)(i+jx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$

Optimal. Leaf size=38

$$\mathrm{Int}\left(\frac{1}{(g+hx)(i+jx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2},x\right)$$

```
[Out] Unintegrable(1/(h*x+g)/(j*x+i)/(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

Rubi [A] time = 0.29, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(g+hx)(i+jx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((g + h*x)*(i + j*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2),x]
[Out] Defer[Int][1/((g + h*x)*(i + j*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2), x]
```

Rubi steps

$$\int \frac{1}{(g+hx)(546+jx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx=\int \frac{1}{(g+hx)(546+jx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}$$

Mathematica [A] time = 30.40, size = 0, normalized size = 0.00

$$\int \frac{1}{(g+hx)(i+jx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((g + h*x)*(i + j*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2),x]
[Out] Integrate[1/((g + h*x)*(i + j*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2), x]
```

fricas [A] time = 0.49, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{1}{a^2hjx^2+a^2gi+\left(b^2hjx^2+b^2gi+\left(b^2hi+b^2gj\right)x\right)\log\left(\left(\left((fx+e)^p d\right)^q c\right)^2+\left(a^2hi+a^2gj\right)x+2\left(abhjx^2\right.\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(j*x+i)/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="fr
icas")
[Out] integral(1/(a^2*h*j*x^2 + a^2*g*i + (b^2*h*j*x^2 + b^2*g*i + (b^2*h*i + b^2
*g*j)*x)*log(((f*x + e)^p*d)^q*c)^2 + (a^2*h*i + a^2*g*j)*x + 2*(a*b*h*j*x^
2 + a*b*g*i + (a*b*h*i + a*b*g*j)*x)*log(((f*x + e)^p*d)^q*c)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(hx+g)(jx+i)\left(b\log\left(\left((fx+e)^p d\right)^q c\right)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(j*x+i)/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="gi
ac")
```

```
[Out] integrate(1/((h*x + g)*(j*x + i)*(b*log(((f*x + e)^p*d)^q*c) + a)^2), x)
```

maple [A] time = 0.53, size = 0, normalized size = 0.00

$$\int \frac{1}{(hx+g)(jx+i)\left(b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(h*x+g)/(j*x+i)/(b*ln(c*(d*(f*x+e)^p)^q)+a)^2,x)
```

```
[Out] int(1/(h*x+g)/(j*x+i)/(b*ln(c*(d*(f*x+e)^p)^q)+a)^2,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{}{abfgipq+\left(fgipq^2\log(d)+fgipq\log(c)\right)b^2+\left(abfhjpq+\left(fhjpq^2\log(d)+fhjpq\log(c)\right)b^2\right)x^2+\left(\left(hipq+gjpq\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(j*x+i)/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="ma
xima")
```

```
[Out] -(f*x + e)/(a*b*f*g*i*p*q + (f*g*i*p*q^2*log(d) + f*g*i*p*q*log(c))*b^2 + (
a*b*f*h*j*p*q + (f*h*j*p*q^2*log(d) + f*h*j*p*q*log(c))*b^2)*x^2 + ((h*i*p*
q + g*j*p*q)*a*b*f + ((h*i*p*q + g*j*p*q)*f*log(c) + (h*i*p*q^2 + g*j*p*q^2
)*f*log(d))*b^2)*x + (b^2*f*h*j*p*q*x^2 + b^2*f*g*i*p*q + (h*i*p*q + g*j*p*
q)*b^2*f*x)*log(((f*x + e)^p)^q)) - integrate((f*h*j*x^2 + 2*e*h*j*x - f*g*
i + (h*i + g*j)*e)/(a*b*f*g^2*i^2*p*q + (a*b*f*h^2*j^2*p*q + (f*h^2*j^2*p*q
^2*log(d) + f*h^2*j^2*p*q*log(c))*b^2)*x^4 + 2*((h^2*i*j*p*q + g*h*j^2*p*q)
*a*b*f + ((h^2*i*j*p*q + g*h*j^2*p*q)*f*log(c) + (h^2*i*j*p*q^2 + g*h*j^2*p
*q^2)*f*log(d))*b^2)*x^3 + (f*g^2*i^2*p*q^2*log(d) + f*g^2*i^2*p*q*log(c))*
b^2 + ((h^2*i^2*p*q + 4*g*h*i*j*p*q + g^2*j^2*p*q)*a*b*f + ((h^2*i^2*p*q +
4*g*h*i*j*p*q + g^2*j^2*p*q)*f*log(c) + (h^2*i^2*p*q^2 + 4*g*h*i*j*p*q^2 +
g^2*j^2*p*q^2)*f*log(d))*b^2)*x^2 + 2*((g*h*i^2*p*q + g^2*i*j*p*q)*a*b*f +
((g*h*i^2*p*q + g^2*i*j*p*q)*f*log(c) + (g*h*i^2*p*q^2 + g^2*i*j*p*q^2)*f*l
og(d))*b^2)*x + (b^2*f*h^2*j^2*p*q*x^4 + b^2*f*g^2*i^2*p*q + 2*(h^2*i*j*p*q
 + g*h*j^2*p*q)*b^2*f*x^3 + (h^2*i^2*p*q + 4*g*h*i*j*p*q + g^2*j^2*p*q)*b^2
*f*x^2 + 2*(g*h*i^2*p*q + g^2*i*j*p*q)*b^2*f*x)*log(((f*x + e)^p)^q)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{\left(g+h\,x\right)\,\left(i+j\,x\right)\,{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((g + h*x)*(i + j*x)*(a + b*log(c*(d*(e + f*x)^p)^q))^2),x)
[Out] int(1/((g + h*x)*(i + j*x)*(a + b*log(c*(d*(e + f*x)^p)^q))^2), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)\right)^{2}\left(g+hx\right)\left(i+jx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(j*x+i)/(a+b*ln(c*(d*(f*x+e)**p)**q))**2,x)
[Out] Integral(1/((a + b*log(c*(d*(e + f*x)**p)**q))**2*(g + h*x)*(i + j*x)), x)
```

3.547 $\int \frac{1}{(g+hx)(i+jx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$

Optimal. Leaf size=38

$$\text{Int}\left(\frac{1}{(g+hx)(i+jx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2},x\right)$$

```
[Out] Unintegrable(1/(h*x+g)/(j*x+i)^2/(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

Rubi [A] time = 0.33, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(g+hx)(i+jx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((g + h*x)*(i + j*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2),x]
```

```
[Out] Defer[Int][1/((g + h*x)*(i + j*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2), x]
```

Rubi steps

$$\int \frac{1}{(g+hx)(547+jx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx = \int \frac{1}{(g+hx)(547+jx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,d$$

Mathematica [A] time = 42.96, size = 0, normalized size = 0.00

$$\int \frac{1}{(g+hx)(i+jx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((g + h*x)*(i + j*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2),x]
```

```
[Out] Integrate[1/((g + h*x)*(i + j*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2), x]
```

fricas [A] time = 0.52, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{}{a^2hj^2x^3+a^2gi^2+\left(2a^2hij+a^2gj^2\right)x^2+\left(b^2hj^2x^3+b^2gi^2+\left(2b^2hij+b^2gj^2\right)x^2+\left(b^2hi^2+2b^2gij\right)x\right)\log}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(j*x+i)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="
fricas")
```

```
[Out] integral(1/(a^2*h*j^2*x^3 + a^2*g*i^2 + (2*a^2*h*i*j + a^2*g*j^2)*x^2 + (b^
2*h*j^2*x^3 + b^2*g*i^2 + (2*b^2*h*i*j + b^2*g*j^2)*x^2 + (b^2*h*i^2 + 2*b^
```

```
2*g*i*j)*x)*log(((f*x + e)^p*d)^q*c)^2 + (a^2*h*i^2 + 2*a^2*g*i*j)*x + 2*(a
*b*h*j^2*x^3 + a*b*g*i^2 + (2*a*b*h*i*j + a*b*g*j^2)*x^2 + (a*b*h*i^2 + 2*a
*b*g*i*j)*x)*log(((f*x + e)^p*d)^q*c)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(hx+g)(jx+i)^2\left(b\log\left(\left((fx+e)^p d\right)^q c\right)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(j*x+i)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="
giac")
```

```
[Out] integrate(1/((h*x + g)*(j*x + i)^2*(b*log(((f*x + e)^p*d)^q*c) + a)^2), x)
```

maple [A] time = 0.55, size = 0, normalized size = 0.00

$$\int \frac{1}{(hx+g)(jx+i)^2\left(b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(h*x+g)/(j*x+i)^2/(b*ln(c*(d*(f*x+e)^p)^q)+a)^2,x)
```

```
[Out] int(1/(h*x+g)/(j*x+i)^2/(b*ln(c*(d*(f*x+e)^p)^q)+a)^2,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(j*x+i)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="
maxima")
```

```
[Out] -(f*x + e)/(a*b*f*g*i^2*p*q + (a*b*f*h*j^2*p*q + (f*h*j^2*p*q^2*log(d) + f*
h*j^2*p*q*log(c))*b^2)*x^3 + (f*g*i^2*p*q^2*log(d) + f*g*i^2*p*q*log(c))*b^
2 + ((2*h*i*j*p*q + g*j^2*p*q)*a*b*f + ((2*h*i*j*p*q + g*j^2*p*q)*f*log(c)
+ (2*h*i*j*p*q^2 + g*j^2*p*q^2)*f*log(d))*b^2)*x^2 + ((h*i^2*p*q + 2*g*i*j*
p*q)*a*b*f + ((h*i^2*p*q + 2*g*i*j*p*q)*f*log(c) + (h*i^2*p*q^2 + 2*g*i*j*p
*q^2)*f*log(d))*b^2)*x + (b^2*f*h*j^2*p*q*x^3 + b^2*f*g*i^2*p*q + (2*h*i*j*
p*q + g*j^2*p*q)*b^2*f*x^2 + (h*i^2*p*q + 2*g*i*j*p*q)*b^2*f*x)*log(((f*x +
 e)^p)^q)) - integrate((2*f*h*j*x^2 - f*g*i + (h*i + 2*g*j)*e + (f*g*j + 3*
e*h*j)*x)/(a*b*f*g^2*i^3*p*q + (a*b*f*h^2*j^3*p*q + (f*h^2*j^3*p*q^2*log(d)
 + f*h^2*j^3*p*q*log(c))*b^2)*x^5 + ((3*h^2*i*j^2*p*q + 2*g*h*j^3*p*q)*a*b*
f + ((3*h^2*i*j^2*p*q + 2*g*h*j^3*p*q)*f*log(c) + (3*h^2*i*j^2*p*q^2 + 2*g*
h*j^3*p*q^2)*f*log(d))*b^2)*x^4 + ((3*h^2*i^2*j*p*q + 6*g*h*i*j^2*p*q + g^2
*j^3*p*q)*a*b*f + ((3*h^2*i^2*j*p*q + 6*g*h*i*j^2*p*q + g^2*j^3*p*q)*f*log(
c) + (3*h^2*i^2*j*p*q^2 + 6*g*h*i*j^2*p*q^2 + g^2*j^3*p*q^2)*f*log(d))*b^2)
*x^3 + (f*g^2*i^3*p*q^2*log(d) + f*g^2*i^3*p*q*log(c))*b^2 + ((h^2*i^3*p*q
+ 6*g*h*i^2*j*p*q + 3*g^2*i*j^2*p*q)*a*b*f + ((h^2*i^3*p*q + 6*g*h*i^2*j*p*
q + 3*g^2*i*j^2*p*q)*f*log(c) + (h^2*i^3*p*q^2 + 6*g*h*i^2*j*p*q^2 + 3*g^2*
i*j^2*p*q^2)*f*log(d))*b^2)*x^2 + ((2*g*h*i^3*p*q + 3*g^2*i^2*j*p*q)*a*b*f
+ ((2*g*h*i^3*p*q + 3*g^2*i^2*j*p*q)*f*log(c) + (2*g*h*i^3*p*q^2 + 3*g^2*i^
2*j*p*q^2)*f*log(d))*b^2)*x + (b^2*f*h^2*j^3*p*q*x^5 + b^2*f*g^2*i^3*p*q +
(3*h^2*i*j^2*p*q + 2*g*h*j^3*p*q)*b^2*f*x^4 + (3*h^2*i^2*j*p*q + 6*g*h*i*j^
2*p*q + g^2*j^3*p*q)*b^2*f*x^3 + (h^2*i^3*p*q + 6*g*h*i^2*j*p*q + 3*g^2*i*j
^2*p*q)*b^2*f*x^2 + (2*g*h*i^3*p*q + 3*g^2*i^2*j*p*q)*b^2*f*x)*log(((f*x +
e)^p)^q)), x)
```

mupad [**A**] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{\left(g+h\,x\right)\,{\left(i+j\,x\right)}^2\,{\left(a+b\,\ln\left(c\,{\left(d\,{\left(e+f\,x\right)}^p\right)}^q\right)\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((g + h*x)*(i + j*x)^2*(a + b*log(c*(d*(e + f*x)^p)^q))^2),x)
[Out] int(1/((g + h*x)*(i + j*x)^2*(a + b*log(c*(d*(e + f*x)^p)^q))^2), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(j*x+i)**2/(a+b*ln(c*(d*(f*x+e)**p)**q))**2,x)
[Out] Timed out
```

Chapter 4

Listing of Grading functions

The following are the current version of the grading functions used for grading the quality of the antiderivative with reference to the optimal antiderivative included in the test suite.

There is a version for Maple and for Mathematica/Rubi. There is a version for grading Sympy and version for use with Sagemath.

The following are links to the current source code.

The following are the listings of source code of the grading functions.

4.0.1 Mathematica and Rubi grading function

```
(* Original version thanks to Albert Rich emailed on 03/21/2017 *)
(* ::Package:: *)

(* ::Subsection:: *)
(*GradeAntiderivative[result,optimal]*)


(* ::Text:: *)
(*If result and optimal are mathematical expressions, *)
(*          GradeAntiderivative[result,optimal] returns*)
(*  "F" if the result fails to integrate an expression that*)
(*      is integrable*)
(*  "C" if result involves higher level functions than necessary*)
(*  "B" if result is more than twice the size of the optimal*)
(*      antiderivative*)
(*  "A" if result can be considered optimal*)


GradeAntiderivative[result_,optimal_] :=
  If[ExpnType[result]<=ExpnType[optimal],
    If[FreeQ[result,Complex] || Not[FreeQ[optimal,Complex]],
      If[LeafCount[result]<=2*LeafCount[optimal],
        "A",
      "B"],
    "C"],
  If[FreeQ[result,Integrate] && FreeQ[result,Int],
    "C",
  "F"]]


(* ::Text:: *)
(*The following summarizes the type number assigned an *)
(*expression based on the functions it involves*)
(*1 = rational function*)
(*2 = algebraic function*)
```

```
(*3 = elementary function*)
(*4 = special function*)
(*5 = hyperpergeometric function*)
(*6 = appell function*)
(*7 = rootsum function*)
(*8 = integrate function*)
(*9 = unknown function*)


ExpnType[expn_] :=
  If[AtomQ[expn],
    1,
  If[ListQ[expn],
    Max[Map[ExpnType,expn]],
  If[Head[expn]===Power,
    If[IntegerQ[expn[[2]]],
      ExpnType[expn[[1]]],
    If[Head[expn[[2]]]===Rational,
      If[IntegerQ[expn[[1]]] || Head[expn[[1]]]===Rational,
        1,
      Max[ExpnType[expn[[1]]],2]],
    Max[ExpnType[expn[[1]]],ExpnType[expn[[2]]],3]]],
  If[Head[expn]===Plus || Head[expn]===Times,
    Max[ExpnType[First[expn]],ExpnType[Rest[expn]]],
  If[ElementaryFunctionQ[Head[expn]],
    Max[3,ExpnType[expn[[1]]]],
  If[SpecialFunctionQ[Head[expn]],
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],4]],
  If[HypergeometricFunctionQ[Head[expn]],
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],5]],
  If[AppellFunctionQ[Head[expn]],
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],6]],
  If[Head[expn]===RootSum,
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],7]],
  If[Head[expn]===Integrate || Head[expn]===Int,
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],8]],
  9]]]]]]]]]]


ElementaryFunctionQ[func_] :=
  MemberQ[{
        Exp,Log,
        Sin,Cos,Tan,Cot,Sec,Csc,
        ArcSin,ArcCos,ArcTan,ArcCot,ArcSec,ArcCsc,
        Sinh,Cosh,Tanh,Coth,Sech,Csch,
        ArcSinh,ArcCosh,ArcTanh,ArcCoth,ArcSech,ArcCsch
},func]


SpecialFunctionQ[func_] :=
  MemberQ[{
        Erf, Erfc, Erfi,
        FresnelS, FresnelC,
        ExpIntegralE, ExpIntegralEi, LogIntegral,
        SinIntegral, CosIntegral, SinhIntegral, CoshIntegral,
        Gamma, LogGamma, PolyGamma,
        Zeta, PolyLog, ProductLog,
        EllipticF, EllipticE, EllipticPi
},func]


HypergeometricFunctionQ[func_] :=
  MemberQ[{Hypergeometric1F1,Hypergeometric2F1,HypergeometricPFQ},func]
```

```
AppellFunctionQ[func_] :=
  MemberQ[{AppellF1},func]
```

4.0.2 Maple grading function

```
# File: GradeAntiderivative.mpl
# Original version thanks to Albert Rich emailed on 03/21/2017

#Nasser 03/22/2017  Use Maple leaf count instead since buildin
#Nasser 03/23/2017  missing 'ln' for ElementaryFunctionQ added
#Nasser 03/24/2017  corrected the check for complex result
#Nasser 10/27/2017  check for leafsize and do not call ExpnType()
#                   if leaf size is "too large". Set at 500,000
#Nasser 12/22/2019  Added debug flag, added 'dilog' to special functions
#                   see problem 156, file Apostol_Problems

GradeAntiderivative := proc(result,optimal)
local leaf_count_result, leaf_count_optimal,ExpnType_result,ExpnType_optimal,
   debug:=false;

      leaf_count_result:=leafcount(result);
      #do NOT call ExpnType() if leaf size is too large. Recursion problem
      if leaf_count_result > 500000 then
          return "B";
      fi;

      leaf_count_optimal:=leafcount(optimal);

      ExpnType_result:=ExpnType(result);
      ExpnType_optimal:=ExpnType(optimal);

      if debug then
         print("ExpnType_result",ExpnType_result," ExpnType_optimal=",
   ExpnType_optimal);
      fi;

# If result and optimal are mathematical expressions,
#  GradeAntiderivative[result,optimal] returns
#   "F" if the result fails to integrate an expression that
#       is integrable
#   "C" if result involves higher level functions than necessary
#   "B" if result is more than twice the size of the optimal
#       antiderivative
#   "A" if result can be considered optimal

  #This check below actually is not needed, since I only
  #call this grading only for passed integrals. i.e. I check
  #for "F" before calling this. But no harm of keeping it here.
  #just in case.


  if not type(result,freeof('int')) then
     return "F";
  end if;


  if ExpnType_result<=ExpnType_optimal then
      if debug then
          print("ExpnType_result<=ExpnType_optimal");
      fi;
```

```
      if is_contains_complex(result) then
         if is_contains_complex(optimal) then
            if debug then
               print("both result and optimal complex");
            fi;
            #both result and optimal complex
            if leaf_count_result<=2*leaf_count_optimal then
               return "A";
            else
               return "B";
            end if
         else #result contains complex but optimal is not
            if debug then
               print("result contains complex but optimal is not");
            fi;
            return "C";
         end if
      else # result do not contain complex
           # this assumes optimal do not as well
           if debug then
               print("result do not contain complex, this assumes optimal do
   not as well");
           fi;
           if leaf_count_result<=2*leaf_count_optimal then
              if debug then
                 print("leaf_count_result<=2*leaf_count_optimal");
              fi;
              return "A";
           else
              if debug then
                 print("leaf_count_result>2*leaf_count_optimal");
              fi;
              return "B";
           end if
      end if
  else #ExpnType(result) > ExpnType(optimal)
      if debug then
         print("ExpnType(result) > ExpnType(optimal)");
      fi;
      return "C";
  end if

end proc:

#
# is_contains_complex(result)
# takes expressions and returns true if it contains "I" else false
#
#Nasser 032417
is_contains_complex:= proc(expression)
  return (has(expression,I));
end proc:

# The following summarizes the type number assigned an expression
# based on the functions it involves
# 1 = rational function
# 2 = algebraic function
# 3 = elementary function
# 4 = special function
# 5 = hyperpergeometric function
# 6 = appell function
# 7 = rootsum function
# 8 = integrate function
```

```
# 9 = unknown function

ExpnType := proc(expn)
  if type(expn,'atomic') then
    1
  elif type(expn,'list') then
    apply(max,map(ExpnType,expn))
  elif type(expn,'sqrt') then
    if type(op(1,expn),'rational') then
       1
    else
       max(2,ExpnType(op(1,expn)))
    end if
  elif type(expn,'`^`') then
    if type(op(2,expn),'integer') then
      ExpnType(op(1,expn))
    elif type(op(2,expn),'rational') then
      if type(op(1,expn),'rational') then
         1
      else
         max(2,ExpnType(op(1,expn)))
      end if
    else
         max(3,ExpnType(op(1,expn)),ExpnType(op(2,expn)))
    end if
  elif type(expn,'`+`') or type(expn,'`*`') then
    max(ExpnType(op(1,expn)),max(ExpnType(rest(expn))))
  elif ElementaryFunctionQ(op(0,expn)) then
    max(3,ExpnType(op(1,expn)))
  elif SpecialFunctionQ(op(0,expn)) then
    max(4,apply(max,map(ExpnType,[op(expn)])))
  elif HypergeometricFunctionQ(op(0,expn)) then
    max(5,apply(max,map(ExpnType,[op(expn)])))
  elif AppellFunctionQ(op(0,expn)) then
    max(6,apply(max,map(ExpnType,[op(expn)])))
  elif op(0,expn)='int' then
    max(8,apply(max,map(ExpnType,[op(expn)]))) else
  9
  end if
end proc:


ElementaryFunctionQ := proc(func)
  member(func,[
        exp,log,ln,
        sin,cos,tan,cot,sec,csc,
        arcsin,arccos,arctan,arccot,arcsec,arccsc,
        sinh,cosh,tanh,coth,sech,csch,
        arcsinh,arccosh,arctanh,arccoth,arcsech,arccsch])
end proc:

SpecialFunctionQ := proc(func)
  member(func,[
        erf,erfc,erfi,
        FresnelS,FresnelC,
        Ei,Ei,Li,Si,Ci,Shi,Chi,
        GAMMA,lnGAMMA,Psi,Zeta,polylog,dilog,LambertW,
        EllipticF,EllipticE,EllipticPi])
end proc:

HypergeometricFunctionQ := proc(func)
  member(func,[Hypergeometric1F1,hypergeom,HypergeometricPFQ])
end proc:
```

```
AppellFunctionQ := proc(func)
  member(func,[AppellF1])
end proc:

# u is a sum or product.  rest(u) returns all but the
# first term or factor of u.
rest := proc(u) local v;
  if nops(u)=2 then
     op(2,u)
  else
     apply(op(0,u),op(2..nops(u),u))
  end if
end proc:

#leafcount(u) returns the number of nodes in u.
#Nasser 3/23/17  Replaced by build-in leafCount from package in Maple
leafcount := proc(u)
   MmaTranslator[Mma][LeafCount](u);
end proc:
```

4.0.3 Sympy grading function

```
#Dec 24, 2019. Nasser M. Abbasi:
#              Port of original Maple grading function by
#              Albert Rich to use with Sympy/Python
#Dec 27, 2019  Nasser. Added `RootSum`. See problem 177, Timofeev file
#              added 'exp_polar'
from sympy import *

def leaf_count(expr):
    #sympy do not have leaf count function. This is approximation
    return round(1.7*count_ops(expr))

def is_sqrt(expr):
    if isinstance(expr,Pow):
        if expr.args[1] == Rational(1,2):
            return True
        else:
            return False
    else:
        return False

def is_elementary_function(func):
    return func in [exp,log,ln,sin,cos,tan,cot,sec,csc,
            asin,acos,atan,acot,asec,acsc,sinh,cosh,tanh,coth,sech,csch,
            asinh,acosh,atanh,acoth,asech,acsch
        ]

def is_special_function(func):
    return func in [ erf,erfc,erfi,
             fresnels,fresnelc,Ei,Ei,Li,Si,Ci,Shi,Chi,
             gamma,loggamma,digamma,zeta,polylog,LambertW,
             elliptic_f,elliptic_e,elliptic_pi,exp_polar
         ]

def is_hypergeometric_function(func):
    return func in [hyper]

def is_appell_function(func):
    return func in [appellf1]
```

```
def is_atom(expn):
    try:
        if expn.isAtom or isinstance(expn,int) or isinstance(expn,float):
           return True
        else:
           return False

    except AttributeError as error:
        return False

def expnType(expn):
    debug=False
    if debug:
        print("expn=",expn,"type(expn)=",type(expn))

    if is_atom(expn):
      return 1
    elif isinstance(expn,list):
        return max(map(expnType, expn))   #apply(max,map(ExpnType,expn))
    elif  is_sqrt(expn):
        if isinstance(expn.args[0],Rational): #type(op(1,expn),'rational')
            return 1
        else:
            return max(2,expnType(expn.args[0]))  #max(2,ExpnType(op(1,expn)))
    elif isinstance(expn,Pow):   #type(expn,'`^`')
        if isinstance(expn.args[1],Integer):  #type(op(2,expn),'integer')
            return expnType(expn.args[0])   #ExpnType(op(1,expn))
        elif isinstance(expn.args[1],Rational):  #type(op(2,expn),'rational')
            if isinstance(expn.args[0],Rational): #type(op(1,expn),'rational')
                return 1
            else:
                return max(2,expnType(expn.args[0]))  #max(2,ExpnType(op(1,expn
   )))
        else:
            return max(3,expnType(expn.args[0]),expnType(expn.args[1])) #max(3,
   ExpnType(op(1,expn)),ExpnType(op(2,expn)))
    elif isinstance(expn,Add) or isinstance(expn,Mul): #type(expn,'`+`') or
   type(expn,'`*`')
        m1 = expnType(expn.args[0])
        m2 = expnType(list(expn.args[1:]))
        return max(m1,m2)  #max(ExpnType(op(1,expn)),max(ExpnType(rest(expn))))
    elif is_elementary_function(expn.func):  #ElementaryFunctionQ(op(0,expn))
        return max(3,expnType(expn.args[0]))  #max(3,ExpnType(op(1,expn)))
    elif is_special_function(expn.func): #SpecialFunctionQ(op(0,expn))
        m1 = max(map(expnType, list(expn.args)))
        return max(4,m1)   #max(4,apply(max,map(ExpnType,[op(expn)])))
    elif is_hypergeometric_function(expn.func): #HypergeometricFunctionQ(op(0,
   expn))
        m1 = max(map(expnType, list(expn.args)))
        return max(5,m1)   #max(5,apply(max,map(ExpnType,[op(expn)])))
    elif is_appell_function(expn.func):
        m1 = max(map(expnType, list(expn.args)))
        return max(6,m1)   #max(5,apply(max,map(ExpnType,[op(expn)])))
    elif isinstance(expn,RootSum):
        m1 = max(map(expnType, list(expn.args))) #Apply[Max,Append[Map[ExpnType
   ,Apply[List,expn]],7]],
        return max(7,m1)
    elif str(expn).find("Integral") != -1:
        m1 = max(map(expnType, list(expn.args)))
        return max(8,m1)   #max(5,apply(max,map(ExpnType,[op(expn)])))
    else:
        return 9
```

```
#main function
def grade_antiderivative(result,optimal):

    leaf_count_result  = leaf_count(result)
    leaf_count_optimal = leaf_count(optimal)

    expnType_result  = expnType(result)
    expnType_optimal = expnType(optimal)

    if str(result).find("Integral") != -1:
        return "F"

    if expnType_result <= expnType_optimal:
        if result.has(I):
            if optimal.has(I): #both result and optimal complex
                if leaf_count_result <= 2*leaf_count_optimal:
                    return "A"
                else:
                    return "B"
            else: #result contains complex but optimal is not
                return "C"
        else: # result do not contain complex, this assumes optimal do not as
   well
            if leaf_count_result <= 2*leaf_count_optimal:
                return "A"
            else:
                return "B"
    else:
        return "C"
```

4.0.4 SageMath grading function

```
#Dec 24, 2019. Nasser: Ported original Maple grading function by
#              Albert Rich to use with Sagemath. This is used to
#              grade Fricas, Giac and Maxima results.
#Dec 24, 2019. Nasser: Added 'exp_integral_e' and 'sng', 'sin_integral'
#              'arctan2','floor','abs','log_integral'

from sage.all import *
from sage.symbolic.operators import add_vararg, mul_vararg

debug=False;

def tree_size(expr):
    r"""
    Return the tree size of this expression.
    """
    if expr not in SR:
        # deal with lists, tuples, vectors
        return 1 + sum(tree_size(a) for a in expr)
    expr = SR(expr)
    x, aa = expr.operator(), expr.operands()
    if x is None:
        return 1
    else:
        return 1 + sum(tree_size(a) for a in aa)

def is_sqrt(expr):
    if expr.operator() == operator.pow:   #isinstance(expr,Pow):
        if expr.operands()[1]==1/2: #expr.args[1] == Rational(1,2):
            if debug: print ("expr is sqrt")
            return True
```

```
        else:
            return False
    else:
        return False

def is_elementary_function(func):
    debug=False
    m = func.name() in ['exp','log','ln',
            'sin','cos','tan','cot','sec','csc',
            'arcsin','arccos','arctan','arccot','arcsec','arccsc',
            'sinh','cosh','tanh','coth','sech','csch',
            'arcsinh','arccosh','arctanh','arccoth','arcsech','arccsch','sgn',
        'arctan2','floor','abs'
        ]
    if debug:
        if m:
            print ("func ", func , " is elementary_function")
        else:
            print ("func ", func , " is NOT elementary_function")


    return m

def is_special_function(func):
    debug=False
    if debug: print ("type(func)=", type(func))

    m= func.name() in ['erf','erfc','erfi','fresnel_sin','fresnel_cos','Ei',
           'Ei','Li','Si','sin_integral','Ci','cos_integral','Shi','
    sinh_integral'
           'Chi','cosh_integral','gamma','log_gamma','psi,zeta',
           'polylog','lambert_w','elliptic_f','elliptic_e',
           'elliptic_pi','exp_integral_e','log_integral']

    if debug:
        print ("m=",m)
        if m:
            print ("func ", func ," is special_function")
        else:
            print ("func ", func ," is NOT special_function")


    return m


def is_hypergeometric_function(func):
    return func.name() in ['hypergeometric','hypergeometric_M','
    hypergeometric_U']

def is_appell_function(func):
    return func.name() in ['hypergeometric']   #[appellf1] can't find this in
    sagemath

def is_atom(expn):

    debug=False
    if debug: print ("Enter is_atom")


    #thanks to answer at https://ask.sagemath.org/question/49179/what-is-
    sagemath-equivalent-to-atomic-type-in-maple/
    try:
        if expn.parent() is SR:
```

```
            return expn.operator() is None
        if expn.parent() in (ZZ, QQ, AA, QQbar):
            return expn in expn.parent() # Should always return True
        if hasattr(expn.parent(),"base_ring") and hasattr(expn.parent(),"gens")
    :
            return expn in expn.parent().base_ring() or expn in expn.parent().
    gens()
        return False

    except AttributeError as error:
        return False


def expnType(expn):

    if debug:
        print (">>>>>Enter expnType, expn=", expn)
        print (">>>>>is_atom(expn)=", is_atom(expn))

    if is_atom(expn):
        return 1
    elif type(expn)==list:   #isinstance(expn,list):
        return max(map(expnType, expn))   #apply(max,map(ExpnType,expn))
    elif  is_sqrt(expn):
        if  type(expn.operands()[0])==Rational: #type(isinstance(expn.args[0],
    Rational):
            return 1
        else:
            return max(2,expnType(expn.operands()[0]))  #max(2,expnType(expn.
    args[0]))
    elif expn.operator() == operator.pow:   #isinstance(expn,Pow)
        if type(expn.operands()[1])==Integer:  #isinstance(expn.args[1],Integer
    )
            return expnType(expn.operands()[0])   #expnType(expn.args[0])
        elif type(expn.operands()[1])==Rational:  #isinstance(expn.args[1],
    Rational)
            if type(expn.operands()[0])==Rational: #isinstance(expn.args[0],
    Rational)
                return 1
            else:
                return max(2,expnType(expn.operands()[0]))  #max(2,expnType(
    expn.args[0]))
        else:
            return max(3,expnType(expn.operands()[0]),expnType(expn.operands()
    [1])) #max(3,expnType(expn.operands()[0]),expnType(expn.operands()[1]))
    elif expn.operator() == add_vararg or expn.operator() == mul_vararg: #
    isinstance(expn,Add) or isinstance(expn,Mul)
        m1 = expnType(expn.operands()[0]) #expnType(expn.args[0])
        m2 = expnType(expn.operands()[1:]) #expnType(list(expn.args[1:]))
        return max(m1,m2)  #max(ExpnType(op(1,expn)),max(ExpnType(rest(expn))))
    elif is_elementary_function(expn.operator()):  #is_elementary_function(expn
    .func)
        return max(3,expnType(expn.operands()[0]))
    elif is_special_function(expn.operator()): #is_special_function(expn.func)
        m1 = max(map(expnType, expn.operands()))      #max(map(expnType, list(
    expn.args)))
        return max(4,m1)   #max(4,m1)
    elif is_hypergeometric_function(expn.operator()): #
    is_hypergeometric_function(expn.func)
        m1 = max(map(expnType, expn.operands()))       #max(map(expnType, list(
    expn.args)))
        return max(5,m1)   #max(5,m1)
    elif is_appell_function(expn.operator()):
```

```
        m1 = max(map(expnType, expn.operands()))       #max(map(expnType, list(
    expn.args)))
        return max(6,m1)   #max(6,m1)
    elif str(expn).find("Integral") != -1: #this will never happen, since it
                #is checked before calling the grading function that is passed.
                #but kept it here.
        m1 = max(map(expnType, expn.operands()))       #max(map(expnType, list(
    expn.args)))
        return max(8,m1)   #max(5,apply(max,map(ExpnType,[op(expn)])))
    else:
        return 9

#main function
def grade_antiderivative(result,optimal):

    if debug: print ("Enter grade_antiderivative for sagemath")

    leaf_count_result  = tree_size(result) #leaf_count(result)
    leaf_count_optimal = tree_size(optimal) #leaf_count(optimal)

    if debug: print ("leaf_count_result=", leaf_count_result, "
    leaf_count_optimal=",leaf_count_optimal)


    expnType_result  = expnType(result)
    expnType_optimal = expnType(optimal)

    if debug: print ("expnType_result=", expnType_result, "expnType_optimal=",
    expnType_optimal)

    if expnType_result <= expnType_optimal:
        if result.has(I):
            if optimal.has(I): #both result and optimal complex
                if leaf_count_result <= 2*leaf_count_optimal:
                    return "A"
                else:
                    return "B"
            else: #result contains complex but optimal is not
                return "C"
        else: # result do not contain complex, this assumes optimal do not as
    well
            if leaf_count_result <= 2*leaf_count_optimal:
                return "A"
            else:
                return "B"
    else:
        return "C"
```